

EVALUATING THE GENDER-INCLUSIVE UPTAKE OF NEW MEDIA PLATFORMS BY NANO AND MICRO ENTERPRISES IN KANO STATE NIGERIA

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Abstract

This research sought to evaluate the gender-inclusive adoption and utilisation of new media platforms among Nano and Micro Enterprises in Kano State, Nigeria. Situated within the framework of the Digital Divide Theory, the study employed a quantitative data approach collected through a survey questionnaire from 105 purposefully sampled nano and micro business owners across the state. The study tested a hypothesis regarding the relationship between gender and technology adoption; specifically focusing on various new media platforms such as social media networks, mobile phones, and e-commerce. The data analysis involved a descriptive statistics and cross tabulation methodology with a chi-squared test to determine whether significant gender disparities exist within technology adoption and utilisation patterns. The findings indicate that, contrary to the initial hypothesis, gender does not play a statistically significant role in explaining these disparities. Instead, the analysis uncovers age and educational level as more influential factors in determining technology adoption patterns. Notably, both male and female entrepreneurs in the 26-35 age bracket exhibited a higher propensity for adopting and utilising new media technologies. Moreover, those with a secondary school education level showed more extensive usage across various technology categories. The study's implications extend to the development of strategies for fostering digital inclusion in the region, emphasising the need for policy interventions, awareness campaigns, and capacity-building programs targeting women entrepreneurs.

Keywords: Digital technologies, gender, micro enterprises nano enterprises, new media

Introduction

In recent years, digital technologies have transformed the business landscapes of healthcare, finance, education, retail, manufacturing, transportation, entertainment, agriculture, energy and government operations. New media tools in the form of healthcare monitoring devices for example, smartphone-connected glucometers have improved the way for monitoring blood sugar levels, food habits, and activity level offering new opportunities for patients to seek care on time (Takeishi, 2021). The extension of digital technologies is no different in small business enterprises as noted by Malti and Kodge (2021), it has provided avenues for entrepreneurs to engage with customers, expand their markets, and enhance their competitiveness.

However, studies have shown that the adoption and utilisation of these technologies are not evenly distributed, due to gender disparities which are particularly pronounced in many contexts (Love et al., 2023). This means that there is a need to understand the gender dynamics of technology uptake among small scale business owners such as the nano and micro enterprises. This could be crucial for fostering inclusive economic growth and empowering women entrepreneurs.

Kano State, located in Northern Nigeria, has a rich entrepreneurial culture characterised by the presence of numerous small-scale businesses, especially nano and micro enterprises (Khamis & Gumawa, 2020). Gwaison (2021) notes that the state stands as the premier industrial hub in Northern Nigeria and ranks as the second-largest industrial center nationwide. Furthermore, the region boasts a diverse industrial landscape encompassing sectors such as textiles, leather processing, footwear, cosmetics, plastics, enamelware, pharmaceuticals, ceramics, and furniture. The state is also home to enterprises in agricultural tools, beverages, dairy goods, vegetable oils, animal feed, and more.

According to the National Bureau of Statistics (NBS, 2017) report, micro, small, and medium enterprises (MSMEs) account for over 90% of all businesses in Nigeria and contribute to over 50% of the country's GDP. The Small and Medium Enterprises Development Agency of Nigeria (SMEDAN, 2021), also notes that nano and micro enterprises play a vital role in the local economy, contributing to employment generation, poverty reduction, and overall socio-economic development for over 1.7 million people in Kano State. However, small business owners in Kano State often face numerous challenges, including limited access to resources, inadequate infrastructure, and socio-cultural barriers. Furthermore, the NBS notes that the number of medium-sized enterprises in Nigeria decreased significantly from 4,670 in 2013 to 1,793 in 2017, with Kano State experiencing a 70.5% decline in the number of small and medium-sized enterprises. This decline can be attributed to various factors, including the lack of access to finance, inadequate infrastructure, and the unfavorable business environment (NBS, 2017).

Studies on the adoption of new media platforms have predominantly focused on larger firms and businesses (Orser et al., 2019), thereby neglecting the unique challenges faced by nano and micro enterprises in regions like Kano State. Moreover, the gender dynamics of technology adoption within these contexts have received limited attention, despite evidence suggesting significant disparities (Mishra et al., 2020).

Many studies in Nigeria have also solely focused on Small and Medium Enterprises and how they integrate social media into business practices. For example, Oyewobi et al. (2022) in a study explored the influence of social media adoption on the performance of construction small and medium-sized enterprises (SMEs) in Abuja – Nigeria. Another study by Gbandi and Iyamu (2022) investigated the effect of social media marketing on the growth of business providing evidence from selected Small and Medium Enterprises (SMEs) in Benin City, Nigeria.

However, there is a gap on how other new media platforms such as e-commerce and mobile applications are adopted and their impact on entrepreneurial success and growth in Nigeria for nano and micro enterprises (Owoseni et al., 2020). As technologies evolve as is the nature of new media, there is a need to understand the extent to which gender equality and women empowerment are progressing towards their full achievement in Nigeria, particularly in relation to information and communication technologies (Omosebi & Motunrayo, 2021). It is therefore against this background, that this study analyses how the research on gender in the digital economy can contribute to a better understanding of the relationship between gender and the use of new media platforms by nano and micro enterprises. This research endeavors to contribute empirically grounded insights into the gendered dimensions of technological engagement within the entrepreneurial sphere. This study is also pivotal for comprehending the differential access, utilisation, and outcomes stemming from digital tools, thereby delineating the contours of gender inequality in entrepreneurial pursuits. This endeavor aligns with the scholarly discourse emphasising the imperatives of gender-sensitive entrepreneurship policies and interventions (Brush et al., 2018; Jennings & Brush, 2013), thus positioning the study as a critical catalyst for informed policy formulation and programmatic interventions fostering gender equity in entrepreneurial ecosystems.

Additionally, this study aspires to enrich the scholarly canon by identifying the barriers and facilitators that impede or foster gender-inclusive technological adoption. This would offer actionable insights for policymakers, business support entities, and stakeholders vested in bolstering digital entrepreneurship endeavors. This scholarly contribution expands on extant literature advocating for contextually grounded interventions to surmount gender-based barriers to digital inclusion (Dutta & Mia, 2011; Kabeer, 2005), thereby offering a space for academic discourse on gender, technology, and entrepreneurship.

Research Objectives

The objectives of this study are to:

1. Analyse the differences in the uptake (adoption and utilisation) of new media platforms between male and female-owned or managed Nano and Micro Enterprises in Kano State.
2. Examine the factors affecting the gender-inclusive uptake of new media platforms among Nano and Micro Enterprises in Kano State, Nigeria.

Research Questions

In furtherance to the objectives, the following research questions were identified:

1. How does the gender of business owners influence the adoption and utilisation of new media platforms in Nano and Micro Enterprises in Kano State, Nigeria?
2. What are the key factors affecting the gender-inclusive uptake of new media platforms in Nano and Micro Enterprises in Kano State, Nigeria?

Research Hypothesis

The following hypothesis was formulated for the study:

H1 - There is a significant relationship between gender and the adoption and utilisation of new media platforms by Nano and Micro Enterprises in Kano State.

H0 - There is no significant relationship between gender and the adoption and utilisation of new media platforms by Nano and Micro Enterprises in Kano State.

Supporting Theory

The Theory of Digital Divide

The Digital Divide theory posits that various factors, such as socioeconomic status, education, gender, and geographic location, influence an individual's or group's ability to access and effectively utilise digital technologies (Anderson, 2015; Dijk, 2017). Scholars such as Dijk (2017) argue that there is a gap between those who have access to and can use information and communications technologies (ICTs) and those who cannot. The Digital Divide theory, was not developed by a single individual but rather emerged as a concept through the work of various researchers and scholars. The theory was propounded in the 1990s, as the Internet began to become more widely available. While it was initially concerned with the gap between developed and developing countries, studies by notable contributors like William Dutton, Jan van Dijk, and Norris Pippa has since expanded the concept to include other groups within societies, such as women and minorities further developing and popularising the Digital divide theory (Dutton & Reisdorf, 2019; Norris & Inglehart, 2013; Dijk, 2017). The digital divide argument also comes from studies that have shown that women, in particular, may face greater challenges in adopting and using new media platforms due to limited access to resources, digital skills, and social norms (Liff et al., 2004; Vartanova & Gladkova, 2022).

However, while the theory of Digital divide has been influential in understanding technology disparities, it has also faced some criticisms from scholars. One of the main criticisms is the Simplistic Binary argument. Scholars such as Bertot (2003) argue that the Digital divide theory often presents a simplistic binary model that divides individuals and communities into "haves" and "have-nots" solely based on access to technology. Furthermore, Anzera and Comunello (2018) also support this argument by highlighting that the binary approach oversimplifies the complexities of digital inclusion and exclusion. In reality, digital disparities can be multifaceted, involving various factors beyond mere access, such as digital skills, literacy, and meaningful usage. To avoid overlooking the complexities and subtleties in digital inclusion and exclusion, Vartanova and Gladkova (2022) argue that a more nuanced understanding of digital inequality is required.

However, looking beyond what scholars have posited, this theory is useful in examining whether gender disparities in digital literacy and access contributes to the differences in technology adoption between male and female-owned enterprises. This is because other scholars such as Doric (2022), Min and Kim (2021), Ola-Akuma et al. (2023) and Warschauer (2004) have justified the use of the Digital divide theory to shed light on how factors such as business size, industry sector, and location influence technology adoption among small business owners.

Literature Review

Conceptual Framework

Gender disparities and digital inclusion

Gender-inclusive uptake refers to the extent to which both male and female entrepreneurs actively adopt and utilise new media platforms for their business activities. Gender plays a significant role in explaining the variations in technology platform adoption and utilisation between males and females. Research on technology acceptance and usage has consistently highlighted that men and women have different approaches towards technology and hold distinct self-perceptions regarding its use (Ajina et al., 2023). This is a concept called gender dynamics. D'Acunto et al. (2020) claim that gender dynamics refer to the social, cultural, and economic forces that shape the roles, expectations, and experiences of individuals based on their gender. This concept encompasses gender norms, stereotypes, power relations, and socio-cultural expectations that affect women entrepreneurs' access to resources, technology, networks, and decision-making opportunities. According to a literature review by Dwivedi et al. (2021) women entrepreneurs face several challenges in adopting and utilising new media platforms. These challenges include a lack of access to technology, limited digital literacy, and social norms that discourage women from using technology. Furthermore, other studies have shown that women entrepreneurs are less likely to use social media for business purposes than their male counterparts (Dmour & Abuhammad, 2021). This is due to several factors, including a lack of confidence in their digital skills, a lack of time, and a lack of knowledge about how to use social media effectively.

Consequently, the term "digital inclusion" describes the steps taken to guarantee that all people and communities, including the most disadvantaged, have access to and use Information and Communication Technologies (ICTs) (Fountain, 2023). It is an idea that seeks to close the digital divide and advance digital equity by offering users access to affordable, reliable broadband Internet service, Internet-enabled devices that are suitable for their needs, training in digital literacy, high-quality technical support, and software and online resources that facilitate and promote participation, self-sufficiency, and collaboration. It entails assessing the differences in technology adoption and investigating the elements that either facilitate or obstruct gender equality in terms of getting access to and effectively utilising these platforms.

Organisation for Economic Co-operation and Development (OECD, 2021) records that women entrepreneurs often face socio-cultural barriers, such as gender stereotypes and limited access to resources, which hinder their adoption of new technologies. Earlier, in a comprehensive literature review by Braunstein (2019), the author highlighted the importance of gender-inclusive uptake in the context of digital platforms. They opined that promoting gender equality in technology adoption leads to increased innovation, economic growth, and societal development.

Similarly, Musa et al. (2016) explored the factors influencing gender-inclusive uptake of mobile marketing. The study identified self-efficacy, perceived usefulness, and social influence as key determinants of technology adoption among both male and female users. Another study conducted in Rwanda to investigate the gender digital divide by Mumporeze and Prieler (2017) discovered that the persistence of social, economic, and cultural factors hindered women's access to and the use of ICTs. Additionally, the study underscored the potential economic benefits of achieving gender parity in ICT access and suggested education and gender-sensitive strategies as key steps toward addressing the issue. Latest studies have focused on the role of social networks in promoting gender-inclusive uptake of digital platforms such as the study by Rahman et al. (2023) where the authors highlighted the significance of supportive networks and mentoring relationships in empowering women entrepreneurs to embrace new technologies. Previous research by Orser et al. (2019) found that women entrepreneurs face several challenges in adopting and utilising new media platforms, including a lack of access to technology, limited digital literacy, and social norms that discourage women from using technology.

New Media Platforms

New media platforms encompass a wide range of digital technologies and communication tools that facilitate online interactions, content sharing, and business activities (McMullan, 2017; Shaikh, 2018). Old media and new media technologies differ in several ways. In contrast to new media, Uduak (2021) describes communication delivery systems that are relatively independent, static, and historical such as newspapers, magazines, radio, and television as old media. This is because scholars such as Cramer (2015) note that new media technologies are characterised by their interactivity, digitisation, convergence, and networking capabilities.

With the advancements in technology, new media and social media are often used interchangeably, but they are not the same thing. Penn (2021) claims that new media refers to the various forms of digital communication technologies that are characterised by digital-first content and low physical costs. New media technologies have emerged in recent years, such as the Internet, mobile devices, and social media platforms. On the other hand, Social Media is a subset of new media that focuses on social networking and user-generated content. Furthermore, Adeola et al. (2022) notes that new media allows users to create, share, and consume content in real-time, across multiple platforms and devices. New media technologies also enable user-generated content, social networking, and personalised experiences, which are not possible with old media. The new media concept includes social media platforms, e-commerce websites, mobile applications, and other emerging digital platforms that enable entrepreneurs to engage with customers, promote their products or services, and conduct transactions (Penn, 2021). Komunte (2015) notes that the mobile phone is an economic tool that liberates women entrepreneurs from poverty and empowers them with knowledge. Additionally, Komunte (2015) notes that social media and mobile technologies can provide women entrepreneurs with opportunities to overcome traditional constraints, expand their businesses, and enhance their economic participation.

Nano and Micro Enterprises

The terms "nano enterprise" (NE) and "micro enterprise" (ME) are used to describe small businesses with limited resources (SMEDAN, 2021). The definitions of nano and micro enterprises vary from country to country. For example, in the United States, the Small Business Administration (SBA) defines a micro enterprise as a business with fewer than 10 employees and annual sales of less than \$2 million (Pedraza, 2021). In the United Kingdom, the Department for Business, Energy and Industrial Strategy (BEIS) defines a micro enterprise as a business with fewer than 10 employees and annual turnover of less than \$2.5 million.

In Nigeria, the SMEDAN (2021) defines nano enterprises as "self-employed individuals or unpaid family workers who operate micro-enterprises with no paid employees." The agency also defines micro enterprises as small unregistered or registered businesses with up to 5 employees and annual turnover or total assets of less than N3 million. This definition is consistent with the definition of nano enterprises used by the International Labour Organization (ILO, 2002) which defines nano enterprises as self-employed individuals or unpaid family workers who operate micro-enterprises with no paid employees."

SMEDAN (2021) recognises the importance of nano enterprises in the Nigerian economy. Nano enterprises are the smallest type of businesses in Nigeria, and they play a significant role in creating jobs, generating income, and contributing to economic growth. Nano enterprises are the smallest type of businesses and typically have no employees. They are characterised by low investment requirements and low turnover. Nano and micro enterprises represent the smallest scale of businesses, often operated by a single entrepreneur or a small team with limited resources and a local or niche market focus. Furthermore, SMEDAN's position on nano enterprises is that they should be supported and encouraged to grow. The agency believes that nano enterprises have the potential to be a major driver of economic growth in Nigeria, and it is committed to providing them with the support they need to succeed. NMEs play a vital role in the economy, especially in developing regions such as Kano State, where they contribute to employment generation, poverty reduction, and local economic development.

Policy Frameworks and Interventions

As demonstrated by Braun (2022), policy frameworks contribute immensely on gender-inclusive uptake of technology in small and medium-sized enterprises. Braun emphasises the importance of policy frameworks that address gender disparities and provide support mechanisms to enhance women's access to technology and digital skills. Sadiq et al. (2022) notes that in Nigeria, policy interventions have played a significant role in promoting gender-inclusive uptake of technology in small and medium-sized enterprises (SMEs). These are interventions that aim to address gender disparities, enhance women's access to technology, and empower them to effectively utilise digital platforms. In Nigeria, Digital Skills Nigeria (DSN) is a notable policy intervention. DSN is a multi-year, multi-stakeholder private-public-non-profit partnership designed by Microsoft for the purpose of building the capacity of key government Ministries, Departments and Agencies (MDAs) to offer sustainable, scalable reskilling and employment services aligned to the local labor markets. Maria (2023) notes that the program focuses on providing access to digital skills training (from digital literacy to advanced training) for young people in Nigeria between the ages of 16-35 years. DSN is implemented as a collaboration between Microsoft, The Federal Ministry of Communication and Digital Economy, Tech4Dev, and private and public sector stakeholders.

Consequently, the impact of this policy intervention on gender-inclusive technology uptake in Nigerian SMEs can be observed in several ways such as digital skills training and capacity building; Access to Finance and Resources; Gender Mainstreaming in Technology Policies; Creation of Supportive Ecosystems and Awareness Campaigns and Advocacy.

Another policy intervention is the National Information Technology Development Agency (NITDA). The National Information Technology Development Agency (NITDA) is a Federal Government agency set up by an act of the National Assembly for the implementation of the Nigerian Information Technology (IT) policy. The agency is responsible for the development, regulation, and promotion of Information Technology (IT) in Nigeria. Their mandate is to develop and regulate IT for sustainable national development. The priorities of the agency are developmental regulation, digital literacy and skills, solid infrastructure, service infrastructure, digital services development and promotion, software infrastructure, digital society and emerging technologies and indigenous content development and adoption. Although a new initiative by the government was launched in 2023, NITDA is to organise training for Women in ICT, covering key skill areas in entrepreneurship, business, ICT and communication.

These initiatives aim to enhance the technological literacy, knowledge, and confidence in utilising digital tools and platforms. By equipping women with the necessary skills, they would be better prepared to adopt and leverage technology in their SMEs, leading to increased participation in the digital economy. Additionally, NITDA have focused on raising awareness and advocating for gender equality in technology adoption. These campaigns aim to challenge societal norms, stereotypes, and biases that hinder women's access to and utilisation of technology.

Challenges in Adopting New Media Advertising for Small Businesses

Digital literacy is a key factor that affects the gender-inclusive uptake of new media platforms in Nano and Micro Enterprises in Nigeria. According to a study published in the *Journal of Business Research*, digital literacy is a significant predictor of social media adoption among small and medium-sized enterprises (SMEs) (Nawi et al., 2019). Women entrepreneurs who lack digital literacy skills may find it difficult to use new media platforms effectively.

Access to technology is another factor that affects the gender-inclusive uptake of new media platforms in Nano and Micro Enterprises in Nigeria. According to a 2019 report by the International Telecommunication Union (ITU), women are less likely than men to have access to technology, particularly in developing countries. This lack of access can limit women's ability to use new media platforms for their businesses.

A major consideration also are cultural factors such as language barriers and differing communication and norms which can significantly affect the effectiveness of new media tools for NMEs in different regions of Nigeria. As noted by Adebayo and Hassan (2021), cultural factors are critical in understanding the adoption and effective use of technology among SMEs in Nigeria. For instance, in

some regions, a particular social media platform may be more widely used than others due to cultural norms or language preferences, thus affecting the reach and impact of new media advertising on the target audience. Similarly, a study by Oyewobi and Adesina (2020) highlighted the importance of considering cultural and contextual factors in the design and implementation of digital marketing strategies for SMEs in Nigeria.

Methodology

To comprehensively understand the gender-inclusive uptake of new media platforms, a survey approach was employed. This approach allowed for the collection and analysis of quantitative data, providing a more nuanced understanding of the phenomena (Creswell & Creswell, 2018). Survey questionnaires, which were designed using Google Forms, were utilised to gather information from nano and micro business owners in Kano State. These structured questionnaires included items specifically tailored to evaluate the extent of adoption and utilisation of new media platforms, as well as to explore the barriers and facilitators influencing gender-inclusive uptake. To create a representative sample, a purposive sampling technique was employed, purposefully selecting 105 nano and micro business owners across Kano State, with a focus on various sectors and regions, including key business hubs such as Sabon Gari, Kofar Wambai, Yan Kaba, Dawanu, and YanKura Markets. The sample size is appropriate based on resource constraints and practical considerations of the study (Lakens, 2022). The data collection phase spanned three months, from February to April 2023, allowing for comprehensive data gathering under varying conditions and seasons.

The data collected for this study was subjected to a systematic analysis. The analysis used a Cross-tabulation analysis to explore the relationship between gender, age, educational levels and the utilisation of new media platforms, while descriptive statistics (mean) was utilised to summarise the data. Furthermore, hypothesis testing was performed using a Chi-squared distribution test to determine statistically significant relationships or differences between variables such as gender and the adoption of new media platforms. The results were interpreted within the context of the research objectives, providing valuable insights into the gender-inclusive uptake of new media platforms by these enterprises. To enhance data comprehension, the findings were presented in a clear and organised manner, particularly the use of contingency tables.

Result

Cross-Tabulation Analysis

This study performed a cross-tabulation analysis of the data provided, to examine the relationships between variables: Sex, Age Range, Level of Education and New Media Tools Used for Business. The percentage distribution of respondents in each category are presented and analysed below:

Table 1. Cross tabulation analysis by age, gender, educational level and new media technologies

I. Sex	New Media Technologies Adopted & Utilised	Level of Education	Age Range	Frequency	Percentages (%)
FEMALE	POS	Secondary School	26 – 35	1	2.33
	POS Total			1	2.33
	Social Media Networks (e.g., Facebook)	Diploma	36 – 45	5	11.6
			26 – 35	1	2.33
		Primary School	36 – 45	1	2.33
		Secondary School	18 – 25	2	4.7
			46 and above	1	2.33
		Undergraduate	18 – 25	3	7

		26 – 35	6	14	
		36 – 45	8	18.6	
		46 and above	1	2.33	
Social Media Networks (e.g., Facebook Total)			29	67.4	
Mobile Phones	Basic/Primary School	36 – 45	1	2.33	
		Diploma	1	2.33	
		Secondary School	1	2.33	
	Undergraduate	26 – 35	4	9.3	
		36 – 45	1	2.33	
		18 – 25	2	4.7	
		26 – 35	2	4.7	
Mobile Phones Total			12	27.9	
Ecommerce	Undergraduate	18 – 25	1	2.33	
Ecommerce Total			1	2.33	
Female Total			43	40.95	
MALE	P.O. S		0	0	
	Social Media Networks (e.g., Facebook)	Diploma	26 – 35	1	0.9
			Secondary School	1	0.9
		Undergraduate	26 – 35	3	4.8
			36 – 45	2	3.2
			46 and above	1	0.9
			18 – 25	3	4.8
			26 – 35	2	3.2
			36 – 45	6	9.7
		Basic/Primary School	18 – 25	1	0.9
			26 – 35	1	0.9
	Social Media Networks (e.g., Facebook Total)			21	33.9
	Mobile Phone	Diploma	26 – 35	3	4.8
			36 – 45	4	6.5
Secondary School		18 – 25	2	3/2	
		26 – 35	13	21	
		36 – 45	5	8.1	
Undergraduate		18 – 25	3	4.8	
		26 – 35	3	4.8	
Mobile Phone Total			36	58.1	
Ecommerce	Undergraduate	26 – 35	5	8.1	
Ecommerce Total			5	8.1	
Male Total			62	59.05	
Grand Total			105	100%	

Source: Field Survey, 2023

Table 1, highlights the differential adoption patterns of new media technologies among males and females, with age and educational level serving as influencing factors. The age group 26 – 35 is the most active across both genders and various new media technologies as both males and females in this age range predominantly use social media networks which include Facebook and mobile phones for business. While the engagement remains significant for those within Ages 36 – 45, there is a slight decline in activity compared to the 26-35 age group. However, the use of mobile phones remains consistent across both genders. This suggests that there is a predominant role of social media networks and mobile phones in business activities, especially among younger demographics (26-45 age range). However, there is a notable gender difference in the utilization of new media technologies, with males showing higher engagement rates across most categories.

Table 2. Average knowledge scores for new media usage

New Media Technology	Average Knowledge Score	
	Males	Females
WhatsApp	5.0	4.9
Twitter	2.3	1.7
Facebook	4.5	4.5
TikTok	2.2	2.2
YouTube	1.5	2.0
Pinterest	2.0	2.0
LinkedIn	5.0	3.3
Instagram	0.7	2.5
Likee	2.2	2.5
Snapchat	2.5	2.4
Telegram	2.8	3.6
Ecommerce	3.1	1.5
P.O.S	3	2

Source: Field Survey, 2023

Table 2, shows the average (mean) knowledge scores for different new media technologies among male and female respondents. The scores are on a scale of 1 to 5, with a higher score indicating greater knowledge or familiarity with the technology. Both males and females have high knowledge scores for WhatsApp, with males having a slightly higher average score (5.0) compared to females (4.9). Similarly, Twitter, males have a higher average knowledge score (2.3) compared to females (1.7). However, the scores for both genders were relatively low, indicating that respondents, in general, have limited knowledge of Twitter. The lowest average scores for both males and females were for Instagram (0.7 for males and 2.5 for females), E-commerce (3.1 for males and 1.5 for females) and P.O.S (3 for males and 2 for females).

The findings suggest that while both genders demonstrate a solid understanding of several new media platforms, there are notable differences in their familiarity and proficiency across specific applications.

Table 3. Benefits of using new media platforms

Reasons	Percentage		Percentage		Total
	Female	(%)	Male	(%)	
To chat with friends	11	25.58	2	3.23	13
To promote products/services	0	0	1	1.61	1
To expand my market	6	13.95	21	33.87	27
To find new customers	13	30.23	8	12.90	21
To increase sales	1	2.33	0	0	1
To connect with customers	12	27.91	30	48.39	42
Total	43	100%	62	100%	105

Source: Field Survey, 2023

Table 3, shows the reasons for using new media. For males, the most prominent usage of new media is "To connect with customers", with a percentage of 48.39%. On the other hand, for females, the most prominent usage is "To chat with friends", with a percentage of 25.58%.

These findings suggest that males predominantly use new media platforms as a tool for business-related activities, particularly for customer engagement while females, on the other hand, use these platforms more for social interactions and maintaining personal relationships.

Table 4. Challenges of using new media platforms

Challenges of using E-commerce	Female	Female	Male	Male
		Percentage (%)		Percentage (%)
I am not aware of what e-commerce can offer	22	51	15	24
I am not aware that I can use E-commerce for my business	20	47	46	74
It takes time to use	1	2	1	2
Total	43	100%	62	100%

Challenges of using social media	Female	Female	Male	Male
		Percentage (%)		Percentage (%)
I do not know any marketing strategies	1	2	0	0
I am aware of these platforms but don't know how to use them for business	8	19	4	6
I am not aware of what the platforms can offer	1	2	0	0
I lack access to facilities such as smartphone	2	5	1	2
High cost of data	23	53	2	3
Poor Internet	3	7	52	84
It takes time	5	12	3	5
Total	43	100%	62	100%

Source: Field Survey, 2023

Table 4, shows the challenges of using e-commerce and social media platforms by gender. Approximately 51.2% of females (22 individuals) with 24.2% of males (15 individuals) reported being unaware of what e-commerce can offer. Similarly, 46.51% of females (20 individuals) and 74.19% of males (46 individuals) were unaware they could use e-commerce for their business endeavors. In terms of challenges of using social media, 53.5% (23 females), in contrast to 3.23% of males (2 respondents) identified the high cost of data as a challenge when using social media platforms.

Hypothesis Testing

H1 - There is a significant difference in the adoption and utilisation of new media platforms between male-owned and female-owned or managed Nano and Micro Enterprises in Kano State. The hypothesis was tested using the chi-square distribution and it was compared to the critical value. The chi-square test statistic is calculated as the sum of the squared differences between the observed and expected frequencies divided by the expected frequencies:

$$\chi^2 = \sum ((O - E)^2 / E)$$

where

O = Observed frequency

E = Expected frequency

[expected frequency was calculated for each cell = (Row Total × Column Total) / Grand Total]

For the hypothesis (H1), we compared the adoption and utilisation of new media platforms between male-owned and female-owned or managed Nano and Micro Enterprises. As shown in Table 5 below:

Table 5. Correlations (*N* = 379)

Gender	Social Media Networks (e.g.		Mobile Smart Phone		e-Commerce		POS	
	Expected	Observed	Expected	Observed	Expected	Observed	Expected	Observed
Female-Owned/Managed	20.6	29	19.6	12	2.5	1	0.4	1
Male-Owned/Managed	29.6	21	28.3	36	3.5	5	0.6	0
chi-squared value	0.01494		0.02474		0.21419		0.22067	
df	1		1		1		1	
p-value	0.90273		0.87502		0.64350		0.63853	
chi-squared value	0.00289							
df	3							
p-value	0.99996							

Notes: Chi-square test

Table 5 shows the expected and observed values for the adoption and utilisation of new media platforms by male and female owned/managed Nano and Micro Enterprises in Kano State. The p-value indicates whether there is a significant difference between the expected and observed values.

All the p-values are relatively high (all greater than 0.05) for each of the new media platforms tested - social media networks, mobile smart phone, e-Commerce, and POS, the p-values indicating that there is no significant difference between the expected and observed values for male-owned and female-owned or managed Nano and Micro Enterprises in Kano State. Therefore, we cannot reject the null hypothesis that there is no significant difference in the adoption and utilisation of new media platforms between male-owned and female-owned or managed Nano and Micro Enterprises in Kano State.

Discussion of Findings

This study sought to provide empirical evidence and insights into the dynamics of gender-inclusive technology adoption in nano and micro enterprises in Kano State with two specific objectives.

Objective 1, sought to analyse the differences in the uptake (adoption and utilisation) of new media platforms between male and female-owned or managed Nano and Micro Enterprises in Kano State. The data shows that there are more male respondents (62) than female respondents (43). This indicates a gender disparity in business ownership and management within the nano and micro enterprises in Kano State, Nigeria. Particularly, the higher percentage of male business owners/managers suggests that women are underrepresented in this entrepreneurial domain. In terms of the uptake (adoption and utilisation) of new media, the data indicates that Mobile Smart Phone and Social Media Networks (e.g., Facebook) are the most popular technologies used for businesses among the respondents.

Additionally, there is a notable gender difference in the usage of certain technologies, with females showing more interest in E-commerce sites compared to males, while males dominated the use of social media platforms for business. The data also reveals gender-based disparities in the use of new media technologies among the surveyed population. For social media networks (e.g., Facebook), females displayed a notably higher usage rate compared to males. On the other hand, for e-commerce platforms, a slightly higher proportion of males used them. POS systems were used by a very limited number of respondents, with a slight inclination towards females. A substantial portion of the respondents, both female and male, indicated that they do not use any of the mentioned technologies.

Consequently, the gender disparity in business ownership and management has implications for understanding the adoption and utilisation of new media platforms in these enterprises. This is because, women's underrepresentation in business leadership positions could potentially influence decision-making processes regarding the adoption and utilisation of new media platforms, as well as access to information and training related to technology (Orser et al., 2019).

Objective 2, sought to examine the factors that affect the gender-inclusive uptake of new media platforms among Nano and Micro Enterprises in Kano State, Nigeria. To generate more options on responses, the survey considered both the benefits and challenges. The gender disparities at play among 105 respondents in terms of participation is an important factor to consider when evaluating the gender-inclusive uptake of new media platforms by nano and micro enterprises in Kano State, Nigeria. The

findings demonstrate that females primarily use new media platforms for social interaction, with 8% mentioning "To chat with friends." Additionally, only 26% utilised these platforms for business and marketing purposes, with 12% mentioning "To find new customers" and 14% mentioning "To promote products/services."

On the other hand, males showed a greater inclination towards using new media platforms for business and marketing purposes. The highest percentage (26%) for males is for "To expand my market," indicating a strong focus on market expansion. They also mentioned other business-related reasons such as "To connect with customers" (1%), "To find new customers" (10%), and "To promote products/services" (19%). Cumulatively, majority of respondents were not inclined to using new media platforms to promote their products or services or to augment sales respectively.

While a higher percentage of males, displayed a stronger focus on business and marketing purposes, females demonstrated a more balanced usage pattern, engaging in both social interaction and business/marketing activities. These findings align with the postulations of Dmour and Abuhammad (2021) that women entrepreneurs are less likely to use social media for business purposes than their male counterparts.

In contrast, there were a few notable challenges affecting the adoption and utilisation of new media for business with profound gender disparities in the context of e-commerce, there is a significant gender gap in awareness, with over 51% of females unaware of e-commerce's potential compared to around 24% of males. A similar gap is observed in recognising the applicability of e-commerce for business, where nearly 47% of females were unaware, whereas approximately 74% of males faced this challenge. In terms of time constraints, both genders reported minimal issues.

For social media, a minor gender disparity emerged in terms of knowledge gaps, with a higher percentage of females acknowledging uncertainty in using these platforms for business purposes. A slight gender disparity is also observed when examining combined challenges, where only one female reported a combination of awareness and utilisation issues. While females reported a lack of access to facilities, primarily smartphones, it affects both genders to some extent. Notably, high Internet data cost was another challenge with a pronounced gender disparity, with more than half of the females grappling with this issue; while only a small percentage of males reported it. Poor Internet connectivity represents a significant challenge, predominantly affecting males, with over 83% reporting issues. This further strengthens the submissions by Vartanova and Gladkova (2022) who argue that a more nuanced understanding of digital inequality is required in view of the weaknesses of the Digital Divide Theory as merely a Simplistic Binary position. Additionally, the perception of social media as time-consuming exhibits a slight gender disparity, with more females finding it so compared to males.

These findings are consistent with Orser et al. (2019) and aligns with the digital divide theory (Djik, 2017) underscoring the need for tailored interventions to address these disparities and promote a more equitable environment for entrepreneurs, particularly female entrepreneurs to promote gender-inclusive participation in the digital economy and foster economic growth.

The study conducted one hypothesis to ascertain if there was a significant relationship between gender and the adoption and utilisation of new media platforms by Nano and Micro Enterprises in Kano State. The chi-squared test for each of the new media platforms revealed that, there was no strong evidence to reject the null hypothesis. In other words, the gender disparities in the adoption and utilisation of these platforms were not statistically significant. This implies that, based on this analysis, gender is not a significant factor in explaining the differences in platform adoption and utilisation among nano and micro enterprises in Kano State, Nigeria. This is contrary to the submissions of Dwivedi et al. (2021), Ajina et al. (2023)

But age and educational level could be a determining factor as shown in the cross-tabulation analysis conducted to provide valuable insights into the distribution of respondents across different categories to better understand the relationship between gender, age, education, and technology adoption in nano and micro enterprises in Kano State, Nigeria. Findings demonstrate that both females and males in the age range of 26-35 show relatively higher utilisation and adoption of new media technologies, social media networks, mobile phones, and e-commerce.

Additionally, secondary school level of education appears to be associated with higher utilisation across different categories. These findings suggest that businesses in Kano State, regardless of gender, are more influenced by age and education when it comes to technology adoption and utilisation, which has implications for understanding and improving digital inclusion in this region. This aligns with the

submissions of Ajina et al. (2023) whose studies have shown that younger entrepreneurs and those with some levels of education are more likely to adopt and utilise technology in their businesses. It is essential to recognise that not all small enterprises are the same. Some may be more technologically advanced than others, and this can be attributed to the age and educational levels of the entrepreneurs.

In conclusion, contrary to the hypothesis, there is no strong evidence to support significant gender disparities in the adoption and utilisation of new media platforms by Nano and Micro Enterprises in Kano State, Nigeria. However, the analysis suggests that other factors, such as age and educational level, may play a more prominent role in determining technology adoption patterns in nano and micro enterprises.

There also remains specific challenges and opportunities faced by NMEs in adopting and utilising new media platforms, with a particular emphasis on gender disparities and the empowerment of women entrepreneurs in view of the theory of digital divide. Notably the study submits that digital literacy, access to technology, Internet cost, inadequate training, and perceived benefits are barriers that shape the gendered patterns of technology uptake in Nigeria. Although, Nigeria has implemented some policy interventions, little progress seems to have been made in promoting gender-inclusive uptake of technology in Nigerian as challenges remain. This is evident in the 51% of the female business owners in Kano who noted they were not aware of what e-commerce can offer.

Recommendations

To promote gender-inclusive uptake of new media platforms, it is crucial to address the underlying factors contributing to the gender gap in business ownership and management. Hence, the study recommends the following:

1. Private organisations, Non-Profit Organisations and Software Development Companies should implement initiatives that support both female and male entrepreneurs by providing training and accessible resources.
2. Governments and telecommunications regulators can collaborate to introduce subsidized data plans tailored for small businesses to alleviate the financial burden of data costs, making it more feasible for NMEs.

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