Afropolitan Journals

ISSN: 3027-2971 www.afropolitanjournals.com

Digital Commerce and MSMEs Output in Sub-Saharan Africa: The Nigeria Experience

Nduka Elda Vitalis Okolo-Obasi [1]; **Emmanuel Ejiofo Nwanmuoh** [2]; **Chuka Uzoma Ifediora** [2]; **Remigius Amarachi Dike** [3]; **Innocent Uzochukwu Ozumba** [3]; **Ikenna Amuka** [3]; **and Chinyere Lawrenta Onwuama** [3]

[1]*Institute for Development Studies, Enugu Campus, University of Nigeria, Nsukka, Nigeria.* [2]*Department of Management, Faculty of Business Administration, Enugu Campus, University of Nigeria, Nsukka, Nigeria.* [3]*Institute of Maritime Studies, University of Nigeria, Nsukka, Nigeria.*

Corresponding author: nduka.obasi.pg82232@unn.edu.ng

DOI: *https://doi.org/10.62154/ajmbr.2025.018.010596*

Abstract

In this paper, we assessed the impact of digital commerce on micro, small and medium enterprises (MSMEs) in sub-Saharan Africa using evidence from Nigeria. In a descriptive research design, we adopted both descriptive and inferential statistics to answer the three research questions and test the corresponding hypotheses. Primary data gleaned from a sample of 400 respondents selected across the six geopolitical zones of Nigeria using multiple sampling techniques was used for the study. Results from logit model regression show that digital commerce has made significant impacts on performance, growth and expansion, as well as cost effectiveness and profitability of MSMEs in Nigeria. While the study noted that, though litany of challenges still confronts digital commerce in sub-Saharan Africa, we still concluded that any increase in awareness and adoption of digital commercial activities by one unit has an odd ratio of about 10.1, hence, MSMEs output will be 10 time likely improve by the unit increase. To this, we recommended that both government and other relevant stakeholders must partner to ensure that enabling digital environments are created for sustainable digital commerce. This partnership must function well in removing all bottleneck especially as it concerns infrastructural development, regulations and improved financial inclusion.

Keywords: Digital Commerce, MSMEs, Sub-Saharan Africa, Logit Models, Nigeria.

Introduction

Micro, Small, and Medium Enterprises (MSMEs) according to IFC (2022), PWC (2024), Okolo-Obasi et al_(2024a, 2024b) have played and continues to play vital parts in the economies of sub-Saharan African nations. To Omobola (2022), MSMEs have contributed in poverty reduction through employment generations that enhanced economic growth of these nations.

Scholars, Abhilash (2022), Okeke et al (2016) have adjudged MSMEs to be the foundation of most developing nations including the Nigerian economy in that the roots of large companies sprout from them. Studies, Ojukwu (2016), Olorunshola and Odeyemi (2022), noted that COVID-19 pandemic rendered many MSMEs in Africa vulnerable because most of them operate only with physical contact. However, the aftermath of COVID gave rise to dependency on digital platforms of which several studies have adduced to have increased the size of MSME in the last 2 years.

However, World Bank (2023) noted MSMEs in Sub-Saharan Africa dropped about 20% in revenue during the COVID pandemic. ILO (2024) about 17% of MSMEs where permanently shot down between 2020 and 2022 leading to loss of over seven million jobs the globe. Hence, at the wake of the COVID-19 pandemic, adopting digital business models becomes the way out for most MSMEs.

In Nigeria, In Nigeria like many other SSA nations, MSMEs are vital for economic growth and they account for about 80% of employment in the country, contribute over 40% of the nation's Gross Domestic Product (GDP) as well as account for 6.21% of Nigeria's exports (Ibene & Obi, 2021). To Mohammed et al (2022), MSMEs in Nigeria make up 96.9% of businesses in the country. Yet, MSMEs face significant challenges in the area of digitization which hinder their growth, development and profitability. The crucial issues in this challenge include inadequate digital skills, limited internet access, and poor integration of digital technologies. These obstacles create an unfriendly business environment, despite government efforts to support growth.

The situation is of a deep concern for a developing economy like Nigeria where shortage of the necessary infrastructure and technology to attract a substantial number of large businesses is evident (Amin et al, 2022). To Arobo (2022), Nwanmuoh et al (2024a, 2024b), there are still considerable gaps in understanding how digital commerce impact key performance indicators of MSMES in Nigeria. Previous studies Archer et al (2016), Asongu et al (2019a, 2019b, 2019c, 2020a, 2020b), divulge substantial limitations regarding digital knowledge and skills in relation to MSMEs performance the country. Therefore, the lapse in addressing the critical role of digital skills limits the understanding of how digital commerce may have directly or indirectly affected MSMEs performance in Nigeria.

According to scholars like Ayo et al (2021), Obidike and Nwanmuoh (2022), while many traditional MSMEs still struggle and barely survive, it appears that MSMEs involved in digital commerce thrive more growing in laps and bound, hence, buttressing the serious gap in research on the impact of digital commerce on MSME performance. On the other hand, some other prior studies Uduji and Okolo-Obasi (2023a, 2023b, 2023c), Sang (2023) highlight that the digital transformations and commerce may have adversely affected the performance MSMEs as a result of individual or collective factors; but such findings regularly neglect to consider the influence of socio-economic and demographic factors on technology adoption as well as application for digital commerce (Ameen et al., 2021). In all, it is an established fact that adopting digital transformation requires resources, structures, and skills that the MSMEs may not have full access to, but evidence have indicated that there is a strong growth, expansion, and cost effective performance of MSMEs which may be attributed to the revolution in digital technology.

It is on the basis of the above that, this study was designed with the aim of investigating how MSMEs in Nigeria have fared in relation to digital commerce and entrepreneurship by contributing in the debate of digitization and growth of MSMEs in Nigeria in three distinct areas that have received reasonable attention in the literature. Hence the study raised the following research questions:

i. What is the impact of digital commerce on MSMEs growth and expansion in Nigeria?
ii. What is the impact of digital commerce on MSMEs performance in Nigeria?
iii. What is the impact of digital commerce on MSMEs cost effectiveness and profitability in Nigeria?

Hypothesis Development

Businesses, whether large and small, rely heavily on the success of their smaller counterparts. Small and medium-sized enterprises (SMEs) are the lifeblood of Asia's economic system. The expansion of micro, small and medium enterprises (MSMEs) depend on their continued access to capital and new markets especially the digital space. In Nigeria, according to Fatoki (2022), the success of MSMEs is crucial to the country's economy as a whole as bulk of the country's productivity is anchored on them. However, the rate at which MSMEs are going digital all over the world leaves much to be desired in Nigeria where infrastructural and skill deficiencies appear to be hindering digital commerce. While using the internet for commercial transactions, and business process management, automating corporate transactions and processes through the use of technology which has become a top goal for many organizations world over still face some major challenges in Nigeria.

To Abhilash (2022), the development of an e-commerce infrastructure has to a reasonable extent not been made a top priority in the country. However, studies like (World Bank, 2016; Adeshina & Ayo, 2020) are pointing out that there are some dramatic enhancements in communication infrastructure, leading to rapid internet penetration, ownership of mobile phones and e-commerce in Nigeria is expanding at an astounding rate. Yet studies like (Ayo, Adewoye & Oni, 2021), maintained that Nigeria has only just begun to explore the potential of digital commerce. Despite their limited means, MSMEs in Nigeria are still powering reasonably in digital commerce to boost their operations and increase their exposure to customers (Nasir, 2019). However, there is still a widespread doubt among Nigerians about the impact of digital commerce of performance, growth and expansion as well as cost effectiveness of digital commerce on MSMEs. Hence, we hypothesized in this study as follows:

HO1: digital commerce has not made any significant impact on MSMEs growth and expansion in Nigeria

HO2: digital commerce has not made any significant impact on MSMEs performance in Nigeria?

HO3: digital commerce has not made any significant impact on MSMEs cost effectiveness and profitability in Nigeria

Literature and Theoretical Underpinning

Conceptual Issue in the Relevant Literature

Digital Commerce and Entrepreneurship

The combination of digital technology mostly electronic with commerce activity is the term we tagged digital commerce in this study. In some quarters it could be described as "electronic commerce" and or "internet commerce". According to Burgess (2022), Kitole et al (2024), digital commerce could be described as the exchange of money and data for the purpose of making monetary and other purchases and sales through the internet. Although the term "e-commerce" is most often used to refer to the purchase and sale of tangible goods via the internet, it may also be used to represent any kind of commercial transaction that takes place over the internet. To Olomu et al (2023) digital commerce entails the business, technology, society, and skills involved in the whole transactional cycle from the moment a customer places an order for a product or service until it is delivered to him or her (Nwanmuoh et al, 2021).

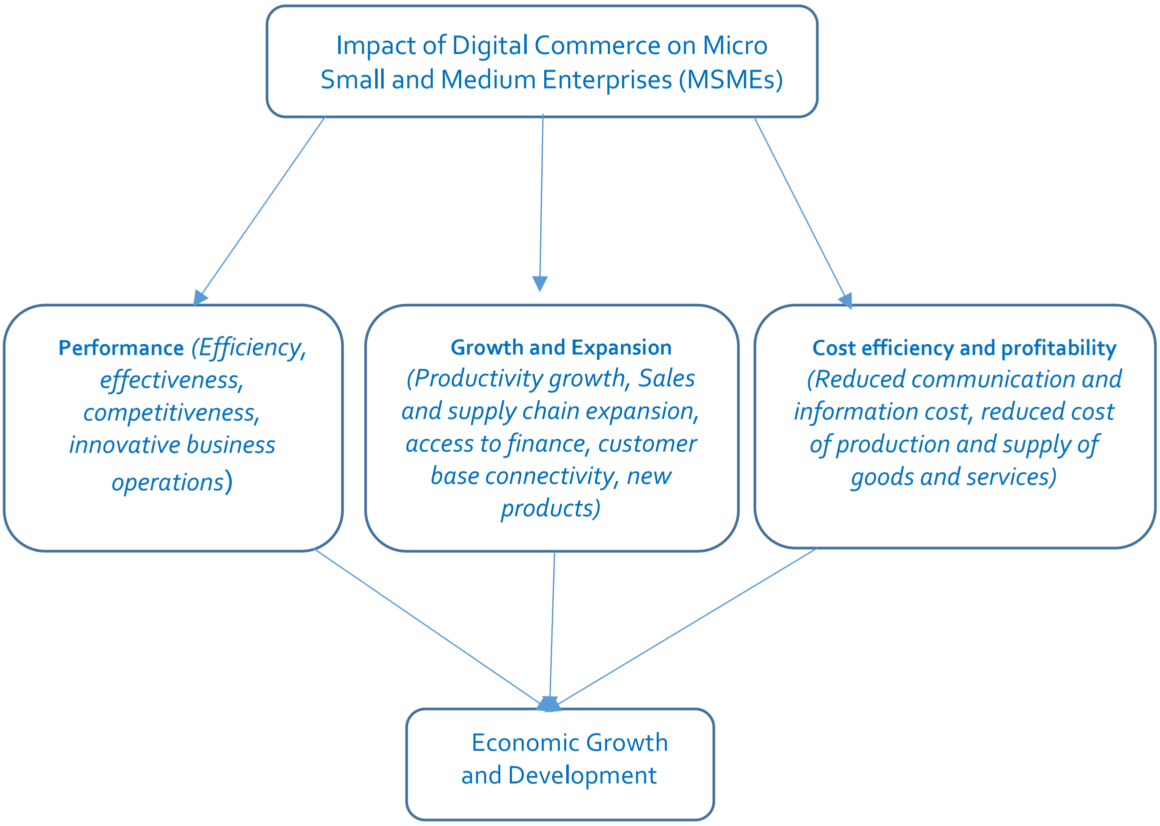

Figure 1: Conceptual framework of impact of digital commerce on MSMEs
Source: Authors' projection

To Anil's (2022) definition it is the kind of commerce conducted through the Internet in an Electronic data interchange (EDI) which entails utilizing computers, the Internet, and commonly used software to transmit and receive data such as product specs and drawings, bids, purchase orders, and invoices, among other things.

This digital commerce is the kind of digital entrepreneurship on the rise, incorporating various multidimensional mixes of technology and entrepreneurship. Generally, digital entrepreneurship can be described as any entrepreneurial activity that moves a significant portion of a company's functions, resources, or offerings on the internet (Kraus, Palmer, Kailer, Kallinger, & Spitzer, 2018). Characteristics of digital entrepreneurship include agility, accessibility, innovation, and creativity, and it has been defined in multiple ways by different authors. By utilizing digital resources like social media, smartphone applications, and the internet, businesses can operate with reduced physical infrastructure and expand their reach to a broader audience. Hence the digital commerce is expected to impact on the performance of MSMEs, the growth and expansion as well as cost effectiveness and profitability of entrepreneurs in the MSMEs There is a notable absence of conceptual discourse and development regarding the idea of digital entrepreneurship, as much of the existing study on the application of digital technologies in entrepreneurship has focused on isolated phenomena. Consequently, several fundamental questions remain largely unaddressed in the current literature. Hence, we put up this conceptual flow expected of digital commerce and entrepreneurship.

MSMEs Performance

According to the Small and Medium Enterprises Development Agency of Nigeria (SMEDAN) and the Bank of Industry (BOI), the definition of the concept Micro, Small and Medium Enterprises (MSME) is normally based on three different indicators. Such indicator that defines MSME include the number of employees in the enterprise, asset base and value of the enterprise and the annual turnover of such organistion. As indicated in Table 1, where an enterprise has asset value that is less than 5 million, such enterprise is categories as micro enterprise. Also, while an enterprise that has assets value of between 5 million to 100 million is categorized as small, that with 101 million to 500 million are classed medium enterprises.

Table 1: MSMEs categorization

Indicator	Size of Enterprise		
	Micro	***Small***	***Medium***
Asset Value	Less than 5 Million	Between 5M-100M	Between 101M – 500M
Annual Turnover	Less than 20Million	Less than 100 Milllion	Less than 500Million
Employee	Less than 10 Persons	Between 10-49 Persons	Between 50-199 Persons

Source: Adapted with modification from World Bank (2023)

A significant role is being played by MSMEs in the Nigerian economy as they provide employment to the teaming population, reduce poverty and contribute to the overall economic growth. UNCTAD. (2019), Teng, Wu, & Yang (2022) noted that MSMEs are responsible for about 80% of employment and over 46.3% of Gross Domestic Product. NBS (2022) averred that, the total number of MSMEs in Nigeria as of 2020 stood at 39,654,385 of which micro enterprises is 96.9% while small and medium enterprises make up the remaining 3.1%. According to World Bank (2020), Uduji and Okolo-Obasi (2017, 2018, 2019, 2020, 2021, 2022a), MSMEs in Nigeria accounts for about 6.21% of gross exports and employed over 84% of total workforce as of 2020. Adeshina and Ayo (2020) noted that the ownership structure of MSMEs shows that about 96.2% of MSMEs are owned by individuals as sole proprietorships, partnerships own about 3.3%, while 0.1% belong to faith based organisations, other forms of ownership accounts for 0.4%. In their own accounts, Akanbi and Akintunde (2018), posited that while about 67.1% of existing MSMEs belongs to the male gender, the rest 32.9% belong to women and the age of the owners shows that about 86% of the owners are between the ages of 20 and 60.

In evaluating the performance of MSMEs, multiple aspects are involved. Such according to Alese and Owoyemi (2017), Uduji and Okolo-Obasi (2022b, 2022c), includes financial health, operational effectiveness, market position, innovation potential, and social influence. The performance of an MSME is categorized by its capability to enter new markets with innovative products, using sales growth and market share as primary indicators (Wilujeng & Mustikowati, 2016; Nwanmuoh et al, 2022).

Some trends that shape the MSME sector in Nigeria include: 1) Access to finance as MSMEs face challenges accessing finance, especially micro-entrepreneurs in the informal sector. 2) Regulatory environment, as MSMEs need a favorable business and regulatory environment to thrive. 3)Digital transformation, studies, Hoang and Le (2023), Romanus and Dickson (2024), Nwanmuoh et al (2024c, 2024d) have shown that MSMEs need to adopt digital and technology transformation to increase productivity and profitability. In the interest of the growth of MSMEs, the government have initiated some project to support them. Some of such projects to support MSMEs in Nigeria include, *MSME Project* which is aimed at increasing the performance and employment levels of MSMEs in selected non-oil industry sub-sectors. The other is the *Backward Integration Plan* (BIP) which is aimed at domesticating production for selected priority products.

Digital Commerce and MSMEs in Nigeria

In the use of knowledge technology and service outcomes, the internet provides businesses with first-rate support (Jamal, 2023). The internet helps improve market procedures, work team accessibility, and advantage creation in cutting edge company zones (Thurban et al, 2022). Enterprises are benefiting from the digital commerce in several ways like creating a conducive market for local and foreign investors at an affordable market cost (MacGregor, 2021); the reduction in the amount of producing, processing, distributing, storing, and recovering paper-based information(Okolo-Obasi, Uduji & Asongu, 2021); the reasonable sale of products and services (Nijenhuis, 2023); and, finally, the evolution of healthy rivalry as a result of the emergence of the digital market platforms, which serves to promote creativity and allow the pursuit of business goals (Lawal & Ogbu (2021).

According to Burgess (2022), businesses may more easily conform to international norms that are in line with normal industrial practice because to the rise of internet commerce. Therefore, the compatibility of internet commerce with tiny companies generates novel communication, promotion, and marketing approaches (Uduji & Okolo-Obasi, 2024).

According to Scopula (2021), MSMEs benefits from the digital commerce platforms by increasing customer engagement, market penetration, technique optimization, market share creation, brand development, market trend awareness, and the mitigation of traditional MSMEs disadvantages. To Burgess (2022), Roman and Valentina (2022), digital commerce increases the ease and speed with which produced goods and services may be sent to clients all over the world. Arabe, (2021), noted that the absence of a physical location may be an issue in digital commerce as online shoppers always experience anxiety about delivery. However, Cusolito et al (2020), Uduji et al (2024a, 2024b, 2024c) confirms that digital commerce customers are still conveniently making orders of a customized variety over the internet and disappointment has not been too huge. Hence, to Amit and Zott (2020), MSMEs now have involved reliable logistics partners to get products to customers. This partnership according to FAO (2022), has improved commodity delivery and reduced shipping costs.

Internet Usage Digital Knowledge and Skills

In line with the assertions of OECD (2021), the internet is a global system of interconnecting computers and other electronic devices via the satellites, cables, and telephone lines. To Scupola (2021), internet operates like an extensive information library, enabling users to shop, access news, send emails, pay bills, watch television, and participate in various other online activities. The extensive virtual environment provided by the internet enhances the performance of MSMEs in many climes of the world (Roman & Valentina, 2022). To Uduji et al (2020a, 2020b), the World Wide Web (WWW), which is part of the internet, provides an interactive and intuitive method for organizing and retrieving information as a powerful tool for conducting business transactions. MSMEs both in Nigeria and all over Sub-Saharan Africa are increasingly shifting toward technology-driven management and integrating information and communication technologies (Ghobakhloo et al., 2022; de Mattos et al., 2023). With a population exceeding 215 million and an internet penetration rate of 55.4% (Internet World Stats, 2023), Nigerian MSMEs have the opportunity to leverage social media as a tool for operational, tactical, and strategic branding efforts, thereby enhancing their market share both locally and internationally (Nwanmuoh et al, 2023). Digital technological knowledge, skills and innovations are currently transforming the business landscape. Social media has become an essential tool for MSMEs to communicate and compete effectively in the market, despite their limited resources and budget constraints (Klein & Todesco, 2021). Unfortunately, there is still this paucity of in-depth study on social media and MSMEs (Chudu et al., 2022). The bottleneck here is in determining how social media can enhance the core competencies of MSMEs to improve their competitiveness (Qalati et al., 2021). In Nigeria, several challenges prevent MSMEs from effectively making use of the digital commerce platforms (CBN, 2016) such challenges include poor levels of digital literacy, high access costs, and a reliance on antiquated technologies. Overcoming these challenges will improve the understanding of how digital commerce platforms like the social media can advance core competencies and competitiveness of MSME in the digital landscape.

Digital Commerce Environment

This describes the business environment, including external factors like infrastructure, regulations, and market conditions that impact SMEs' digital adoption. According to Farooq (2021), the fast-paced advancements in technology, economic and social globalization has provided a boost to the competitive edge of enterprises especially the MSMEs. To Fatoki (2022), Okolo-Obasi & Uduji (2023) like the traditional markets, digital marketplace is influenced by several elements that affect entrepreneurship like globalization, the rise of new technologies, cost-conscious consumers, the internet, and emerging distribution and communication channels. To Thurban et al (2022), this e environment evolution has made serious input in the expansion of e-commerce and e-marketing. Anil (2022), Uduji et al (2021a, 2021b), noted that young people are the leading participants in the e-marketplace, therefore, understanding these generational traits and behaviors is crucial for entrepreneurs to succeed in the digital marketplace, as it helps them anticipate future shifts and challenges in digital commerce.

While the e-environment currently equips businesses with nearly all the marketing and communication tools necessary for growth and the establishment of competitive advantages, not every business is able to leverage these opportunities to enhance productivity and competitiveness (Ajimas, 2024). Recent studies Nwanmuoh (2020), Okolo-Obasi & Uduji (2021, 2022), indicate that the e-environment provides various options and opportunities, particularly for MSMEs with limited resources. The adoption of e-tools enhances an enterprise's competitiveness, profitability, and efficiency (Anjum, 2019; Uduji et al, 2019a, 2019b, 2019c, 2019d)

Theoretical Underpinning

This work is anchored on three different theories which include: Technology Acceptance Model, Resource-based theory, and Knowledge-based Theory. While the Technology Acceptance Model (TAM) postulates that a variety of variables may impact users' choices on how and when they will utilize new technology when offered with the opportunity to do so. It measures the perceived usefulness, and perceived ease of use. The Resource-based Theory (RBT) offers the chances to study the link between the transfer of worldwide knowledge and creative performance (Kotabe et al., 2007; Abhilash, 2022). According to the RBT businesses should focus on their core strengths and efficient management hence, enterprises involved in digital commerce and virtual integration should see such as a competitive advantage and serve as a substitute supplier governance mechanism (Kim et al, 2018). On the other hand, Knowledge-based Theory (KBT) offers a valuable framework that helps comprehend how organisations can furnish information and leadership to foster entrepreneurial thinking and activities. This theory underscores the importance of information as a key organizational resource, suggesting that businesses can attain a competitive edge by effectively acquiring, creating, sharing, and utilizing knowledge.

Materials and Methods

Research Design

In this study, we adopted the descriptive survey design so as to deal with the systematic collection of data from a sample representative of the target population. We utilized quantitative approach in the data collection and analysis to be able to answer the research questions and test the hypotheses.

Population of the study

The target population of this study is both formal and informal MSMEs operating within the Nigeria's entrepreneurship ecosystem. Following the report of the National MSME Survey Report (2023), Nigeria has about 39,654,385 Micro Small and Medium-sized enterprises scattered all over the states of the federation.

Sample Size and Sampling Technique

We applied the use of the sample size determination formula propounded by Yamane (1967) to establish the appropriate sample size used in the study. Having noted the total population of potential respondents to be about 39,654,385 MSMEs in Nigeria, we assumed a 95% confidence level meaning that our error tolerances limit was placed at 5% significant level. Therefore, applying the Yamane (1967) model, it is resented mathematically thus:

$$n = \frac{N}{1+N(e)^2} \qquad \text{Equation 1}$$

Where n = sample size to be determined, N = total estimated population of interest and e = the error tolerances limit. Hence, our sample size was determining thus:

$$n = \frac{39{,}654{,}385}{1+39{,}654{,}385(0.05)^2} = n = \frac{39{,}654{,}385}{1+99135.96} = 400.$$

We made sure of the representation of the relevant population by using multi-stage sampling technique to select the final respondent MSMEs for the study. In the stage one, we partitioned Nigerian in line with the well-recognized six national geopolitical zones making each zone a cluster as follows: North-Central cluster, North-East cluster, and North-West cluster. Others are South-East cluster, South-South cluster and South-West cluster. In stage 2, from each of the cluster, we purposefully selected a state as representative.

Table 2. Sample size determination table

Selected States (Geopolitical zones)	Total Population	% Total Population	Sample per state
Kano (North-West)	6,344,702	16	64
FCT (North-Central)	6,741,245	17	68
Borno (North- East)	2,775,807	7	28
Rivers (South-South)	7,137,789	18	72
Lagos (South-West)	11,896,316	30	120
Anambra (South-East)	4,758,526	12	48
Total	39,654,385		400

Source: SMEDAN (2023), BOI (2023) /Authors' computation

The purpose of this selection is on the basis of commercial activities and number of MSMEs in each of the constituent states of a cluster. FCT Abuja was selected for the North-Central cluster, Borno State for the North-East cluster, Kano State for North-West. Others are Anambra State for South-East, Rivers State for South-South cluster, and Lagos State for South-West cluster. In the stage three, from each of the selected state, we selected two Local Government Areas (LGAs) each on the same basis of having more MSMEs more than the others. Consequently, the number of LGAs studied was 12. In the final stage, from each of the selected LGA, final respondent MSME was selected for the survey based on the population of MSMEs in the zone as shown in the sample Table

Data collection

Written semi-structured questionnaire (SSQ)was used to generate primary data from the respondents used in this study. We used this technique because the opinions of the MSMEs being studied are crucial on all the issues under examination. The SSQ was the major tool used in gleaning survey data from the 400 selected respondent MSMEs. Administration of the questionnaire was done directly by the researchers being aided by trained research assistants (RAs). This RAs were engaged because of the inability of the researchers to speak the different local languages and dialects of the many ethnic groups in the sampled communities.

Analytical framework

We rigorously treated the collected data and cautiously analyzed them so as to be able to provide answers to the research questions as well as test the hypotheses. We employed both descriptive and inferential statistics. The results of the descriptive statistics we presented in the work in form of tables, figures and charts. On the other hand, using inferential statistic tool of multiple regression analysis, we estimated the impact of digital commerce on MSMEs output in Nigeria.

The study's regression model is therefore, stated with the following equations:

$$\text{Logit MO} = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_1 + \beta_4 X_4 + \cdots \ldots \ldots \ldots \ldots \beta_n X_{4n} + \mathcal{E} \qquad \text{Equation (2)}$$

With this, we estimated the effect of digital commerce on the outputs of MSMEs in Nigeria thus:

$$Logit\ MO = \beta_0 + \beta_1 DC + \beta_2 SE_{1.......n} + \beta_3 M_{1.....n} + \mathcal{E} \qquad \text{Equation (3)}$$

Where:

MO = represent the dependent variable MSMEs outputs which is measured in terms of performance, growth and expansion, as well as cost effectiveness and profitability. *DC* = digital commerce which is all forms of e-environment involved in enterprise management.
SE = other socio economic control variables (Age, household size, educational level of owners, estimated monthly income, etc.)
M = other moderating variables like Government policies, etc.
Ɛ = stochastic error term.
*In this model, the main parameter of interest is β_1 in terms of sign and significance.

Results and Discussion

The analysis of data collected for this study started with some description demographic and socio-economic characteristic of the respondents MSME owners. Analysis (Table 3) shows that while about 64.6 % of the respondents are men, only about 35.4% are women. This is a confirmation of the findings of Adeshina and Ayo (2020), Uduji et al (2020) that most women's entrepreneurship endeavours are hidden under their husband. It also agrees with Uduji and Okolo-Obasi (2019a) in that women often play second fiddle in almost all socio-economic and political activities in Africa. With about 93.5% of the respondent within the age of 60years, the result shows that only about 2.5% is below 20 years of age, while 72% are either 50 years or below. This is in agreement with scholars like Ibene and Obi (2021) and Olorunshola and Odeyemi (2022), in that entrepreneurship requires youthful vigour especially now that digitaisation is taking over. The analysis shows that only about 19.25% of the MSMEs owners is not educated, meaning that the rest 80.75% can read and write.

Table 3: Socio- economic Characteristics of the Respondents

Variables	Freq	%	Cum
Sex			
Male	258	64.60	64.60
Female	142	35.40	100
	400	**100**	
Age of MSME Owner			
Less than 20 Yrs	10	2.50	2.50
21 - 30 Yrs	70	17.50	20.00
31 - 40 Yrs	119	29.75	49.75
41 - 50 Yrs	89	22.25	72.00
51 - 60 Yrs	86	21.50	93.50
Above 60 Yrs	26	6.50	100
	400	**100**	
Enterprise Ownership Type			
Sole Proprietor	**310**	77.50	77.50
Partnership	**70**	17.50	95.00
Corporative	**11**	2.75	97.75
NGOs/Faith-based Org	**6**	1.50	99.25
Others	**3**	0.75	100
	400	**100**	
Primary Sector of Enterprise			
Farming /Fishing	105	26.25	26.25
Trading	161	40.25	66.50
Handicraft	76	19.00	85.50
Oil and Gas	6	1.50	87.00
Manufacturing	42	10.50	97.50
Others	10	2.50	100
	400	**100**	

Variables	Freq	%	Cum
Enterprise Category			
Micro	**349**	87.25	87.25
Small	**49**	12.25	99.50
Medium	**2**	0.50	100
	400	**100**	
Education of MSME Owner			
None	77	19.25	19.25
FSLC	173	43.25	62.50
WAEC/WASSCE	122	30.50	93.00
Degree and above	28	7.00	100
	400	**100**	
Estimated Annual Income			
Below 5,000,000	116	29.00	29.00
5,001,000 - 50,000,000	160	40.00	69.00
50,001,000 - 100,000,000	45	11.25	80.25
100,001,000 - 150,000,000	20	5.00	85.25
150,001,000 - 200,000, 000	15	3.75	89.00
200,001,000 - 250,000, 000	12	3.00	92.00
250,001, 000 - 300,000,000	10	2.50	94.50
300,001, 000 - 350,000,000	7	1.75	96.25
350,001, 000 - 400,000,000	6	1.50	97.75
400,001, 000 - 450,000,000	4	1.00	98.75
450,001, 000 - 500,000,000	3	0.75	99.50
Above 500,000,000	2	0.50	100
	400	**100**	

Source: Computed from the field data by Authors

This simply agree with Olomu et al (2023), that Nigeria is fast becoming literate, and literacy level will soon not be a hindrance in any venture. In all this, the result indicated that while the annual turnover of 29% of the MSMEs is less than 5 million naira ($2,940), about 69%

have less than 50 million naira ($294,117) turnover and a cumulative of 80.25% have turnover less than 100millon naira ($588,235) turnover. This agrees with Ayo et al (2021), in that majority of the enterprises in Nigeria are still in the category of micro enterprises. Conversely, the average annual income of the MSMEs is still very low indicating high rate of poverty in the Sub-Saharan Africa as opined by scholars like Okolo-Obasi and Uduji (2021, 2022).

Assessment of Digital Commerce and digital Technology

Analysis in figure 1 shows that, accessing the digital commerce innovation may not have been a very easy and simple thing.

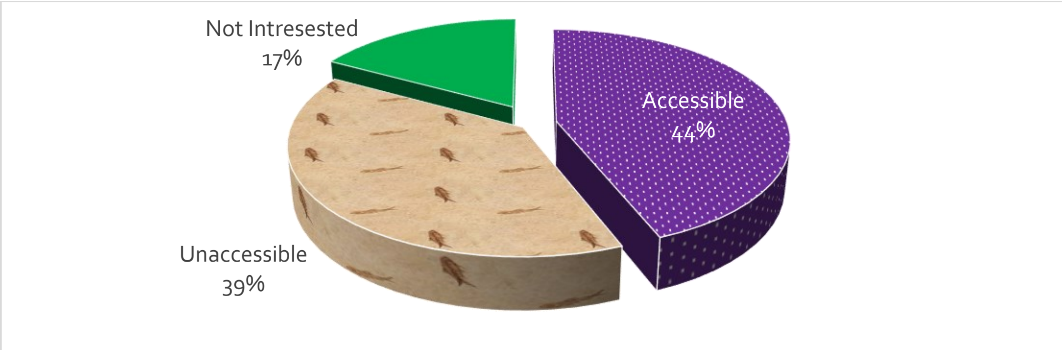

Figure 1: Percentage distribution of respondents by assessment of digital commerce
Source: Computed from the field data by Authors.

The result shows that while about 44% of the respondents accessed the digital technologies and platform to perform digital commercial activities, about 39% are not able to access while about 17% are not interested. This is an indication that about 56% more than half of the MSMEs are not yet digital compliant for many reasons.

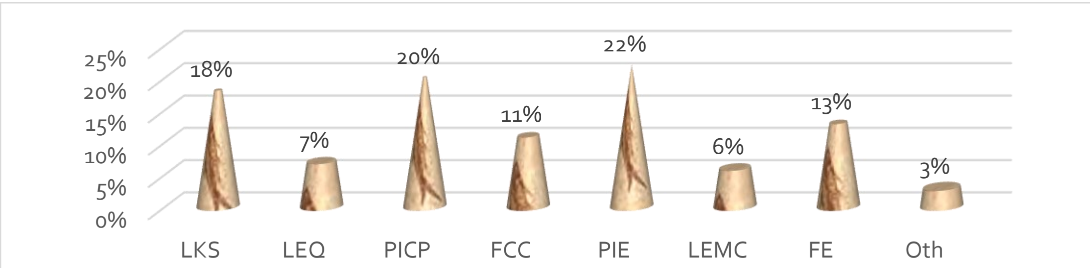

Figure 2: Percentage distribution of respondents according to their major challenges in accessing digital commerce[1]
Source: Computed from the field data by Authors

[1] LKS = Lack of Knowledge and Skill, LEQ = Low education Qualification, PICP = Poor or no Internet Connectivity and penetration, FCC = Fear of cybercrime, PIE = Poor Infrastructure equipment, LEMC = Level of exposure of major customers FE = Financial exclusion, and Oth = Others

Analysis in figure 2 pointed out the various reason adduced by the respondents to why they may not have adopted digital commerce. In assessing the major constrains to accessing digital commerce and technology, while about 18% complained about lack of knowledge and requisite skills, only about 7% complained about low education qualification
Others are poor or no internet connectivity and penetration 20%, fear of cybercrime 11%, poor infrastructure equipment 22%, level of exposure of major customers 6%, financial exclusion 13%, and Others who could not pin down specific issues that accounted for about 3%. This embassy the opinion of Alese and Owoyemi (2017), and World Bank (2020), in that while digital commerce maybe a welcomed innovation, but the challenges facing the adoption and utilization are still enormous.

Econometric analysis
We estimated the average impact of digital commerce – among other explanatory variables on the dependent variables (MSME Performance, MASME Growth and Expansion and MSME Cost Effectiveness and Profitability) at significance level of 5%.

Table 3: Projected impact of digital commerce on MSME output in Nigeria.

Y	X	Coefficients	Std Error	Significant	Odd Ration
MO_1 Performance	$\beta_1 DC$	1.125	0.041	0.062*	8.732
	$\beta_2 Age$	-0.017	0.009	0.233**	0.983
	$\beta_2 Sex$	-0.039	0.022	0.16**	0.762
	$\beta_3 ECat$	0.014	0.001	0.072*	0.816
	$\beta_4 EOT$	0.491	0.018	0.074**	0.996
	$\beta_5 AY$	0.017	0. 201	0.0013**	1.017
	$\beta_6 ESect$	0.916	0.114	0.058	0.908
	$\beta_7 Edu$	0.211	0.115	0.006*	1.524
	$\beta_8 SKn$	0.428	0.212	0.0081**	1.612
	$\beta_9 MS$	-0.047	0.124	1.029	1.810
	Constant	1.291	0.667	0.164**	2.533
MO_2 Growth and Expansion	$\beta_1 DC$	1.436	0.054	0.051*	10.421
	$\beta_2 Age$	-0.045	0.155	0.771**	1.046
	$\beta_2 Sex$	-0.352	0.275	0.202	0.703
	$\beta_3 ECat$	0.304	0.010	0.092**	1.000
	$\beta_4 EOT$	0.436	0.028	0.091**	1.036
	$\beta_5 AY$	0.221	0.012	-0.081**	0.890
	$\beta_6 ESect$	0.327	0.135	0.052**	0.830
	$\beta_7 Edu$	0.421	0.026	0.962*	1.001
	$\beta_8 SKn$	1.032	0.021	0.424**	1.768
	$\beta_9 MS$	0.033	0.024	-0.065*	0.967
	Constant	2.321	0.951	1.022**	8.785

MO_3 Cost effectiveness and Profitability	$\beta_9 MS$	0.025	0.023	0.047	1.026
	$\beta_2 Age$	-0.025	0.010	0.062**	0.976
	$\beta_2 Sex$	0.024	0.225	0.914	1.025
	$\beta_5 AY$	0.416	0.022	0.268**	1.025
	$\beta_7 Edu$	0.006	0.125	0.342	1.006
	$\beta_3 ECat$	-0.032	0.022	0.142**	0.969
	$\beta_6 ESect$	0.241	0.119	0.051**	1.786
	$\beta_4 EOT$	0.304	0.010	0.065*	0.996
	$\beta_8 SKn$	0.019	0.023	0.406**	0.981
	$\beta_1 DC$	0.125	0.041	0.053*	12.133
	Constant	1.645	0.829	1.164*	2.533

a Variable(s) entered on step 1: Age, Sex, ECat, EOT, AY, Edu, ESect, MS, SKn,
* * significant at 5%; ***significant at 10%.
Source Authors' Computation

For all the indicators of interest (Performance, Growth and Expansion, cost effectiveness and Profitability), we conducted a test of the full model against a constant only model. The result shows that all were statistically significant to show that the predictors as a set reliably distinguished between the "Yes" and "No" impact of Digital commerce (DC) with a chi square of 43.611 and, P-value <.001 and degree of freedom equal to 8. We also got an average Nagelkerke's R^2 of the three as 0.842 indicated a strong relationship between prediction and grouping. Therefore, the overall Prediction success was 92% (94% for the Yes and 90% for the No).

Impact of digital commerce on MSMEs growth and expansion in Nigeria

For the performance indicator MO_1, the outcome is represented using the equation below. Logit (MO_1) = 1.291+ 1.125DC + (0.017)Age + (0.039)Sex + 0.014ECat + 0.491EOT + 0.017AY + 0.916ESect + 0.211Edu + 0.428SKn + (-0.047)MS. On this note, the Z- value for digital commerce DC is 4.5, with an associated p-value of .063. Thus, on the basis of the set 5% significant level, the study rejected the null hypothesis HO1 and concluded that digital commerce has made significant impact on the performance of MSMEs in Nigeria. Consequently, because the EXP (B) value of the Predictor – DC is 8.732, the implication is that if the acceptance of digital commerce is raise by one unit, the odds ratio is 8.732 times as large and therefore performance of MSMEs will be about 9 more times likely to improve.

Impact of digital commerce on MSMEs growth and expansion in Nigeria

For the Growth and Expansion indicator MO_2, the outcome is represented below.
Logit (MO_2) = 1.291+ 1.436DC + (0.045)Age + (0.352)Sex + 0.304ECat + 0.436EOT + 0.221AY + 0.27ESect + 0.421Edu + 1.032SKn + 0.033MS. On this note, the Z- value for DC is 3.6, with an associated p-value of .076. Thus, on the basis of the set 5% significant level, the study rejected the null hypothesis HO_2 and concluded that digital commerce has made significant

impact on the growth and expansion of MSMEs in Nigeria. Based on this, as the EXP (B) value of the Predictor – DC is 10.421, we noted that if the acceptance of digital commerce is raise by one unit, the odds ratio is 10.421 times as large, hence the growth and expansion of MSMEs will be about 10 more times likely to improve.

Impact of digital commerce on MSMEs Cost effectiveness and Profitability in Nigeria

For the Cost effectiveness and Profitability indicator MO_3, the outcome is represented below.

Logit (MO_3) = 1.291+ 0.025MS + (0.025)Age +1.436DC + 0.24)Sex + 0.416AY + 0.421Edu +0.032ECat + 0.241ESect + 0.304EOT +1.032SKn + 1.125DC. Also, as the Z- value for DC is 4.1, with an associated p-value of .082 and on the basis of our set 5% significant level, we rejected the null hypothesis HO_3 and concluded that digital commerce has made significant impact on the cost effectiveness and profitability of MSMEs in Nigeria. On the other hand, like other indicators, the EXP (B) value of the Predictor – DC is 12.133, implying that raising the acceptance of digital commerce by one unit has an odds ratio of 12.133 times as large. This indicates that cost effectiveness and profitability of MSMEs in this case will be about 12 more times likely to improve.

Generally, the findings of this study indicate that digital commerce as a new way of doing business in Nigeria is progressively becoming widespread as it provides platform for even entrepreneurs without enough capital to establish physical presence to embark on business. This confirms the findings of Kitole et al (2024) while dispelling the fears of Olomu et al (2023) Sang (2023). The digital commerce is gradually replacing the traditional commerce and have shown big signs of improving the ease of doing business both locally and internationally. The result of this study shows that, though numerous challenges still confront the digital platforms, yet digital commerce appears to be engendering better relationship between both the demand and supply side of the patronage. This is in conformity with the assertions of Akanbi and Akintunde (2018), Mohammed et al (2022), in that, the performances of MSMEs are being improved, improved growth is witnessed and MSMEs are widely expanding. Also as noted by Arobo (2022), that the aftermath of COVID lead to shutdown of many MSMEs, the finding here shows that many of such MSMEs have sprang up again due largely to the provision made by digital commerce.

The impact of digital commerce on MSMEs output measured under three main areas of performance, growth and expansion as well as profitability notice in the Logit model estimation in Table 3. It is worth noting that that on aggregate, the digital commerce may not have made huge influence, but the little made is positively significant. Hence, the inference that if more effort is made by both the government and non-governmental organization to curb the challenges of infrastructural deficit, improve on financial inclusion, and provide adequate technical digital skill acquisition, as well as curb the menace of cybercrime, MSMEs are likely to be average of 10 time booming beyond what is obtainable now.

Noted from the Analysis Table 3 is also the correlations between, sex, age, and educational qualification, marital status of MSME owner, enterprise ownership type, primary sector of enterprise, enterprise category. The result shows that any increase in the age of the owners is resulting in decrease in participation of respondent in digital commerce. This buttresses the finding of Ojukwu (2016), in that digital commerce has a lot to do with the young people. Also, marriage especially to the women has negative relation with participation as it is shown that men participate more than the women. It confirms the assertion of Uduji et al 2021a) in that women have lesser chance than men in almost all sectors of social and economic activities. The result also indicated that educational qualification has a positive significant relation with MSMEs outcome and digital commerce in Nigeria. This is in line with Okeke et al (2016), Nwanmuoh et al (2023), that with proper education, all other facet of live endevour will fall perfectly in places other explanatory variable that positively relate with MSMEs outcome are enterprise ownership type, primary sector of enterprise, enterprise category. This simply means that any government programmes and policies that will encourage increase in them should be emphasized.

Concluding Remark and Implications

In this study, the findings show the significant impact of digital commerce as well as digital technology on MSMEs outcome in Sub-Saharan Africa especially in Nigeria. the study highlights the transformative potential of digital commerce across various aspects of MSMEs performance, growth and expansion as well as profitability. From enhancing operational efficiency and productivity to driving innovation, financial success, and customer engagement, digital commerce is fast becoming a crucial enabler for MSMEs seeking sustainable growth and competitiveness in dynamic market environments. The result noted several challenges yet while making recommendations for both government and private sectors, it emphasizes the strategic imperative for MSMEs to embrace digital commerce initiatives and invest in digital capabilities to remain agile, resilient, and responsive to evolving market landscapes.

The result of this study therefore, implies that both policymakers and practitioners in MSMEs growth in sub-Saharan Africa and other developing nations should pay deliberate attention and make concerted effort to improve infrastructures that will enable digital commerce. Also, it is expedient that Policymakers focus on promoting financial inclusion, training and skill acquisitions so as to enhance the adoption of digital technologies that will facilitate digital commerce among MSMEs. In addition, government and other stakeholders as a matter of urgency should work towards creating a conducive digital environment for digital commerce and entrepreneurship by implementing regulatory changes.

Disclosure Statement

No potential conflict of interest was reported by the authors.

Funding

Funding for this research was provided by the authors.

References

Abhilash, C. (2022). E-commerce law in developing countries: An Indian perspective. *International Journal of Phytoremediation*, doi: 10.1080/1360083022000031948

Adeshina, A. and Ayo, C. (2020). An empirical investigation of the level of users' acceptance of e-baking in Nigeria. *Journal of Internet Banking and Commerce*, 15(1), 1–13.

Ajimas, S.L.J. (2024). The use of digitalisation and impact on MSME performance in Malang, Indonesia. KnE Social Sciences. https://doi.org/10.18502/kss.v9i4.15102.

Akanbi, B. and Akintunde, T. (2018). E-commerce Adoption and Small Medium Scale Enterprises Performance in Nigeria. *European Journal of Management and Marketing Studies,* 3(1), 10-24.

Alese B. and Owoyemi, S. (2017). Factor Analytic Approach to Internet Usage. How to build profitable mini sites to sell e-books, software or physical goods. *CBG 's InfernefEnfrepreneur.* 1(8),37-38.

Amin, M., Suliyanto, S., & Tabrani, T. (2022). Digital marketing and market orientation influence sales performance through product innovation and excellence. *Jurnal Ekonomi Bisnis Manajemen Dan Akuntansi (JEBMA)*, 2(3), 163–174. https://doi.org/10.47709/jebma.v2i3.2597.

Amit R. and Zott, C. (2020). Value drivers of e-commerce business model. A working paper in the INSEAD Working Paper Series. France: Fontainebleau.

Anil, K. (2022). Introduction to e-commerce. MM-409/1B-419. http://www.ddegjust.ac.in/studymaterial/mcom/mc-201.pdf.

Anjum, A. (2019). Impact of Technology Adoption on the Performance of Small and Medium Enterprises in India. *The Journal of Social Sciences Research*, 54(3), 1284–1294. https://doi.org/10.32861/jssr.54.1284.1294.

Archer N., Yuan Y., Bassett R. (2016). Electronic commerce in service industries. *Electronic Commerce Innovations and Marketing Management*, 15(3), 212 - 217.

Arobo, A. T. (2022). The effect of digital marketing on SMEs: A case study of Swedish and Nigerian companies. In ltu.diva-portal.org. http://urn.kb.se/resolve?urn=urn:nbn:se:ltu:diva-91753

Asongu, S.A., Uduji, J.I., and Okolo-Obasi, N.V.E. (2020a). Political Instability and Political Terror: Global Evidence on Persistence. *Journal of Public Affairs,* 20(3): e2119, http://doi:10.1002/pa.2119

Asongu, S.A., Uduji, J.I., and Okolo-Obasi, N.V.E. (2020b). Foreign Aid Volatility and Lifelong Learning *International Journal of Education Economics and Development,* 11(4): 370-406, http://doi:10.1504/IJEED.2020.10030587

Asongu, S.A., Uduji, J.I., and Okolo-Obasi, N.V.E. (2019a). Homicide and Social Media: Global Empirical Evidence. *Technology in Society,* 59 (November) 101188, https://doi.org/10.1016/j.techsoc.2019.101188

Asongu, S.A., Uduji, J.I., and Okolo-Obasi, N.V.E. (2019b). Transfer Pricing and Corporate Social Responsibility: Arguments, views and Agenda. *Mineral Economics,* 32(3): 353-363, https://doi:10.1007/s13563-019-00195-2

Asongu, S.A., Uduji, J.I., and Okolo-Obasi, N.V.E. (2019c). Thresholds of External Flows for Inclusive Human Development in sub-Saharan Africa. *International Journal of Community Well-Being,* 2(2-4): 213-233, https://doi:10.1007/s42413-019-00037-7

Ayo, C., Adewoye, J. and Oni, A. (2021). Business-to-consumer e-commerce in Nigeria: Prospects and challenges. *African Journal of Business Management*, 5(13), 5109–5117.

Burgess E. (2022). Information technology in small business: issues and challenges. Australia: Idea Group Publishing.

CBN. (2016). Overview of government's efforts in the development of SMEs and the emergence of Small and Medium Industries Equity Investment Scheme (SMIEIS). National Summit on SMIEIs Organized by the Bankers' Committee and Lagos Chambers of Commerce and Industry. Lagos: Central Bank of Nigeria (CBN).

Cusolito, A.P., Lederman, D., & Pena, J. O. (2020). The effects of digital-technology adoption on productivity and factor demand: Firm-Level evidence from developing countries. *In World Bank, Washington, DC eBooks*. https://doi.org/10.1596/1813-9450-9333.

FAO, (2022). Report. Thirty-sixth Session of the FAO Regional Conference for Asia and the Pacific. Bangkok

Farooq, A. (2021). Electronic commerce: An Indian perspective. *International Journal of Law and Information Technology*, 9(2),133–170.

Fatoki, O. (2022). The impact of entrepreneurial orientation on access to debt finance and performance of small and medium enterprises in South Africa. *Journal of Social Science,* 32(2), 121–131

Hoang, H., & Le, Tan, T. (2023). Unveiling digital transformation: Investigating technology adoption in Vietnam's food delivery industry for enhanced customer experience. *Heliyon*, 9(9), e19719. https://doi.org/10.1016/j.heliyon.2023.e19719.

Ibene, K. and Obi, R. (2021). The internet and its use in the emerging Nigerian information society. In: Namoda Tech-Scope. 4 2.

Jamal, A. R. (2023). Determinants of adoption and impact of digital technologies by SMEs in Jordan. University of Canberra Research Portal. https://researchprofiles.canberra.edu.au/en/student.

Kitole, F.A., Mkuna, E., & Sesabo, J.K. (2024). Digitalization and agricultural transformation in developing countries: Empirical evidence from Tanzania agriculture sector, *Smart Agricultural Technology*, 7, 100379, ISSN 2772-3755, https://doi.org/10.1016/j.atech.2023.100379.

Lawal, A. and Ogbu, R. (2021). "E-commerce, problems and prospect in Nigeria". International *Journal of Scientific Engineering and Applied Science*, 1(3),230–236.

MacGregor, R. (2021). Perception of Barriers to e-Commerce adoption in SMEs in a Developed and Developing Country: A Comparison between Australia and Indonesia. *Journal of Electronic Commerce in Organizations,* 8(1), 61-82

Mohammed, R., Fisher, R., Jaworskin, B. and Gahill, M. (2022). Internet Marketing: Building advertising in a networked economy. Irwin: McGrawHill.

Nijenhuis, J. (2023). The role of digitalisation in SME performance in emerging economies. Theses.ubn.ru.nl. https://theses.ubn.ru.nl/handle/123456789/15981.

Nwanmuoh, E.E., Okolo-Obasi, N.E.V., Anene, J.N., Uwakwe, I.V., Udu, F.T, Amuka, I. and Emeter, P.O. (2024c). Agricultural Marketing and Sustainable Household Food Security in Sub-Saharan Africa: Evidence from Nigeria. *African Journal of Agricultural Science and Food Research 17(1),225-248* https://doi.org/10.62154/ajasfr.2024.017.010501

Nwanmuoh, E.E., Okolo-Obasi, N.V.E., Dibua, E.C., Udu, F.T., Amuka, I., and Emeter, P.O. (2024b). Public Relations Practitioners Leadership Skills as Determinants of Effective Communication in Organizations: Setting the Agenda with Evidence from South-East, Nigeria. *African Journal of Management and Business Research* 16(1),206-232 https://doi.org/10.62154/ajmbr.2024.016.010433

Nwanmuoh, E.E., Okolo-Obasi, N.E.V., Imo, G.I., Udu, F.T and Emeter, P.O. (2024a). Public Relations Political Advertising Campaign and Voters' Attitude: Evidence from 2023 General Election in South-East Nigeria. *African Journal of Humanities and Contemporary Education Research 15(1),342-367* https://doi.org/10.62154/fba92141

Nwanmuoh E.E., Chi, A.N., Ogbuka, J.C., Ifediora, C., Ugbam, C. O., and Imo, G.I. (2023). Effect of public relations planning on human resource management performance of the Independent National Electoral Commission in Nigeria. *Cogent Social Sciences (2023*), 9: 2222571 https://doi.org/10.1080/23311886.2023.2222571

Nwanmuoh, E.E., Dibua, E.C., Amaife, H. T., Obi-Okonkwo, L. C., and Abdulganiu. M. (2022). Public Relations: An Effective Tool for Gender Equality and National Development. *International Journal of Science Academic Research* 3 (2), 3451-3455.

Nwanmuoh, E.E., Dibua, E. C., Amaife, H. T. and Obi-Okonkwo, L. C. (2021). Public Relations Strategies: A Veritable Tool for Conflict Resolution, Peace Building, Democracy and National Development. *International Journal of Science Academic Research* 2(7),1893-1897

Nwanmuoh, E.E. (2020). Rethinking Public Relations and Community Development in Nigeria. *International Journal of Innovative Development and Policy Studies* 8(3):77-82.

Nwanmuoh, E. E., Dibua, E. C., Onyegbuna, C. M., & Friday, E. C. (2024). Information Communication Technology (ICT) and the Effective Growth of SMEs in Anambra State, Nigeria. *International Journal of Capacity Building in Education and Management*, *6*(5),19-30.

Obidike, E. E. and Nwanmuoh, E. E. (2022). A Comparative Assessment of the Implementation of Integrated Coastal Zone Management Policies in Developing Countries. *Global Scientific Journals* 10(7),2141-2159

OECD, (2021). The Digital Transformation of SMEs, OECD Studies on SMEs and Entrepreneurship, OECD Publishing, Paris, https://doi.org/10.1787/bdb9256a-en.

Ojukwu, D. (2016). Achieving Sustainable Growth through the Adoption of Integrated Business and Information Solutions: A Case Study of Nigerian Small and Medium Sized Enterprises. *Journal of Information Impact,* 6(1), 47 - 60.

Okeke, M., Oboreh, J. and Ezeaghaego, C. (2016). Effect of E-commerce and the Growth of Small Scale Enterprises in Selected Enterprises in Anambra State. *Singaporean Journal of Business Economics, And Management Studies*, 5(2), 82-92.

Obisesan, A. &Adeyonu, A. (2018). Financial Inclusion of Arable Crop Farmers in Nigeria. Paper Presentation at the 30th International Conference of Agricultural Economist held at Vancouver July 28- August 2, 2018.

Okolo-Obasi, N. E. V., Nwanmuoh, E. E., Ifediora, C. U., Dike, R. A., Ozumba, I. U., & Anyachebelu, N. C. (2025). Financial Inclusion and Poverty Reduction among Rural Women in Sub-Saharan Africa: Evidence from Nigeria. *African Journal of Management and Business Research*, *17*(1), 452-474. https://doi.org/10.62154/ajmbr.2024.017.010572

Okolo-Obasi, N.V.E., Nwanmuoh, E.E., Nkwonta, N., Iyke-Ofoedu, M.I., Okoro, D.P., Ikpo, K.P., Ogbu-Nwali, O., Ezuke, C.S., Ewelukwa, O.N., Emezue, I.J. (2025). The Impact of "Jakpa" on Educational, Healthcare and Housing Development of Rural Communities in Nigeria: Evidence from South-Eastern Region. *African Journal of Humanities & Contemporary Education Research* 17(1), 333 – 360 https://doi.org/10.62154/ajhcer.2024.017.010535

Okolo-Obasi, N.V.E., Nwanmuoh, E.E., Iyke-Ofoedu, M.I., Okoro, D. P., Ikpo, K.P., Ezuke, C.S., Ogbu-Nwali, O and Emeter, P.O. (2024a). Government Policies and Business Start-Ups in Sub-Saharan Africa: The Fate of Entrepreneurship Among Young People in Nigeria. African Journal of Management and Business Research, 17(1),378-400.

Okolo-obasi, N.V.E., Nwanmouh, E.E., Anene, J.N., Uwakwe, I.V., Udu, F.T., Nkwonta, N., Okoro, D.P., Ikpo, K.P. (2024b) Strategic Public Relations Practices and Consumer Buying Behaviour in sub-Saharan Africa: A study of Nigeria's Fast Moving Consumer Goods Industry. *African Journal of Management and Business Research* 17(1)356-377. https://doi.org/10.62154/ajmbr.2024.017.010533

Okolo-Obasi, E. N., & Uduji, J. I. (2023). Government enterprise and empowerment program (GEEP) and women's performance in entrepreneurship development in Nigeria, Development in Practice, https://doi.org/10.1080/09614524.2023.2178639

Okolo-Obasi, N.V.E. and Uduji, J.I. (2022). The Impact of National Home Grown School Feeding Programme (NHGSFP) on Rural Communities in Nigeria. *Journal of Economic and Administrative Sciences,* https://doi.org/10.1108/JEAS-10-2021-0211

Okolo-Obasi, N.V.E., Uduji, J.I. and Asongu, S.A. (2021a). Strengthening Women's Participation in the Traditional Enterprises of sub-Saharan Africa: The Role of Corporate Social Responsibility Initiatives in Niger Delta, Nigeria. *African Development Review,* 32: S78-S90, https://doi.org/10.1111/1467-8268.12484

Okolo-Obasi, N.V.E. and Uduji, J.I. (2021). Does Agri- Business/ Small and Medium Enterprise Investment Scheme (AGSMEIS) Impact on Youth Entrepreneurship Development in sub-Saharan Africa? Evidence from Nigeria. *Journal of Economic and Administrative Sciences,* https://doi.org/10.1108/JEAS-05-2021-0094

Olomu, O.M., Binuyo, O.G., & Oyebisi, O.T. (2023). The adoption and impact of internet-based technological innovations on the performance of the industrial cluster firms. Journal of Economy and Technology, 1, 164–178. https://doi.org/10.1016/j.ject.2023.11.004.

Olorunshola, D. and Odeyemi, T. (2022). Virtue or vice? Public policies and Nigerian entrepreneurial venture performance. *Journal of Small Business and Enterprise Development.* ahead-of-print (ahead-of-print). doi:10.1108/JSBED-07-2021-0279. ISSN 1462-6004. S2CID 249721896.

Omobola, J. (2022). E-commerce and ICT in Nigeria: An engine for job creation and economic growth. Proceedings of E-commerce conference in Lagos, Nigeria. Organized by Jumia.com.

Romanus, L. D. and Dickson, U. (2024). A Systematic Review of Digital Technology Adoption in Small and Medium-Sized Enterprises: Implications for Performance in Developing Countries. *International Journal of Development and Management Review* 19(1),58-71

Roman, A., & RUSU Valentina, D. (2022). Digital technologies and the performance of small and medium enterprises. Studies in Business and Economics, 17(3), 190–203. https://ideas.repec.org/a/blg/journl/v17y2022i3p190-203.html

Sang, T. M. (2023). Digital transformation toward sustainable development in Vietnamese small and medium enterprises. *Management & Marketing*, 18(SI),459–473,

Scupola, A. (2021). Adoption of internet-based electronic commerce in Southern Italian SMES, 1'' Nordic Workshop on Electronic Commerce, Halmstad, Sweden

Thurban, E., Lee, D., Warkentin, J. and Chung, H. (2022). Electronic commerce. - A managerial perspective. New Jersey: Prentice Hall

Teng, X., Wu, Z., & Yang, F. (2022). Research on the relationship between digital transformation and the performance of SMEs. *Sustainability*, 14(10), 6012. https://doi.org/10.3390/su14106012.

Uduji, J.I. and Okolo-Obasi, N.V.E. (2024). Nigeria for Women Project (NFWP) and social cohesion in rural livelihoods. *Journal Of Enterprising Communities People and Places in the Global Economy* .http://doi.org/10.1108/JEC-01-2024-0010

Uduji, J.I., Okolo-Obasi, N.V.E., Uduji J.U., Emengini, S. E., Odoh L.C., Iyadi, R. (2024a). Capacity Development for Small Scale Women Entrepreneur and Corporate Social Responsibility in Nigeria's Niger Delta Region. *Social Responsibility Journal* http://doi.org/10.1108/SRJ-03-2024-0199

Uduji, J.I., Okolo-Obasi, N.V.E., Nnabuko, J.O., Ugwuonah, G.E. and Onwumere, J.U. (2024b). Inter-communal violence in sub-Saharan Africa: The role of corporate social responsibility in Nigeria's oil producing region. *Recourses Policy Journal,* https://doi.org/10.1016/j.resourpol.2024.104882

Uduji, J.I., Okolo-Obasi, N.V.E., Nnabuko, J.O., Ugwuonah, G.E. and Onwumere, J.U. (2023). Mainstreaming gender sensitivity in cash crop market supply chain: the role of CSR in Nigeria's oil producing community. *Journal of Agribusiness in Developing and Emerging Economies,* https://doi.org/10.1108/JADEE-09-2023-0228

Uduji, J.I. and Okolo-Obasi, N.V.E. (2023a). Government Enterprise and Empowerment Programme (GEEP) and Women's performance in Entrepreneurship Development in Nigeria. *Development in Practice,* https://doi.org/10.1080/09614524.2023.2178639

Uduji, J.I. and Okolo-Obasi, N.V.E. (2023b). Analysis of Rural Women's Access to Financial Services and Corporate Social Responsibility in Nigeria's Niger Delta region. *African Journal of Science, Technology, Innovation and Development.* https://doi.org/10.1080/20421338.2023.2296673

Uduji, J.I. and Okolo-Obasi, N.V.E. (2023c). Gender and Food Security in Nigeria: The Role of Corporate Social Responsibility in the Oil Producing Communities. *Journal of Global Responsibility,*15(1): 125-150https://doi.org/10.1108/JGR-07-2022-0067

Uduji, J.I. and Okolo-Obasi, N.V.E. (2022a). Gender-Sensitive Responses to Climate Change in Nigeria: The Role of Multinationals' Corporate Social Responsibility in Oil Host Communities. *Journal of Global Responsibility,* 14(1): 89-110, https://doi.org/10.1108/JGR-05-2022-0040

Uduji, J.I. and Okolo-Obasi, N.V.E. (2022b). Gender Inequalities in Rural Labour Markets: The Role of Corporate Social Responsibility in Niger Delta, Nigeria. *Journal of Enterprising Communities: People and Places in the Global Economy,* https://doi.org/10.1108/JEC-05-2022-0073

Uduji, J.I. and Okolo-Obasi, N.V.E. (2022c). Building Social Capital through Rural Women's Groups: The Role of Corporate Social Responsibility in Oil Host Communities. *Journal of Business and Socio-economic Development,* https://doi.org/10.1108/JBSED-07-2022-0079

Uduji, J.I., Okolo-Obasi, N.V.E. and Asongu, S.A. (2021a). Sustainable Peacebuilding and Development in Nigeria's Post-Amnesty Programme: The Role of Corporate Social Responsibility in Oil Host Communities. *Journal of Public Affairs,* 21; e2200, http://doi:10.1002/pa.2200

Uduji J.I. and Okolo-Obasi, N.V.E. (2021). Empowerment of Rural Young People in Informal Farm Entrepreneurship: The Role of Corporate Social Responsibility in Nigeria's Oil Producing Communities. *Journal of Enterprising Communities: People and Places in the Global Economy*, 16(6):924-947, https://doi/10.1108/JEC-04-2021-0054

Uduji, J.I., Okolo-Obasi, N.V.E. and Asongu, S.A. (2021b). Does Growth Enhancement Support Scheme (GESS) Contribute to Youth Development in Informal Farm Entrepreneurship? Evidence from Rural Communities in Nigeria. *Journal of Enterprising Communities: People and Places in the Global Economy,* 15(3):451-476, http://doi:10.1108/JEC-06-2020-0116

Uduji J.I. and Okolo-Obasi, N.V.E. (2020). Youth Empowerment in Non-Timber Forest Products (NTFPs) of sub-Saharan Africa: The Role of Corporate Social Responsibility in Niger Delta, Nigeria. *Journal of Enterprising Communities: People and Places in the Global Economy,* 14(5): 729-752, https://doi/10.1108/JEC-08-2017-0066

Uduji, J.I., Okolo-Obasi, N.V.E. and Asongu, S. A. (2020a). Sustaining Cultural Tourism through Higher Female Participation in Nigeria: The Role of Corporate Social Responsibility in Oil Host Communities. *International Journal of Tourism Research,* 22(1):120-143, https://doi.org/10.1002/jtr.2323

Uduji, J.I., Okolo-Obasi, N.V.E. and Asongu, S.A. (2020b). Analysis of Farmers' Food Price Volatility and Nigeria's Growth Enhancement Support Scheme. *African Journal of Science, Innovation and Development,* 13(4): 463-478, https://doi.org/10.1080/20421338.2020.1814516

Uduji, J.I. and Okolo-Obasi, N.V.E. (2019). Corporate Social Responsibility in Nigeria and Youth in Sustainable Traditional Industries Livelihood in Oil Producing Communities. *Journal of International Development,* 31(7): 658-678, https://doi:10.1002/jid.3432

Uduji, J.I., Okolo-Obasi, Okolo-Obasi, N.V.E. and Asongu, S. A. (2019a). Does CSR Contribute to the Development of Rural Young People in Cultural Tourism of sub-Saharan Africa? Evidence from the Niger Delta in Nigeria. *Journal of Tourism and Cultural Change,*17(6): 725-757, https://doi.org/10.1080/14766825.2018.1502777

Uduji, J.I., Okolo-Obasi, N.V.E. and Asongu, S.A. (2019b). Growth Enhancement Support Scheme (GESS) and Farmers' Fertilizer Use in Rural Nigeria. *African Development Review,* 31(3): 348-363, https://doi.org/10.1111/1467-8268.12394

Uduji, J.I. and Okolo-Obasi, N.V.E. (2018). Young Rural Women Participation in the E-Wallet Programme and Usage Intensity of Modern Agricultural Inputs in Nigeria. *Gender, Technology and Development*, 22(1):59-81, http://doi.org/10.1080/09718524.2018.1445894

Uduji, J.I., Okolo-Obasi, N.V.E. and Asongu, S.A. (2019c). The Impact of E-Wallet on Informal Farm Entrepreneurship Development in Rural Nigeria. *The Electronic Journal of Information Systems in Developing Countries,* 85(3): 1-21, https://doi/10.1002/isd2.12066

Uduji, J.I., Okolo-Obasi, N.V.E. and Asongu, S.A. (2019d). Electronic Wallet Technology and the Enabling Environment of Smallholder Farmers in Nigeria. *Agricultural Finance Review.* 79(5): 666-688, https://doi:10.1108/AFR-2018-0103

Uduji, J.I. and Okolo-Obasi, N.V.E. (2017). Multinational Oil Firms" CSR Initiative in Nigeria: The Need of Rural Farmers in Host Communities. *Journal of International Development,* 29(3): 308-329, http://doi.org/10.1002/jid.3243

UNCTAD. (2019). Economic development in Africa report 2019: Made in Africa – rules of origin for enhanced intra-African trade. United Nations Digital Library System. https://digitallibrary.un.org/record/3825235.

World Bank. (2016). World Development Report 2016: Digital dividends. World Bank. http://documents.worldbank.org/curated/en/896971468194972881/World-developmentreport-2016-digital-dividends.

World Bank. (2020). Small and Medium Enterprises (SMEs). Retrieved from https://www.worldbank.org/en/topic/smefinance.