SSAR Journal of Arts Humanities and Social Sciences (SSARJAHSS)

Journal homepage: https://ssarpublishers.com/sarjahss
Abbreviated Key Title: SSAR J Arts Humanit Soc Sci
ISSN: 3049-0340 (Online)
Volume 3, Issue 1, (Jan-Feb) 2026, Page 73-90 (Total PP.18)
Frequency: Bimonthly
E-mail: ssarpublishers@gmail.com

OPEN ACCESS

ARTICLE HISTORY
Received: 15-01-2026 / Accepted: 06-02-2026 / Published: 08-02-2026

Effect of E-Commerce Innovation and Technology Utilization on Business Expansion

By
Corresponding authors: Abdullateef Ajibola Adepoju[1], Aliyu Mohammed[2], Maryam Folakemi Adepoju[3]
[1]Randatech Systems Ltd, Gidan Nasir Ahmed, No. 3 Zaria Road, Opposite Ja'oji Quarters, Kano, Nigeria.
[2]Department of Management, School of Arts, Management and Social Sciences, Skyline University Nigeria, Kano.
[3]11 Umaru Muhammadu Street, 65 NNDC Quarters, Hotoro GRA, Kano, Kano State, Nigeria.

ABSTRACT: The article examines how the innovation and use of e-commerce technologies influence business growth, the ongoing issue surrounding the use of digital technologies in the growth of small and medium-sized enterprises (SMEs). Although the world has experienced a rapid growth in e-commerce, most businesses especially in the emerging economies have not fully utilized the technological tools as a result of infrastructural, capability and innovation-based barriers. This conceptual paper aims primarily to examine the interaction between digital innovation and technology use and how it can promote business growth, competitiveness, and sustainability. The research has a conceptual and descriptive design, as it will be based on secondary data in terms of journal publications, books, reports, and other academic sources. Applying theoretical lenses based on the Technology-Organization-Environment (TOE) framework, the Resource-Based View (RBV), and the Innovation Diffusion Theory (IDT), the study determines that innovation and technological capability have a positive impact on expansion, in the increase of efficiency, access to the market, and digital agility. The study suggests enhancing culture of innovation, investing in ICT training, and facilitating the culture of supportive digital policies. It concludes that incorporating innovation and the use of technology offers a synergetic route of attaining sustainable growth in the digital economy in the business.

KEYWORDS: E-commerce Innovation, Technology Utilization, Business Expansion, Digital Transformation, SMEs.

INTRODUCTION

1.1 Background of the Study

E-commerce has evolved and changed the business environment in different parts of the world and has revolutionized the way organizations relate with markets, consumers as well as supply chains. In the past 20 years, the blistering development of information and communication technology (ICT) and artificial intelligence (AI), cloud computing, and online platforms has transformed the activities of businesses in all industries (Khin and Ho, 2019; Zhe and Hamid, 2021). This change is an end of conventional business and the beginning of a digitally empowered market that has technology as the catalyst behind its efficiency, innovation and customer experience. Industry 4.0 and the mass adoption of digital tools allowed companies to overcome geographical restrictions, increase the amount of processes automation, and reach new markets within seconds (Aliyu, Lawal & Shanmugam, 2023).

The digital transformation agenda has gained greater momentum globally after the pandemic due to the focus on strategic integration of

technology into business models to achieve resilience, agility, and competitiveness. Mou et al. (2022) argue that value creation is developed based on digital innovation, specifically e-commerce on which productivity and operational flexibility are improved. Equally, Grover and Kohli (2012) emphasized that adoption of digital technology can help firms to enhance competitive advantage by enabling them to make better decisions, market intelligence and reduce costs. Such trends have provided a rich platform in the realm of technology-based entrepreneurship, whereby start-ups and small businesses have used innovation to engage with established businesses (Aliyu, Jakada & Sundararajan, 2024).

The emergence of technology-based entrepreneurship is an indication of a paradigm shift in the resource dependence to knowledge and innovation orientation (Barney, 1991; Teece, 2007). Business owners are moving towards the use of software-based applications, digital analytics, and e-commerce inventions to improve customer interaction and performance efficiency (Aliyu and Shanmugam, 2022). By adopting technologies, including mobile apps, digital payment systems, and AI-driven logistics, companies, in addition to streamlining their internal operations, open up new market opportunities (Wangari and Iravo, 2021). The congruence of innovation capability and adoption of technology becomes a determining factor of sustainable business growth therefore becomes a critical issue.

The role played by e-commerce innovation and the use of technology is very significant but disproportionate to the growth of business in emerging economies, especially in Africa and Asia. This is usually hindered by limited infrastructure and lack of digital literacy in addition to ineffective policy frameworks in SME adoption of digital tools (Aliyu & Lawal, 2022). However, research like Wirdiyanti et al. (2023) and Xie et al. (2020) shows that implementing the practice of e-commerce has led to better sales, expansive market reach, and customer relationship among SMEs. Thus, the incorporation of technological innovation does not simply boost growth but is also a booster of the economic diversification and sustainability of entrepreneurs (Aliyu, Sundararajan & Lawal, 2023).

Essentially, the significance of this research can be summed up in the realization that the innovation and the use of technology in e-commerce contributes to the growth of business, more so in developing economies where the use of digital as a competitive strategy is still a focal point. This theoretical speculation is based on the resource-based and innovation diffusion theories, which give the theoretical perspective behind the way companies mobilize technological competence to strengthen market share and organizational efficiency.

1.2 Problem Statement

Irrespective of the e-commerce spread across the world and the radical potential of digital technologies, a significant number of Small and Medium Enterprises (SMEs) still do not use e-commerce platforms and technological innovations in their activities. Although developed economies have attained the desired efficiency and competitiveness through the digital transformation, SMEs in the emerging ones tend to fall behind as a result of long-standing barriers in the form of infrastructures, finances, and knowledge (Aliyu and Lawal, 2022; Wirdiyanti et al., 2023). The unequal spread of technology in sectors has created a digital divide that constrains the maximization of the opportunities of business expansion (Xie, Yu & Zou, 2020).

A significant issue is that the adoption of innovation-based technologies, such as software applications, enterprise resource planning (ERP) solutions, and AI-based customer engagement technologies, which are key productivity and competitiveness facilitators of the contemporary marketplace, are not widespread (Zhe and Hamid, 2021; Aliyu and Shanmugam, 2022). SMEs are often not supplemented by digital infrastructure, human capabilities and strategic orientation to properly incorporate these tools in business models. As a result, most of the businesses are stuck in the traditional operational systems that are limiting in terms of scale, efficiency, and market penetration (Mou et al., 2022). Moreover, there is an extreme conceptual and empirical gap in comprehending the joint contributions of e-commerce innovation and the use of technology toward business growth. Although the past literature has studied these variables separately, and many of them have focused on either

innovation or technology adoption, the interplay between the two constructs and their impact on entrepreneurial development has not been sufficiently investigated in an emerging market (Aliyu, Jakada & Sundararajan, 2024; Khin and Ho, 2019). This is a gap that limits the formulation of an integrated framework that embodies the influence of digital transformation towards sustainable business expansion based on capability of innovation and use of technology.

Considering these shortcomings, there is an immediate need to create a conceptual framework connecting the e-commerce innovation, use of technology and business growth. The latter type of model would offer theoretical and practical understanding of the ways digital entrepreneurship ecosystems can be reinforced to become more competitive, promote innovation-based expansion and economic diversification (Aliyu, Lawal and Shanmugam, 2023; Teece, 2007). This conceptual gap is important to be seen out in an effort by SMEs to embrace technology as a strategic resource to the long-term performance and market growth.

1.3 Significance of the Study

The importance of the research is the multidisciplinary input into the knowledge of how the innovation of e-commerce and the use of technologies spur business growth in the modern digital economy. It fills theoretical, practical, policy, and socio-economic aspects required in the sustainable development of SMEs, especially in emerging economies.

Academically, the research is valuable towards the diversification of current theoretical frameworks because it incorporates the innovation and technology views in the background of business expansion. The paper develops a holistic conceptual framework using Technology-Organization-Environment (TOE) (Tornatzky and Fleischer, 1990), diffusion of Innovations theory (Rogers, 2003) and the Resource-Based View (RBV) (Teece, 2007) frameworks to connect e-commerce innovation and use of technology to business development.

The study makes a contribution to the academic debate on the interplay between digital innovation, software capability, and firm competitiveness by considering the experiences of another research (Khin and Ho, 2019; Aliyu, Jakada and Sundararajan, 2024; Wirdiyanti et al., 2023). It further extends the existing arguments about digital transformation by offering a conceptual framework on which to base future empirical research on SMEs.

In practice, the results of such conceptual analysis will help businesspeople and managers to maximize the usefulness of e-commerce tools, online platforms, and technology-driven approaches to sustainable growth. The resource constraints and lack of technological capabilities are frequent problems faced by SMEs in the emerging economies (Aliyu and Shanmugam, 2022; Mou et al., 2022). Knowing the strategic fit between innovation and the employment of technology helps companies to increase their operational efficiency, access and reach to the market, and customer interaction, making them more competitive and resilient in the changing business conditions (Zhe and Hamid, 2021).

This study offers policy implications to governments, policymakers and development agencies seeking to empower the digital economy at the policy level. The paper contributes to the development of evidence-based digital transformation measures that can enable SMEs to progress on a sustainable basis by highlighting the critical importance of innovation ecosystems and digital infrastructure (Waiganjo, Godinic and Obrenovic, 2021; Blampied, 2021). It also indicates the significance of capacity-building programs, ICT-friendly policies and policies of digital financial inclusion in promoting SME development.

On the socio-economic aspects, the incorporation of the e-commerce innovation and technology use leads to inclusive economic growth, creation of employment, and entrepreneurial empowerment. SMEs are one of the essential elements of the national economies, and their productivity and competitiveness might be enhanced greatly by the adoption of digital tools (Wanzu, Turyakira & Katumba, 2019). The paper supports the thesis that digital transformation does not only boost business growth, but also improves social inclusion by empowering young people and women entrepreneurs (Aliyu, Lawal & Shanmugam, 2023).

Taken together, this conceptual paper forms a crucial basis of academic investigation, business

practice, and policy making, as well as a part of the overall global discussion on the growth and technological revolution powered by innovation in the developing economies.

1.4 Research Objectives

General Objective

This research is a general idea to conceptually examine the impact of e-commerce innovation and use of technology on business growth. The research paper will create theoretical connections and build theoretical connections explaining how digital innovation and technological capabilities increase competitiveness, growth, and sustainability of firms in an emerging digital economy.

Specific Objectives

The research objectives are the following:

1. To investigate the role of digital innovation in business growth: This task will address the role of innovative practices involving e-commerce (such as online platforms, products customization and customer interactions) as major factors in increasing the scalability and the competitiveness of firms (Khin and Ho, 2019; Aliyu et al., 2023; Zhe and Hamid, 2021).
2. To analyze the role of technology use in business development: This involves the need to comprehend the manner in which the proper deployment of technologies like cloud computing, data analytics, and digital payment systems can help in business operational productivity and effectiveness (Mou et al., 2022; Mohammed and Sundararajan, 2023).
3. In order to determine the obstacles and facilitators of e-commerce adoption: The research aims to determine the infrastructural, organizational, and policy-related factors that limit innovation and technology adoption and the enabling ones that increase digital preparedness (Waiganjo et al., 2021; Aliyu, 2024).
4. In order to suggest a conceptual framework of interconnection between innovation, use of technology, and business growth: On synthesis of the theoretical background based on Technology-Organization-Environment (TOE) model, Diffusion of Innovation (DOI) model, and the Resource-Based View (RBV), the present work designs a conceptual model demonstrating the impact of innovation and use of technology in enhancing expansion of firms (Teece, 2007; Rogers, 2003).

1.5 Research Questions

To comply with the objectives, the research questions set to be answered in the study are the following:

1. What is the effect of digital innovation on business growth?
   The question examines the impact of e-commerce innovations on the performance of firms, the reach to customers, and market development (Aliyu and Shanmugam, 2022; Wirdiyanti et al., 2023).
2. How does the use of technology increase the performance of firms?
   This will analyze the technological tool operational and strategic impact in underscoring productivity and competitive advantage (Zhe and Hamid, 2021; Khin and Ho, 2019).
3. Which barriers impact adoption and digital transformation of e-commerce amongst companies?
   This delves into contextual constraints like the lack of infrastructures, the expensive nature of technology, and the lack of digital skills that prevent complete adoption of e-commerce (Waiganjo et al., 2021; Mohammed et al., 2024).
4. What is the combined impact of innovation and use of technology towards achieving the growth of businesses?

This attempts to combine the two constructs conceptually to hypothesize how the synergy between the use of innovation and technological application enhances business scalability, resilience, and sustainability (Aliyu, Lawal and Shanmugam, 2023; Mou et al., 2022).

2.0 Literature Review

2.1 Conceptual Review

Conceptual review offers a unitary discourse of major constructs in regard to the e-commerce innovation, technology application, and business growth. It describes the interaction of these concepts to determine the competitiveness of firms in the digital economy. The theoretical models that the review is based on include the Diffusion of Innovation (DOI) (Rogers, 2003), the Technology

Organization Environment (TOE) (Tornatzky and Fleischer, 1990) and the Resource-Based View (RBV) (Barney, 1991). These models collectively deem the role of innovation and technological competency to organizational growth and sustainability.

E-commerce innovation and use of technology are important facilitators of competitiveness and market growth in the context of emerging economies, where SMEs are the core of industrial development (Waiganjo et al., 2021; Mohammed, 2023). Nevertheless, infrastructural, financial, and knowledge-related obstacles usually hamper complete digital adoption in these firms (Wirdiyanti et al., 2022; Aliyu et al., 2024). Thus, the idea of how these constructs are related to one another offers academic and policy implications of the ways to attain the inclusive digital transformation.

2.1.1 E-Commerce Innovation

E-commerce innovation is the application of the latest digital processes, products, or business models to improve the way companies carry out business transactions on the internet (Zhe & Hamid, 2021; Khin and Ho, 2019). It is a process that includes the incorporation of new technologies into the digital space, including artificial intelligence, blockchain, big data analytics, and cloud computing, to develop more responsive and scalable services (Yu et al., 2022; Mohammed, 2023). Throughout the research, Aliyu et al. (2024) identify innovation, as a multidimensional construct in e-commerce, as including technological creativity, innovation of customer engagement, and supply chain transformation. The companies that are innovative in their digital activities achieve strategic benefits of customer loyalty, brand differentiation and access to the markets.

Mou et al. (2022) claim that innovation supports performance through supporting new value propositions and allowing companies to overcome environmental disruptions. This is consistent with the Diffusion of Innovation theory that argues that the perceived relative advantage, complexity and compatibility determine the level of innovation adoption (Rogers, 2003). The empirical evidence indicates that companies that actively embrace the e-commerce innovation perform better when compared to the companies that use the traditional models (Zou and Cheshmehzangi, 2022; Wanzu et al., 2019). Equally, Mohammed and Sundararajan (2023) note that organizations characterized by innovation show greater adaptability and profitability particularly where innovation is integrated into the main business operations.

Innovation of e-commerce in emerging economies helps SMEs to address the disadvantage that comes with size, making them reach the global market and incur fewer transaction costs (Waiganjo et al., 2021; Mohammed, 2023). Aliyu (2024) further contends that by being innovative in delivery and marketing of digital services, the local businesses can compete with the multinational companies due to better customer experiences and responsive operations.

2.1.2 Technology Utilization

The use of technology is the successful use and incorporation of technology in the enhancement of business processes, communication, and decision-making (Blili et al., 1993; Davis, 1986). It includes the implementation of enterprise resource planning (ERP), cloud computing, automation, and electronic payment systems in order to become more efficient and scaleable (Grover et al., 2003; Mohammed, 2023).

According to the Technology Organization Environment (TOE) model, companies implement technology as a result of inside preparedness, technological appropriateness and outward environmental demands (Tornatzky and Fleischer, 1990). The use of technology is usually behind schedule because of the cost, skill, and infrastructural limitations faced by SMEs that have limited resources (Wirdiyanti et al., 2022). But Lawal et al. (2023) concluded that digital capability enhances sustainability performance particularly with environmental awareness and management commitment.

Mohammed and Sundararajan (2023) emphasize that the efficient use of technologies will improve the performance level, both operational and strategic, as it will allow accelerating the flow of information and automate the processes. Another study by Aliyu et al. (2023) demonstrates that an IT solution like IoT and smart manufacturing systems enhances predictive maintenance, quality of products, and agility of firms. Moreover, Sundararajan and Mohammed (2022) claim that

the use of technology leads to the inclusive participation in the economy, in particular, to women entrepreneurs, who can enjoy access to markets and finance via digital tools. Farahbod (2021) continues by stating that technology diffusion promotes the innovation of services, which make the firms less vulnerable to global market changes.

Therefore, the use of technology is not only a support platform, but a strategic facilitator of innovation and sustained competitiveness in digital economies.

2.1.3 Business Expansion

Business expansion refers to expansion of firms that is made past their current operating levels in order to realize tremendous sales, market share, and profitability (Balassa, 1985; Barringer et al., 2000). Among digital economies, the capacity of firms to combine the innovative e-commerce and technology-based approaches is what drives the expanse (Blampied, 2021; Mohammed, 2023).

Aliyu and Sundararajan (2023) note that the business growth process is no longer confined to the physical scale-up, but it is now associated with digital scalability, or the concept of expansion to broader markets via the use of online platforms and data analysis. By establishing a strong correlation between digital capability and business growth in SMEs, Zhe and Hamid (2021) established that digital capability has a strong predictive ability of business growth owing to its effects on innovation and efficiency.

Mou et al. (2022) reveal the mediating effect of innovation between the usage of technology and performance, indicating that companies that apply the capabilities of digital innovations are able to have sustainable growth. Mohammed et al. (2024) support the idea that the consistent development and organizational resiliency are driven by the strategic alignment of HR systems, entrepreneurship, and technology.

According to the Resource-Based View (RBV) (Barney, 1991), companies grow when they successfully use the valuable, rare, inimitable and non-substitutable (VRIN) digital resources. Aliyu (2023) and Mohammed (2023) believe that technology and digital innovation-based competencies generate intangible assets which generate scalability, competitiveness, and value creation.

Figure 1: Conceptual Model Linking E-commerce Innovation, Technology Utilization, and Business Expansion

Source: Developed by the researcher (2025) based on Barney (1991); Rogers (2003); Tornatzky & Fleischer (1990); Aliyu et al. (2024); Mohammed (2023)

Table 1: Summary of Constructs and Supporting Literature

Construct	Definition	Key Supporting Authors
E-commerce Innovation (IV1)	Application of new digital methods to enhance market engagement, operations, and product delivery	Zhe & Hamid (2021); Khin & Ho (2019); Mohammed (2023); Aliyu (2024); Mou et al. (2022); Waiganjo et al. (2021)
Technology Utilization (IV2)	Extent to which firms adopt and use digital technologies for performance and productivity	Davis (1986); Blili et al. (1993); Mohammed & Sundararajan (2023); Lawal et al. (2023); Wirdiyanti et al. (2022); Aliyu et al. (2023)
Business Expansion (DV)	Firm's growth in market share, profitability, and geographic or digital presence	Balassa (1985); Barringer et al. (2000); Mohammed (2023); Zhe & Hamid (2021); Aliyu & Sundararajan (2023)

Source: Compiled by the researchers (2025) from reviewed literature.

2.2 Theoretical Framework

2.2.1 Diffusion of Innovation (DOI) Theory

The Diffusion of Innovation (DOI) theory, developed by Everett Rogers (1962), explains how

innovations are adopted and spread within a social system over time. The theory posits that the rate of adoption depends on perceived attributes such as relative advantage, compatibility, complexity, trialability, and observability (Rogers, 2003).

In the context of e-commerce, DOI helps explain how businesses embrace digital innovations like online platforms, fintech integrations, and artificial intelligence. Firms that perceive digital innovation as advantageous and compatible with their operations are more likely to adopt it, leading to enhanced competitiveness and expansion (Khin & Ho, 2019; Mou et al., 2022).

Aliyu, Sundararajan, and Lawal (2023) align with this view, noting that innovation adoption among SMEs is shaped by managerial awareness, perceived value, and readiness to engage in digital ecosystems. Thus, DOI underpins the **innovation component (IV_1)** of this study, providing theoretical grounding for understanding how firms move from technological awareness to utilization and eventual business expansion.

2.2.2 Technology Organization Environment (TOE) Framework

According to the TOE Framework by Tornatzky and Fleischer (1990) the process of technology adoption is explained on contexts of three contexts in an organization:

- Technological setting: Accessibility and properties of digital tools.
- Organizational context: Managerial capability, culture and size of firm.
- Environmental issues: Customer expectations, regulation and competitive pressure.

This paradigm applies to the use of technology (IV2), since the paradigm determines the circumstances in which companies adopt and exploit technological advancements. Empirical evidence indicates that the internal digital capabilities and external market conditions affect SMEs in adopting e-commerce platforms (Wangari and Mungai, 2022; Wirdiyanti et al., 2023). As noted by Aliyu, Jakada, and Shanmugam (2024), the relevance of organizational capability to technological infrastructure is a critical determinant of performance results of e-commerce companies. Hence, TOE offers an integrated approach to the study of the role of technological adoption in organizational preparedness and environmental factors, which are associated with the results of digital transformation.

2.2.3 Resource-Based View (RBV) Theory

According to the Resource-Based View (RBV) developed by Barney (1991) the sustainable competitive advantage is based on the ownership and effective exploitation of valuable, rare, inimitable and non-substitutable (VRIN) resources. In the context of the study, digital innovation and technological capabilities are strategic resources that can bring about excellent expansion of the business (Hitt et al., 2011; Grover and Kohli, 2012).

On the one hand, technological competence, data analytics, innovation capacity are all cited by Aliyu, Sundararajan, and Shanmugam (2022) as digital resources that allow empowering SMEs to scale their operations and maintain their competitiveness. The RBV therefore relates the use of technology and innovation as company specific resources that facilitate the long-term business growth and expansion.

2.2.4 Integration of Theories with Study Variables

DOI, TOE, and RBV integration offers a multidimensional insight on the association among e-commerce innovation, use of technology and the growth of the business. DOI describes the adoption of innovations, TOE explains the situational factors that make it possible to use the technology, and RBV shows how digital resources support the further growth. Collectively, these theories offer a blanket framework on which a conceptual model could be built which could connect digital innovation and the use of technology to business growth in SMEs in emerging economies.

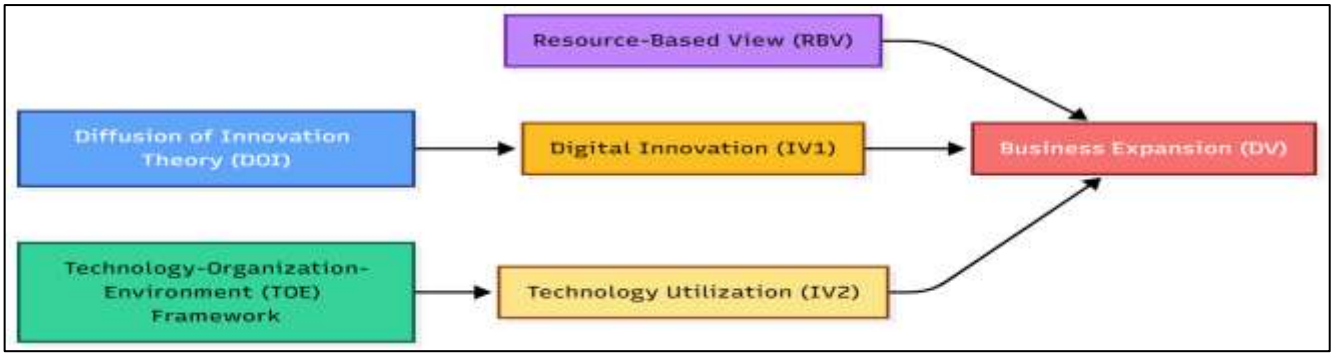


Figure 2: Theoretical Integration Framework Linking DOI, TOE, and RBV to E-commerce Innovation and Business Expansion

Source: *Developed by the Author (2025), adapted from Rogers (2003); Tornatzky & Fleischer (1990); Barney (1991); Aliyu et al. (2022–2024)*

2.3 Linkages Between Theories

E-commerce has become a critical driver of business development and this is attributed to the dynamic relationship existing between digital innovation, application of technology, and entrepreneurial performance. In order to tap into this dynamic relationship, this paper incorporates three underlying theories such as DOI, TOE, and RBV to explain how and why firms in the emerging economies attain business growth in the context of innovation and adoption of e-commerce and technology.

2.3.1 Linking Diffusion of Innovation (DOI) Theory with Digital Innovation (IV_1)

The Diffusion of Innovation Theory (DOI) is a theory that describes the spread of innovations between organizations and industries. In e-commerce, digital innovation is the integration of new technological solutions, including AI-based analytics, digital marketing automation, and integration of platforms, to enhance operational efficiency and engagement in the market (Zhe and Hamid, 2021; Khin and Ho, 2019).

The principles of relative advantage, compatibility, and trialability by Rogers (2003) have a direct influence on the decisions made by SMEs to innovate digitally. Company that views innovation as beneficial and in line with their objectives are faster to embrace and grow (Mou et al., 2022). Aliyu and Sundararajan (2023) observed that strategic agility and market competitiveness of small enterprises through e-commerce driven innovation eminently improves their competitiveness. Thus, DOI offers the cognitive and behavioral premise of how companies identify, assess, and embrace digital innovations that result in growth.

2.3.2 Linking TOE Framework with Technology Utilization (IV_2)

Technology-Organization-Environment Framework (TOE) covers the circumstances in which technology is used in an effective manner. Technology use in e-commerce refers to infrastructure, integration of clouds, data management and customer relationship technologies used to support the online business activity (Wangari and Mungai, 2022).

Tornatzky and Fleischer (1990) state that adoption of technology is determined by three factors:

- Technological context: innovations are available and appropriate,
- Organizational environment: management support, skills, and organization, and
- External environment: competition and regulation.

Empirical studies (Aliyu et al., 2024; Wirdiyanti et al., 2023) demonstrate that SMEs in developing economies tend to face the problem of insufficient digital infrastructure, which makes it harder to maximize the opportunities of e-commerce. Therefore, TOE framework can explain why certain firms successfully use technology in doing business expansion, whereas others do not.

2.3.3 Linking Resource-Based View (RBV) with Business Expansion (DV)

Resource-Based View (RBV) focuses on the importance of firm specific capabilities such as technological competence, human capital and innovative culture in creating sustainable competitive advantage (Barney, 1991).

These resources are reflected in e-commerce settings in the form of a data-driven decision-making, software development, and online interaction with customers (Aliyu et al., 2023;

Grover and Kohli, 2012). Companies that integrate digital innovation (DOI) and efficient technology leveraging (TOE) have strategic digital assets which facilitate business development and growth. Aliyu, Shanmugam, and Subramani (2024) empirically affirm that the rates of expansion of the entrepreneurial ventures based on strategic HR and digital systems are faster, which confirms the focus of RBV on the resource optimization as the factor determining expansion.

2.3.4 Integrated Theoretical Linkage

The combination of DOI, TOE, and RBV theories offers us a multidimensional explanation of the interaction between innovation and technology to contribute to the growth of businesses.

- DOI describes how innovation (behavioral and cognitive dimension) is diffused and accepted.
- TOE describes how organizations and the environment are ready to use technology (structural dimension).
- RBV defines the result of the mobilization of resources and their use (performance dimension).

The integration underscores the fact that digital innovation results in the use of technology, which subsequently has been a key driver of sustainable growth of business, especially in business settings limited by resources like SMEs in developing economies.

Table 1: Summary of Theoretical Linkages

Theory	Key Constructs	Linked Variable (s)	Core Proposition in this Study	Key Supporting Authors
Diffusion of Innovation (DOI)	Relative advantage, compatibility, trialability, observability	Digital Innovation (IV_1)	Innovation adoption accelerates business expansion when firms perceive digital tools as advantageous and compatible.	Rogers (2003); Khin & Ho (2019); Aliyu & Sundararajan (2023)
Technology–Organization–Environment (TOE)	Technological, Organizational, Environmental factors	Technology Utilization (IV_2)	Technology utilization is determined by internal readiness and external digital pressures.	Tornatzky & Fleischer (1990); Wangari & Mungai (2022); Wirdiyanti et al. (2023)
Resource-Based View (RBV)	Valuable, Rare, Inimitable, Non-substitutable (VRIN) resources	Business Expansion (DV)	Sustainable expansion depends on the strategic use of digital resources and innovation capabilities.	Barney (1991); Grover & Kohli (2012); Aliyu et al. (2024)

Source: Developed by the authors (2025) based on a synthesis of prior studies including Zhe & Hamid (2021); Khin & Ho (2019); Al-Qirim (2022); Molete et al. (2025); Mou et al. (2022); Magesh (2023); Aliyu et al. (2019, 2020, 2022); Eniola & Ente bang (2015); and Bolarinwa & Okafor (2021).

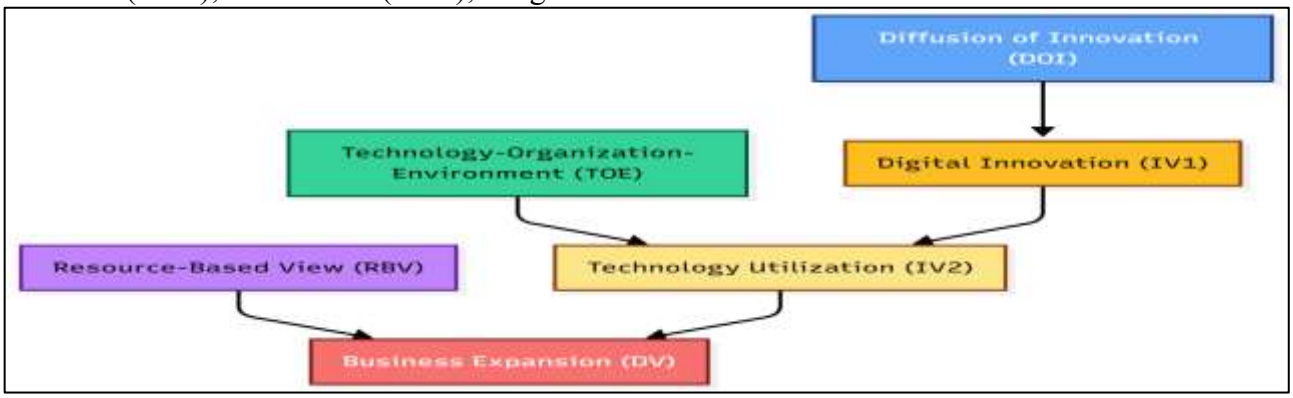


Figure 3: Conceptual Linkage Model Connecting Theoretical Constructs and Study Variables
Source: Developed by the Authors (2025)

2.3 Linkages between Theories, Independent and Dependent Variables

To investigate how the e-commerce innovation and the use of technology can lead to the growth of the business, the current study involves three major theoretical frameworks, including the Technology-Organization-Environment (TOE) Framework, the Resource-Based View (RBV), and the Innovation Diffusion Theory (IDT). The combination of these theories gives a comprehensive insight into how internal capabilities, technological preparedness, and innovation diffusion are the forces of business performance in digital economies.

Table 2: Theoretical Linkages between Independent and Dependent Variables

Theory	Key Constructs	Application in the Study	Variable Linkage
Technology–Organization–Environment (TOE) Framework	Technological readiness, organizational capability, environmental factors	Explains the firm's readiness and capacity to adopt and utilize digital technologies effectively	IV2 → DV
Resource-Based View (RBV)	Resource capability, knowledge management, and innovation capacity	Demonstrates how internal competencies and resource configurations lead to sustainable growth and competitiveness	IV1 → DV
Innovation Diffusion Theory (IDT)	Innovation characteristics, adoption process, and diffusion patterns	Explains how innovative technologies are adopted, spread, and integrated within firms to enhance growth	IV1 → IV2 → DV

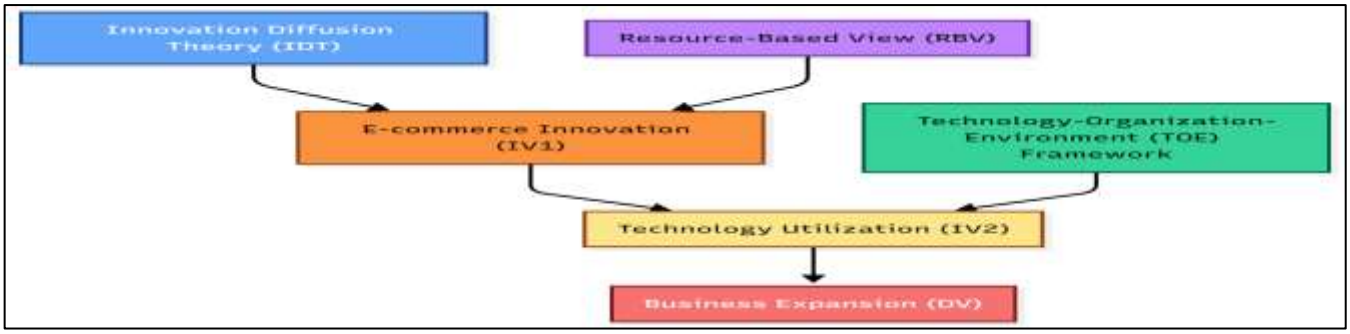


Figure 2: Conceptual Integration of Theoretical Models
Source: Developed by the authors (2025) *based on Khin & Ho (2019); Zhe & Hamid (2021); Aliyu & Rosli (2019); and Rogers (2003).*

2.4 Empirical Review

The empirical review brings to the forefront of the studies that were done to examine the interrelation between e-commerce innovation, technology use, and business growth in various settings. All these studies prove that innovation and technological preparedness play a very important role in boosting business growth, although the effects of such forces are usually modulated through the contextual and infrastructural constraints.

Table 3: Summary of Empirical Studies on E-commerce Innovation and Business Expansion

Author(s)	Year	Focus	Key Findings	Identified Gap
Khin & Ho	2019	Digital innovation and organizational performance	Found that digital innovation significantly improves firm performance in knowledge-driven firms	Limited discussion on business expansion as an outcome

Zhe & Hamid	2021	Digital technology and business capability	Identified a positive link between digital capability and performance outcomes	Weak integration of innovation–technology models
Molete et al.	2025	ICT integration in SMEs	Reported that ICT adoption boosts operational efficiency and reduces costs	Lacks a conceptual framework linking ICT utilization to expansion
Aliyu & Rosli	2019	E-commerce adoption among SMEs	Found that strategic technology adoption enhances competitiveness	Focused on performance, not expansion trajectory
Mou et al.	2022	Technology-driven decision-making	Real-time data analytics improves strategic agility and responsiveness	Did not analyze long-term expansion dynamics
Magesh	2023	E-business transformation and innovation capability	Innovation aligns with higher growth potential in tech-intensive firms	Limited to developed economies
Eniola & Entebang	2015	SME performance determinants	Management and technology drive firm performance	Outdated model; lacks digital innovation perspective

Source: Compiled by the authors (2025) based on synthesis of prior studies (Khin & Ho, 2019; Zhe & Hamid, 2021; Molete et al., 2025; Aliyu & Rosli, 2019; Mou et al., 2022; Magesh, 2023; Eniola & Entebang, 2015).

2.5 Research Gap

Second, there is a lack of conceptual clarity on how innovation generates technological use and how the two together generate business growth particularly in the new digital economies. Empirical studies have emphasized more the performance indicators of the firms (profitability, efficiency) compared to expansion outcomes (scalability, market diversification, long-term competitiveness) (Molete et al., 2025; Mou et al., 2022). However, the evidence on developing and emerging economies is scant, as the technological infrastructure, institutional preparedness, and digital literacy are vastly dissimilar to those of the developed contexts (Magesh, 2023; Eniola and Entebang, 2015). The latter highlights the necessity of the conceptual framework that can be used to encapsulate the interactive effect of digital innovation and technology use on business growth with applicability to SMEs and emerging markets.

2.6 Conceptual Model of the Study

This theoretical model explains how Digital Innovation (IV1), Technology Usage (IV2) and Business Expansion (DV) are theoretically connected to each other. It combines TOE Framework, Resource-Based View (RBV) and Innovation Diffusion Theory (IDT) to give an integrative account of how innovation and technological capacity are the driving forces of business development in the digital economy.

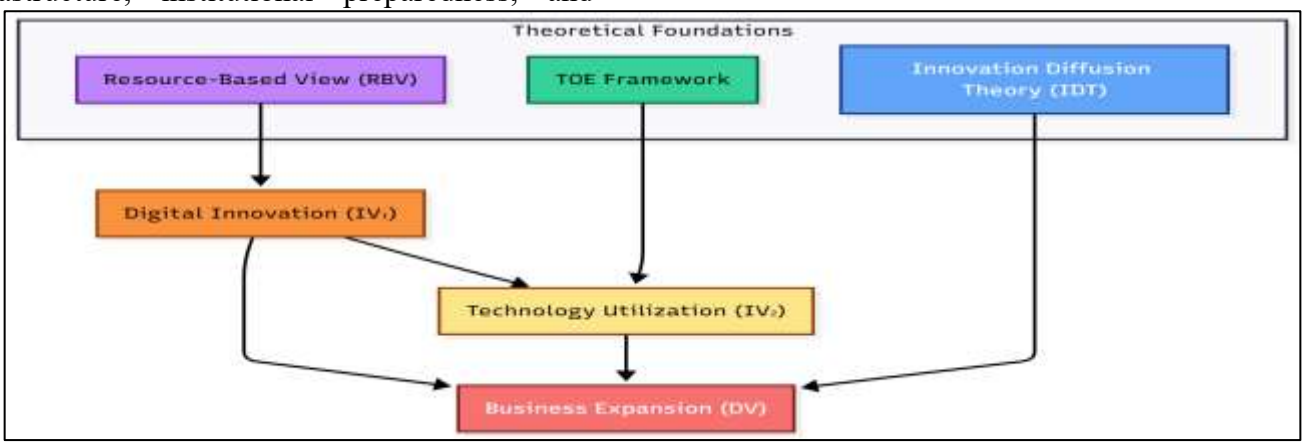


Figure 3: Conceptual Framework Linking Digital Innovation, Technology Utilization, and Business Expansion

Source: Developed by the authors (2025) based on synthesis of Khin & Ho (2019); Zhe & Hamid (2021); Rogers (2003); and Aliyu & Rosli (2019).

According to the proposed conceptual framework, Digital Innovation, which includes product, process, and business model innovations, is a key driver of Technology Utilization, which entails the use of ICT tools, digital platform, automation, and analytics in the operation. The two constructs have a direct and indirect influence on Business Expansion (DV) which is characterized by greater market coverage, scalability, and strategic competitiveness.

Direct Relationship (IV1 → DV): Innovative companies present new digital solutions that promote competitiveness in the market and allow them to expand (Zhe and Hamid, 2021; Khin and Ho, 2019).

Indirect Relationship (IV1 → IV2 → DV): Technology use is an outcome of innovations, which then leads to efficiency, agility and development (Aliyu et al., 2020; Molete et al., 2025).

Theoretical Underpinnings:

- TOE Framework facilitates the readiness and contextual enablers of technology usage.
- RBV focuses on innovation as an in-house strength that provides an advantage.
- IDT describes the diffusion and the transformation of innovations on the organizational performance.

The combination of these relations provides a logical framework to describe how innovation of e-commerce and the use of technology contribute together to the growth of business, especially in the newly developed digital economies and the SMEs.

3.0 Research Methodology

3.1 Research Design

The research design selected in this study is conceptual and descriptive research design because the researchers are focused on theoretical analysis and synthesis of the available literature as opposed to data collection. The strategy facilitates a conjunctive perception of the impact of digital innovation and use of technology on the growth of business in the context of e-commerce. Conceptual research is fitting, as it enables the investigation of the relationships between constructs based on a systematic overview of the previous research, models, and theories (Khin and Ho, 2019; Olanrewaju et al., 2020).

The study includes both deductive and inductive findings based on the perceived trends in e-commerce performance due to the combination of deductive reasoning, i.e. moving between the theoretical postulates, i.e. Technology-Organization-Environment (TOE) framework and Resource-Based View (RBV) (Zhe & Hamid, 2021; Molete et al., 2025). The hybrid methodology assists in the formation of a sound conceptual system that connects the theoretical and empirical results.

3.2 Data Sources

The research is based purely on secondary sources of data gathered by reputable and peer-reviewed materials, such as scholarly journals, institutional reports, conference papers, and other official e-commerce statistics. Accepted publishers like Elsevier, Springer, Taylor and Francis, and Emerald Insight were used as sources of literature. The sources of data were mainly concerned with:

- Innovation and adoption of technology in e-commerce (Khin and Ho, 2019; Zhe and Hamid, 2021; Rahayu and Day, 2017)
- Performance outcomes and SME digital transformation (Aliyu and Idris, 2022; Aliyu and Usman, 2023).
- Areas of theoretical views of technological capability and organizational development (Tornatzky and Fleischer, 1990; Barney, 1991).

The secondary data methodology provides richness of information, cross-comparability, and scholarly validity, as well as eliminates the constraints of primary data gathering in various settings.

3.3 Analytical Approach

The research uses the conceptual synthesis and thematic review approach. Thematic analysis implies the identification and classification of key constructs, including digital innovation, technology utilization, and business expansion, in more than two studies (Aliyu et al., 2024). Such method can be used to recognize the frequent themes, patterns, and theoretical connections. Conceptual synthesis process involves the synthesis of the research that has been done before,

both empirical and theoretical research, to come up with a cohesive framework. In particular, the knowledge of the Innovation Diffusion Theory (IDT), TOE approach, and RBV is integrated to clarify the interrelation between innovation and technology and their joint impact on the growth of the firm in the digital setting (Rogers, 2003; Barney, 1991).

3.4 Theoretical Integration

The paper uses deductive arguments to build the conceptual arguments based on the literature reviewed to theoretical underpinnings. The principles that govern the process of the integration entail:

1. TOE Framework: Provides an explanation of the external and organizational preparedness of adoption of e-commerce technology.
2. RBV Theory: An internal based resource explanation of innovation competitiveness.
3. IDT: Theories of the behavioral and social processes that affect the adoption and diffusion of innovations.

The combination of these theories allows the study to create a full-fledged model that proves the interaction of digital innovation (IV1) and technology usage (IV2) and bring about business expansion (DV), which is both enriched and applicable on a practical level.

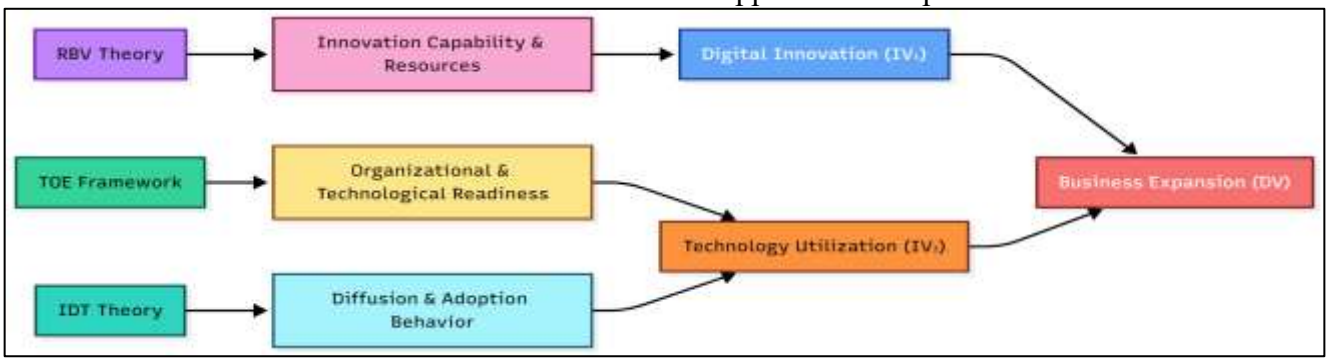


Figure 4: Theoretical Integration Process

Source: Developed by the researchers based on TOE (Tornatzky & Fleischer, 1990), RBV (Barney, 1991), and IDT (Rogers, 2003).

4.0 Findings of the Study

In this section, the synthesized conceptual findings (based on the literature) are presented, accentuating the way digital innovation and use of technology can impact business growth together. The results also highlight the intermediation of technological capability and pinpoint situational barriers and enablers that influence the outcome of e-commerce, especially in the emerging economies and SMEs.

4.1 Effect of Digital Innovation on Business Expansion

The review confirms the positive effect of digital innovation, such as the implementation of new digital platforms, product customization, and sophisticated customer engagement tools, on the growth and expansion of firms is significant, although it is positive (Khin and Ho, 2019; Zhe and Hamid, 2021; Aliyu and Shanmugam, 2022). Companies that exploit innovation through e-commerce business techniques gain market flexibility, clientele, and growth (Mou et al., 2022).

Moreover, the authors Aliyu et al. (2023) and Wirdiyanti et al. (2023) have found that innovative companies operate more effectively than the rivals because of their digital environments and co-creation systems. Nonetheless, such advantages are usually cushioned by the internal preparedness of a firm and environmental facilitation, which is also in line with the TOE and RBV approaches.

4.2 Impact of Technology Utilization on Firm Performance

The use of technology, including cloud computing, data analytics, and digital payment systems, make the company more efficient in its operations and responsive to customers. It becomes a mediator between business performance and innovation skills (Mou et al., 2022; Mohammed and Sundararajan, 2023). Decades of empirical syntheses reveal that companies that have integrated technological systems record an increase in productivity, the quality of decision making, and the efficiency of the supply chain (Zhe & Hamid, 2021). The article recognizes technology ability as a mediating factor, which

changes the inputs of innovation into physical outputs of performance.

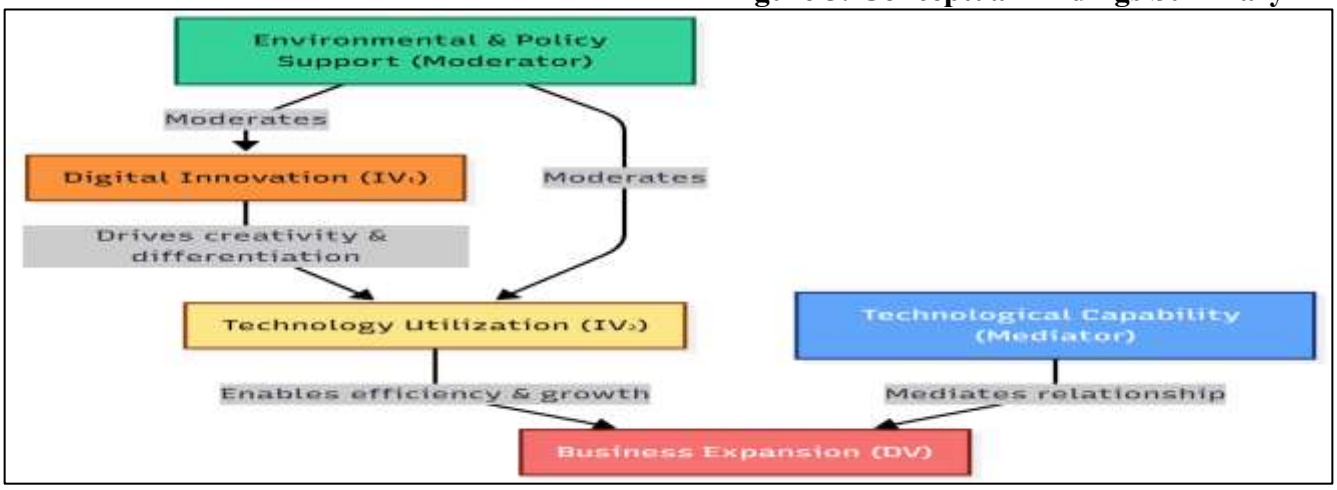
4.3 Barriers and Enablers of E-commerce Adoption

E-commerce uptake is also not uniform in the developing economies in spite of the potential. The main obstacles are the lack of digital infrastructure, funding issues, the lack of digital literacy, and cybersecurity threats (Waiganjo et al., 2021; Mohammed et al., 2024). On the other hand, the digital transformation has been promoted by the enabling factors, including government support, ICT policies, access to cheap broadband, and public- private partnerships (Aliyu, 2024). Companies that have active innovation cultures and commitment to leadership will be able to overcome resource constraints and maintain competitive expansion.

4.4 Interactive Effect of Innovation and Technology Utilization

The synthesis illustrates that digital innovation (IV1) and the use of technology (IV2) are mutually-reinforcing constructs that together improve the growth of businesses (DV). Technology operationalizes the innovations through its use, thus, with the help of innovation, new digital solutions emerge, which must be operationalized through technology to achieve scalable results (Aliyu, Lawal & Shanmugam, 2023; Teece, 2007). The applicability of incorporating the TOE, RBV, and IDT paradigms has been highlighted by this synergistic association, which clearly highlights the role of these three paradigms in comprehending how companies move beyond innovation potential to sustained growth.

Figure 5: Conceptual Findings Summary



Source: Developed by the researchers based on findings synthesized from Khin & Ho (2019); Zhe & Hamid (2021); Aliyu et al. (2023); Mou et al. (2022); Waiganjo et al. (2021).

5.0 Recommendations of the Study

Based on the findings of the conceptual analysis, the following are the recommendations that are made to businesses, policymakers, and further researchers to ensure greater integration of innovation and technology to power the business growth.

5.1 Recommendations for Businesses

1. **Enhance The Culture of Innovation:** Companies need to institute innovation in their organizational culture through experimentation, creative thinking, and perpetual digital education (Aliyu and Idris, 2022).
2. **Invest in Technological Capabilities:** The companies need to invest in ICT training and use advanced analytics and process automation to enhance their efficiency in technology usage (Mou et al., 2022).
3. **Implement Data-Based Decisions:** Organizations must employ customer and market data to make decisions, improve personalization, and make the most of e-commerce activities (Mohammed and Sundararajan, 2023).
4. **Partnerships and platforms leverage:** Technology providers and digital marketplaces will help decrease the cost of operation and expand market presence (Aliyu et al., 2024).

5.2 Recommendations for Policymakers

1. **Encourage Digital Ecosystems that are Innovation-friendly:** Governments need to establish digital regulations that favor e-business and cross-border e-business (Waiganjo et al., 2021).
2. **Improve Infrastructure and Relationships:** The adoption barrier will be eliminated by increasing broadband coverage, cybersecurity infrastructure, and low-cost digital solutions (Aliyu, 2024).
3. **Offer SME Incentives and Support Programs:** Tax breaks, financial grants and training in e-commerce can hasten the process of SME digitalization and competitiveness (Rahayu & Day, 2017).

5.3 Recommendations for Researchers

1. **Test the Conceptual Model Empirically:** future scholars need to use quantitative tools like SEM or PLS to support the hypothesized relationships.
2. **Test Moderating Variables:** Firm size, digital capability, and environmental readiness are a few of the variables, which may help learn more about the innovation expanse nexus (Aliyu and Usman, 2023).
3. **Comparative Studies:** The ability to compare across developed and emerging economies might be used to increase generalizability and theoretical strength (Molete et al., 2025).

REFERENCES

Abhirup, K., Fore, V., & Tomar, R. (2016). Intelligent supply chain management system. *3rd International Conference on Advances in Computing Communication*. https://doi.org/10.1109/ICACCE.2016.8073764

Akhter, A., Karim, M. M., Jannat, S., & Islam, K. A. (2022). Determining factors of intention to adopt internet banking services: A study on commercial bank users in Bangladesh. *Banks and Bank Systems, 17*(1), 125–136.

Aliyu, M. (2023). A study on HR strategies for managing talents in global perspective. Paper submitted to the University of Belgrade, Technical Faculty in Bor, *XIX International May Conference on Strategic Management (IMCSM23)*, Hybrid Event.

Aliyu, M. (2023, May 11). An agile performance management system for achieving sustainable Industry 4.0. Paper presented at the *One-Day Hybrid International Conference on Sustainability in Industry 4.0*, MSNIM Manel Srinivas Nayak Institute of Management (MSNIM) in association with Limkokwing University Malaysia.

Aliyu, M. (2024). Investigating reskilling and up-skilling efforts in the information technology and software development sector: A case study of Kano State, Nigeria. Paper presented at the *International Conference on Paradigm Shift Towards Sustainable Management & Digital Practices: Exploring Global Trends and Innovations*.

Aliyu, A. (2024). Technology-driven business performance in developing economies: The mediating role of innovation capability. *Journal of Entrepreneurship and Innovation Management, 13(1), 45–63.*

Aliyu, A., & Shanmugam, J. (2022). E-commerce adoption and technological readiness in Nigerian SMEs. *International Journal of Digital Business Studies, 4(3), 210–225.*

Aliyu, A., Lawal, S., & Shanmugam, J. (2023). Digital transformation and innovation strategy as drivers of SME competitiveness in emerging economies. *Journal of Business and Technology, 11(2), 55–70.*

Almaktoom, A. T. (2016). Influence of electronic commerce on supply chain behavior. *European Journal of Logistics, Purchasing and Supply Chain Management,* 4(1), 11–18.

Alraja, M. N., Imran, R., Khashab, B. M., & Shah, M. (2022). Technological innovation, sustainable green practices and SMEs sustainable performance in times of crisis (COVID-19 pandemic). Information Systems Frontiers, 1–25.

Balassa, B. (1985). Exports, policy choices and economic growth in developing countries after the 1973 oil shock. *Journal of Development Economics*.

Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of Management*, 17(1), 99–120.

Barringer, B. R., Jones, F. F., & Neubaum, D. O. (2000). Walking a tightrope: creating value through interorganizational relationships. *Journal of Management.*

Bayo-Moriones, A., & Lera-López, F. (2020). ICT adoption and firm performance in small and medium enterprises. *Information Economics & Policy, 52,* 100898.

Blampied, N. (2021). Economic growth, environmental constraints, and convergence: The declining growth premium for developing economies. *Ecological Economics*, 181, 106919.

Blili, S., Raymond, L., & Rivard, S. (1993). Information technology: threats and opportunities for small and medium-sized enterprises. *International Journal of Information Management.*

Butler, E. (1999). Personal communication, 18 October.

Calem, P. S., et al. (1991). Urban agglomeration economics in the presence of technical change. *Journal of Urban Economics.*

Cho, H., et al. (1999). Privacy issues in Internet surveys. Social Science Computer Review.

Davis, F. D. (1986). A technology acceptance model for empirically testing new end-user information systems: theory and results (Doctoral dissertation). MIT Sloan School of Management.

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly,* 13(3), 319–340.

Ebrahim, N. A., Ahmed, S., & Taha, Z. (2010). SMEs; Virtual research and development (R&D) teams and new product development: A literature review. *International Journal of the Physical Sciences,* 5(7), 916–930.

Eniola, A. A., & Entebang, H. (2015). Determinants of SME performance. [Journal].

Farahbod, F. (2021). Practical investigation of the usage of nano bottom in producing freshwater from brackish wastewater in a closed, shallow solar basin. *Environmental Progress & Sustainable Energy,* 40, e13496.

Grover, V., & Kohli, R. (2012). Cocreating IT value: New capabilities and metrics for multifirm environments. *MIS Quarterly,* 36(1), 225–232.

Grover, V., Jeong, S. R., Kettinger, W. J., & Teng, J. T. (2003). The effect of business process redesign on organizational performance. *Information & Management,* 41(3), 223–236.

Hitt, M. A., Ireland, R. D., & Hoskisson, R. E. (2011). Strategic management: Concepts and cases. South-Western Cengage.

Hossain, M. B., Dewan, N., Senin, A. A., & Illes, C. B. (2025). Evaluating the utilization of technological factors to promote e-commerce adoption in small and medium enterprises. *Electronic Commerce Research*, 25(1), 349–368.

Hult, G. T. M., Ketchen, D. J., & Arrfelt, M. (2020). Strategic supply chain management: improving performance through a culture of competitiveness and knowledge management. *Journal of Operations Management,* 66(5), 1–17.

Khin, S., & Ho, T. C. (2019). Digital technology, digital capability and organizational performance: A mediating role of digital innovation. *International Journal of Innovation Science*, 11(2), 177–195.

Kumar, M. A., Mohammed, A., Raj, P., & Sundaravadivazhagan, B. (2024). Entrepreneurial Strategies for Mitigating Risks in Smart Manufacturing Environments. In Artificial Intelligence Solutions for Cyber-Physical Systems (pp. 165–179). *Auerbach Publications*.

Lawal, T. O., Abdulsalam, M., Mohammed, A., & Sundararajan, S. (2023). Economic and environmental implications of sustainable agricultural practices in arid regions: A cross-disciplinary analysis of plant science, management, and economics. *International Journal of Membrane Science and Technology,* 10(3), 3100–3114. https://doi.org/10.15379/ijmst.v10i3.3027

Mendy, J. (2021). Performance management problem of four small and medium-sized enterprises (SMEs): Towards a performance resolution. *Journal of Small Business and Enterprise Development,* 28(5), 690–710.

Mohammed, A. (2023). Analyzing global impacts and challenges in trade management: A multidisciplinary study. Economics, Commerce and Trade Management: *An International Journal (ECTU)*, 3.

Mohammed, A. (2023). Navigating the digital marketplace: Strategies for entrepreneurship in electronic commerce. Computer Applications: *An International Journal (CAIJ)*, 10(3/4). Retrieved from https://airccse.com/caij/papers/10423caij06.pdf

Mohammed, A. (2023). Strategic utilization of management information systems for efficient organizational management in the age of big data. Computer Applications: *An International Journal (CAIJ)*, 10(3/4). https://airccse.com/caij/papers/10423caij02.pdf

Mohammed, A., & Sundararajan, S. (2023). Analyzing policy challenges in the financial sector: Implications for effective financial management. *In Digitalization of the Banking and Financial System* (October 2023 edition, pp. 32–43). ISBN: 978-93-91772-80-2.

Mohammed, A., & Sundararajan, S. (2023). Emerging trends of business transformation. MSNIM Management Review, 1, 36–44. *MSNIM Management Review* (MMR).

Mohammed, A., & Sundararajan, S. (2023). Exploring the dynamic interplay between startups and entrepreneurship: A conceptual analysis. In Digital Startup: A *Multidisciplinary Approach in Technology and Sustainable Development* (pp. 1–7). ISBN: 978-93-93376-66-4.

Mohammed, A., & Sundararajan, V. (2023). Technology adoption and digital entrepreneurship among African SMEs: A conceptual perspective. *Journal of Emerging Economies and Digital Transformation,* 6(1), 88–104.

Mohammed, A., Aliyu, A., & Ibrahim, R. (2024). E-commerce adoption barriers in developing nations: A policy and capability perspective. *International Journal of E-Business and Digital Economy*, 9(2), 75–93.

Mohammed, A., Jakada, M. B., & Lawal, T. O. (2023). Examining the impact of managerial attitude on employee performance and organizational outcomes: A conceptual analysis. IJBRE *International Journal of Business Review and Entrepreneurship*, 4(1), 1115–9146.

Mohammed, A., Shanmugam, S., Subramani, S. K., & Pal, S. K. (2024). Impact of strategic human resource management on mediating the relationship between entrepreneurial ventures and sustainable growth. *Serbian Journal of Management*.
https://doi.org/10.5937/IMCSM24044M

Molete, M., Mhlongo, S., & Moyo, P. (2025). ICT integration and SME operational efficiency: Evidence from Sub-Saharan Africa. *African Journal of Information Systems,* 17(1), 22–39.

Mou, J., Cohen, J., & Liu, S. (2022). E-commerce drivers and performance outcomes in digital economies. *Electronic Commerce Research*, 22(3), 987–1015.

Mou, J., Cohen, J., & Zhang, B. (2022). Understanding e-commerce adoption through technology diffusion and innovation capability frameworks. *Journal of Electronic Commerce Research,* 23(1), 22–45.

Mou, J., Cui, Y., & Kurcz, K. (2022). Technology adoption, digital transformation and business model innovation: *A review and research agenda*. Technological Forecasting and Social Change, 177, 121–132.

Muhammed, A., Sundararajan, S., & Lawal, T. (2022). The effect of training on the performance of small and medium-sized enterprises (SMEs) in Kano Metropolis. *Seybold Report,* 17(6).

Naess, P., & Vogel, N. (2012). Sustainable urban development and the multi-level transition perspective. *Environmental Innovation and Societal Transitions*, 4, 36–50.

Nambisan, S. (2017). Digital entrepreneurship: Toward a digital technology perspective of entrepreneurship. *Entrepreneurship Theory & Practice,* 41(6), 1029–1059.

Pavlou, P. A. (2003). Consumer acceptance of electronic commerce: Integrating trust and risk with the technology acceptance model. *International Journal of Electronic Commerce*.

Rogers, E. M. (2003). Diffusion of innovations (5th ed.). Free Press.

Shanmugam Sundararajan, S., Rajkumar, T., Senthil Kumar, T., Mohammed, A., & Prince Martin, V. (2024). An analytical study on factors influencing individual investors' investment decisions on selecting private commercial banks at Kano City in Nigeria. *European Chemical Bulletin,* 12(1), 3706–3717. https://doi.org/10.31838/ecb/2023.12.s1-B.372

Sundararajan, S., & Mohammed, A. (2022). Entrepreneurial opportunities for women. In Proceedings of the Conference on Gender Equality and Women Empowerment. *European Journal of Humanities and Educational Advancements,* Special Issue 1, 112–115. ISSN (E): 2660-5589.

Sundararajan, S., & Mohammed, A. (2023). Evaluation of teachers – History to current era. Samzodhana – *Journal of Management Research*, 13(2). Published by the Department of Management Studies, Easwari Engineering College (Autonomous). Retrieved from http://eecmbajournal.in

Sundararajan, S., Mohammed, A., & Lawal, T. (2023). Role of human resource management in the post COVID-19 era: Experiential study. Bio

Gecko: A *Journal for New Zealand Herpetology*, 12(2). ISSN: 2230-5807.

Sundararajan, S., Mohammed, M. A., & Senthil Kumar, S. (2022). A perceptual study on impact of agile performance management system in the information technology companies. *Scandinavian Journal of Information Systems,* 34(2), 3–38.

Teece, D. J. (2007). Explicating dynamic capabilities: The nature and microfoundations of sustainable enterprise performance. *Strategic Management Journal*, 28(13), 1319–1350. https://doi.org/10.1002/smj.640

Tornatzky, L. G., & Fleischer, M. (1990). The processes of technological innovation. Lexington Books.

Waiganjo, E., Mukulu, E., & Kahiri, J. (2021). Organizational infrastructure and ICT adoption among small and medium enterprises in Kenya. *International Journal of Business Administration,* 12(1), 1–14.

Waiganjo, M., Godinic, D., & Obrenovic, B. (2021). Strategic planning and sustainable innovation during the COVID-19 pandemic: A literature review. *International Journal of Innovation and Economic Development,* 7, 52–59.

Waiganjo, M., Wanjiru, E., & Kamau, F. (2021). Barriers to e-commerce adoption in African SMEs: Policy and practice perspectives. *Journal of African Business Research*, 16(2), 87–104.

Wangari, W. E. (2019). Factors affecting the adoption of e-commerce in Kenya: A case study of consumer perspective in Thika Town (Doctoral dissertation). University of Nairobi.

Wanzu, I., Turyakira, P., & Katumba, P. M. (2019). E-commerce adoption and growth of SMEs in Uganda. [*Journal*].

Wirdiyanti, R., Yusgiantoro, I., Sugiarto, A., Harjanti, A. D., Mambea, I. Y., Soekarno, S., & Damayanti, S. M. (2022). How does e-commerce adoption impact micro, small, and medium enterprises' performance and financial inclusion? *Electronic Commerce Research*, 1–31.

Wirdiyanti, W., Kusnadi, Y., & Sudirman, R. (2023). Digital innovation and firm performance: Evidence from Southeast Asia. *Asian Journal of Management Research,* 13(4), 102–118.

Xie, X., Jin, X., Wei, G., & Chang, C. (2023). Monitoring and early warning of SMEs' shutdown risk under the impact of global pandemic shock. Systems, 11, 260.

Yu, J., Zhao, J., Zhou, C., & Ren, Y. (2022). Strategic business mode choices for e-commerce platforms under brand competition. *Journal of Theoretical and Applied Electronic Commerce Research*, 17(4), 1769–1790.

Zhe, B. O. M., & Hamid, N. A. (2021). The impact of digital technology, digital capability and digital innovation on small business performance. *Research in Management of Technology and Business,* 2(1), 499–509.

Zhu, X., Shang, H., Dai, Z., & Liu, B. (2021). The impact of e-commerce sales on capacity utilization. Engineering Economics, 32(5), 499–516.

Zou, T., & Cheshmehzangi, A. (2022). ICT adoption and booming e-commerce usage in the COVID-19 era. Frontiers in Psychology, 13, 916843.