



AEFUNAI JOURNAL OF ECONOMICS,
FINANCE AND DEVELOPMENT STUDIES

AEFUNAIJEFDS

Department of Economics and Development Studies
Alex Ekwueme Federal University, Ndufu-Alike Ikwo, Ebonyi State, Nigeria.

Website: <https://www.ecofunai.ng>

ISSN (Print): 2536-6793 | ISSN (Electronic): 2536-6742
Volume 3 (1) February, 2026 (pp 637 - 655)

Submitted November 2025; Published March 2026

DIGITAL ECONOMY, ECONOMY TRANSFORMATION, AND POVERTY ALLEVIATION IN NORTH CENTRAL NIGERIA

Abah, Patricia Onyemowo & Godfrey Ofana Ojeka

Department of Economics, Federal University of Lafia, Nasarawa State, Nigeria

E-mail - mowopat@gmail.com

ABSTRACT

Economic digitization in Nigeria not only creates and boost self-esteem and sense of belonging, but also enhances the accessibility of communication by the majority of the poor and excluded from social media and information channels, mobile banking, and e-commerce activities. This study examined the effect of the digital economy on economic transformation and poverty reduction in North Central Nigeria. The field survey was conducted on a sample of 6436 respondents drawn from 9 local government areas across three senatorial districts of the selected states: Plateau, Nasarawa, and Benue states. A stratified sampling method and snowball sampling technique were used in sampling the population from small-scale farmers small scale businesses of various fields. A modified three-point Likert scale and ordered logistic regression were used to analyze the responses from 6436 questionnaires with a satisfactory response rate of about 80 percent. The study revealed that Digital Access, Digital Skills, and Economic Transformation are statistically significant factors influencing poverty alleviation in the study area. The study therefore recommends that efforts to alleviate poverty in the region should be prioritised by expanding access to digital infrastructure, reducing the cost of connectivity, and investing in inclusive digital skills programmes, particularly for content creation, and entrepreneurial innovation should be emphasized. Policymakers and development partners should also support initiatives that enable digital tools to be applied in agriculture, commerce, education, and health in the region.

Keywords: Digital Economy, Self-esteem, Economic Transformation, and Poverty Alleviation.

Citation: Abah, P. O., & Ojeka, G. O. (2026). Digital economy, economic transformation, and poverty alleviation in North Central Nigeria. *AEFUNAI Journal of Economics, Finance and Development Studies*, 3(1), 637–655.

1. Introduction

Nigeria since the war is permeated with lack in agricultural produce and manufacturing output resulting to abject poverty as a result of many factors such as community clashes, Boko Haram, insurgency and banditry in the regions (Ya'u & Yusuf, 2022), unsustainable agricultural practices, such as reliance on rain-fed agriculture, and wrong pragmatic government agricultural policies (Abah & Abah, 2024), which bedeviled the region and negates the efforts of the governing and management council of the region in the agricultural regional development and poverty reduction at large in the region. According to San (1981), poverty is a lack of people's expansion of economic opportunities and capabilities. It could mean expansion of opportunities to enhance people's abilities to live the lives they value, rather than just increasing their income, evident in good health, well-nourished education, discouraging inequality, and encouraging capability and efficiency.

It is obviously becoming unrealistic for the struggle to be left alone in the hands of the government, especially to tackle the daunting finance and institutions in the region, since finance and institutions are a crucial factor in agricultural processes.

The digital economy has become a response to this quest, especially in regions such as the North Central of Nigeria, where traditional economy options, such as production, distribution, and consumption, are guided by customs, traditions, and beliefs rather than by money or government intervention (Abdullahi & Akinyemi, 2021).

Digital economy, according to Afolabi (2023), is economic activities driven by digital technologies, encompassing online connected transactions, and the use of digital tools in various forms in various sectors. These include e-commerce and online financial services, as well as digital skills development and remote work, which hold the potential to disrupt traditional economic models and create a pathway for inclusive growth, economic transformation, and poverty reduction.

Economic transformation is a dynamic process of shifting resources and activities from low-productivity sectors to high-productivity sectors (Dirk, 2021). This involves a change in economic structure, moving traditional industries towards more modern, high-value sectors; diversification of the economy, increasing the range of economic activities (Beecroft et al, 2022). This is done by being involved in technological innovation and adoption of new technologies, through information and communication technologies, leading to product and service creation, to meet the evolving competitiveness, consumer, and market demand, and ultimately poverty alleviation and a higher standard of living.

All over the world, information and communication technologies have brought about economic growth and development, especially in the lives of people as they provide sustainable new-sprung ways of communication, paying, selling, and probing into a better life and living. According to IAB (2025) digital economy in the United States in 2022 contributed \$3.7 trillion to gross output and form the substantial portion of the USA's GDP. Although it has been argued that digital economy in the Europe, compare to that of USA lag in most of the use and spread of information and communication technology, according to

ProQuest (2024), GDP growth rate in Europe increase by 6% in 2023, 1.1% in 2024, 1.2% in the second quarter on 2025, implying an increase and steady productivity and China through digital economy has experience substantial growth and expansion in its Yuan from 11 trillion Yuan in 2012 (21.6%) to over 50.2 trillion (41.5%.) in 2022(Datasets, 2024).

In African nations, the development of the digital economy has a pictorial impact. The digital economy is projected to contribute significantly, with estimate suggestion of 5.2% by 2025 and potentially reaching 8.5% by 2050 (African Digital Economy, ADE, 2024). Also in the sub-Saharan Africa region, according to the Mobile Economy Sub-Saharan Africa (2022) (GSMA, 2022), in 2021, digital technologies, particularly mobile services, contributed about 8% of sub-Saharan Africa's GDP,

Nigeria's digital economy revenue rose from US\$5.09 billion in 2019 to US\$7.13 billion and US\$9.97 billion in 2020 and 2021, respectively. In the North Central of Nigeria, Okopi (2024) asserted that the digital economy has boosted farmers' self-esteem, sense of belonging, and legal status. Also, according to Okopi (2024), Farmers in the region of Nigeria are connected to wide markets, allowing them to access financial services like saving, payments, and taking out microloans, which improve their financial stability and participation and poverty reduction in the economy of the region.

The mediating factor, economic transformation, can only be effective through the digital factor in the economy. Digital economy could transform, not only in its productivity, but by improving the socio-economic status (increase income, sustenance, job creation, edification and health) of the people in the area. This could be done through the use of platform such as E-commerce and market access where digital platforms connects small businesses and farmers to wider markets, allowing them to easily sell the goods and availing increase income and other opportunities such as Education and skill evolution; where online learning program can brings about the edification and training opportunities, especially in the rural area, enabling the poor acquire skills for employment generation' and Telemedicine services.

This study, therefore, delved into the current state of the digital economy in the region, examining the existing infrastructure and key sectors involved and critically analyzing the mechanisms through which the digital economy can contribute to economic growth and the general welfare of the people in the region.

Research Question

How has digital economy and economic transform affect poverty alleviation in North Central Nigeria?

Objective of the study

The objective of this study is to determine the effect of the digital economy and economic transformation on poverty alleviation in North Central Nigeria.

Research hypothesis

The digital economy and economic transformation do not significantly have a positive effect on poverty alleviation in North Central Nigeria.

2. LITERATURE REVIEW

2.1 Conceptual Literature

Concept of Digital Economy

Tapscott (1995) and Bureau of Economic Analysis (BEA, 2024) defined the digital economy as economic activity resulting from billions of daily online connections between people, businesses, devices, data, and processes. According to him, this includes e-commerce digital service, digital media, online advertisement, and cloud computing. Nhuyen (2023) sees the digital economy as the use of information technology to create, adapt, market, and consume goods and services that are based on the use of information technology, in order to make money (profit-driven application of IT).

Goldfarb and Tucker (2019), on another dimension, asserted digital economy is a factor that reduces five distinct economic costs in research, replication, transportation, tracking, and verification from economic possibilities, enabled by lower transaction costs. For this study, and adopting Tapscott (1995) and BEA(2024), the digital economy is an online economic activity that eventually leads to an increase in higher wages and improved living standards for the poor.

2.2 Concept of Economic Transformation

Economic transformation, according to Chang (2011), is a process of shifting resources from the low-productivity agricultural sector to the high-productivity manufacturing sector, leading to structural changes and increased market integration. According to Willem te Velde, Booth, Leipziger, Uneze (2016), it is the process of improving the quality of economic growth by promoting high productivity, inclusive growth, by meeting the aspirations of people and reducing poverty, and bringing about sustainable economic development. Zeleny (2025) supported Uneze et al (2016) by saying that economic transformation is an unidirectional and irreversible change in dominant human economic activity, driven by accelerating productivity growth, which is in turn fueled by advances in technology, useful innovations, accumulated practical knowledge and experience, improved education levels, quality decision-making, and organized human efforts. To this study, economic transformation means adopting new technology that helps facilitate economic structural changes that will alleviate poverty among the people in North Central Nigeria.

Concept of poverty alleviation

Poverty by San (1981) is not merely a lack of income but a lack of capability and deprivation. This means that poverty is the absence of real opportunities or freedom for a group of people to achieve valuable functions such as being well-nourished, healthy, educated, and having self-respect in their communities.

Sachs (2006) sees poverty alleviation as a big push for integrated investments. He argued that extreme poverty is not just about individual failures but systemic issues that prevent development. He suggests providing significant coordination and investment in areas such as agriculture for sustenance, health, and education to break the poverty cycle. To this study, poverty alleviation means a direct attack on poverty by a broad systemic changes and structural transformation through devices that brings changes through the intervention of people and through aiding technologies that address specific challenges faced by the poor in their daily lives.

2.2. Theoretical Literature and Framework

This study is guided by Sen(1980) and the Neoclassical Growth (Solow-Swan model and Endogenous Growth Theory (Romer, Lucas). Sen (1980)'s theory emphasizes the importance of expanding people's capabilities on opportunities to achieve well-being and live the life they value. These opportunities include economic opportunities, such as access to devices like digital platforms which enhance job searching and creation, and financial services. Social capabilities, such as connecting with social networks, accessing information, and participating in civic life. Health and education capabilities, such as access to online health information and e-learning.

Traditionally, the Neoclassical and endogenous growth theories of economic growth emphasize capital accumulation, labour, and technological progress as drivers of economic growth. In the context of the digital economy, digital technologies are seen as a new form of capital(digital infrastructures, software, and data) and are a powerful enabler of technological progress. Digitization through these devices can boost the overall economic productivity, improve efficiency across the sector, fostering innovation through creating new digital products, services, and bushiness model that generate wealth and employment.

The important note to these theories is that a broad range of choices and opportunities available and the trickle-down effect suggest that the overall economic growth, driven by digital transformation, will eventually lead to increased employment, higher wages, and improved living standards for the poor, and through the digital means, their capabilities are enhanced, directly contributing to poverty reduction.

2.3 Empirical Review

The empirical literature reviewed in this study is divided into two strands: The first strand of the reviewed literature examines the relationships between the digital economy and economic transformation. The second strand focuses on the effect of the digital economy on poverty alleviation. Many studies on the digital economy have attributed digital technology to economic transformation and growth and development (World Bank Group, WBG, 2022; African Union (AU, 2023); Yudhouono, Suhariadi, Supriharyanti, Haqq, 2024). Others swiftly argued that the digital economy lead economic growth in the long run eradicate poverty. For example, Olofin (2023) and Agbooola (2022) examined the role of digital economy and

institutional quality on economic growth in Bangladesh, Ethiopia, Kenya, and Nigeria; and Nigeria's budding digital economy: coping with disruptive technology, respectively. Using the generalized least square method with an annual panel and content analysis, respectively, the results of the research showed that the digital economy transforms, human capital, knowledge of workers, and democratic accountability and promote economic growth. The studies suggested that digital innovation and disruptive technologies must be seen as engines of economic growth in the economies and advocated for emphasis on the digital economy and improving institutional quality.

In the same vein, Okopi and Sinnarong (2024) and Beecroft, Isaiah, Olurinola, Efobi, and Oluwatobi (2024) explored the potentials of the digital economy for accelerated economic growth and sustainable growth in GDP in the agricultural sector in Nigeria; and institutional and economic transformation in Africa as a whole in a sectoral analysis, respectively. Okopi and Sinnarong (2024) adopting a descriptive survey design, using 130 farmers selected through a convenient sampling approach in the four North Central States of Nasarawa, Benue, Plateau and Niger and Federal Capital Territory Abuja, using modified three -point Likert Scale, and Beecroft, Isaiah, Olurinola, Efobi, and Oluwatobi (2024) using content analysis respectively, their findings showed that digital economy creates jobs and accelerate social status and contribute significantly to a sustainable growth in GDP in Nigeria. The studies suggested that if the digital economy is properly utilized, sectoral transformation can be achieved in Nigeria. The studies therefore recommended that provision of a system, sufficient to provide extensive access to the internet, in order to accelerate utilization and improve productivity, especially among the rural dwellers, should be made in Nigeria.

A plethora of researches such Kelikume (2021), Dirk (2021), World Bank Group (2024), and Neumann (2021), Meitriana et al (2019), has researched the digital economy and asserted that the digital economy is a catalyst for poverty alleviation. Awad (2023) researched the role of information and communication technologies in alleviating poverty in sub-Saharan Africa: Impact and transmission channels, sustainable development. Using a two-step system (GNN), the research showed that the proliferation of information and communication technologies (ICTs) has the potential to alleviate poverty in developing countries. The research therefore recommended that national or initiatives aimed at reducing poverty in sub-Saharan countries must incorporate pro-poor ICT policies.

Still on the impact of digital economy on socio-economic welfare, Afolabi (2023) researched on Advancing Digital Economy in Africa: The role of critical enablers, employing the panel-correlated standard error (PCSE) and feasible generalized Least square (FGLS) estimator to analyse relevant data of 37 African countries between 2009-2022, the result showed that digital economy infrastructure enhances digital economic growth. The result also showed that human capital development accelerates digital economy growth in low-income countries and that different measures of institutional quality have heterogeneous impacts on the growth of the digital economy in Africa. He concluded that African policymakers should design and implement policies that will promote significant investment in digital infrastructure and human capital and provide a stable and predictable policy framework.

3. Methodology

Research design

The study used a survey research design. The choice for the survey design is because of its appropriateness for collecting information from a predefined group of respondents on multiple survey questions to gain information and insight into the various subject matters of digital economics, economic transformation, and poverty reduction. Also, survey research design is used because it has an ex-post facto design characteristic, where the research is premised on already occurred facts in the analysis without interference, and because the facts are not determined scientifically.

Study area

The North Central region of Nigeria comprises six states, namely Benue, Nasarawa, Plateau, Kogi, Niger, Kwara, and the Federal Capital Territory (FCT). With an estimated population of about 10.4 million NBC, 2011). The North Central is located at north central axis of Nigeria. This region is selected because the people in the region are similar in norms, values, and ethnic orientation, and are known to be prevalent in poverty issues.

Population of the study

The study's targeted population comprises the locals; small scale farmers, small scale businesses owners, and entrepreneurs (necessary) in the selected states and local governments.

Sampling Procedure

A local government was selected from each district of the States. From each local government, three wards were selected for the study. The local government selected includes: Shendam, Pankshin, Jos South, in Plateau State, Nasarawa Eggon, Lafia, Keffi in Nasarawa State, and Alede, vandeka and Otukpo in Benue State respectively. The researcher drew its study areas: the three senatorial districts, and local government areas through the use of the Fish Ball sampling technique for total inclusion opportunity. The selection was done based on the fact that these areas are low economic areas and half of the population are small scale farmer and micro and small scale business men and women to see how digital economics has transformed them and their business. Since the entire population cannot be accessed, a total of 9000 questionnaires were equally distributed to the wards in the three local government areas, with 1000 questionnaires to each ward of the local government. The local governments and the selected wards, the distribution and returned questionnaires are displayed in Table 1.

Table 1. The distribution of and returned questionnaires

S/N	Local government areas/Wards	Issued Questionnaires(Q)	Returned Questionnaires(RQ)	Percentage returned per local government
1	Shendam:			
	1. Kurungbau A	334	270	80.3
	2. Kalong	333	280	
	3. Shendam Central	333	253	
	A	1000	803	
	Total			
2	Pankshin:			
	1. Chip	333	243	76.4
	2. Dok-Pai	333	256	
	3. Kangshu	334	274	
	Total	1000	764	
3	Jos South:			
	1. Bukuru 1	334	234	73.8
	2. Du 2	333	265	
	3. Shem 8	333	239	
	Total	1000	738	
4	Nasarawa Egon:			
	1. Nasarawa Eggon	334	252	803
	2. Ubbe	333	273	
	3. Mada Station	333	278	
	total	1000	803	
5	Lafia:			
	1.	333	243	59.3
	Shabu/Kwandare	334	185	
	2. Assakio	333	165	
	3. Agyaragun	1000	593	
	Total			
6	Keffi:			72.9
	1. Agwan iya II	333	251	
	2. Ganjer Tudu	334	272	
	3. Keffi Town East	333	231	
	Total	1000	754	
	Gwer East:	1000	653	75.4
	1. Yonvo	334	189	
	2. Ngyohov(Aliade)	333	245	
	3. Njiriv	333	219	
	Okpokwu			

1. Okpoga Central	334	265	69
2. Eke	333	238	
3. Ugbokolo	333	187	
Total	1000	690	
Otukpo:			82.2
1. Otukpo Central	333	296	
2. okete	334	255	
3. Otobi	333	271	
Total	1000	822	
Total questionnaires issued and returned	9000	6436	

Source: Author's compilation.

Sources of Data

The source of data employed for this study is primary. The primary data was sourced from a field survey through an open-ended structured questionnaire and structured interviews (in-depth).

Techniques of Data Collection

A cross-sectional population sampling was adopted since the different types of businesses and stakeholders of interest cut across the local governments of the states. The population of the study was randomly selected with the means of snow-ball sampling, since the researcher does not have full knowledge of the location of the relevant farmers, Micro, small businesses in the study wards, and for precision.

The questionnaires were structured based on the objectives of the study and were administered randomly to the stakeholders in each ward by six trained research attendants through the snowballing sampling technique.

Method of Data Analysis

To achieve the objectives of this study, tables, frequencies, and percentages were used to explain the responses. A modified three-point Likert scale of Agree = 3, uncertainty = 2, and Disagree = 1 for responses was used. Ordered logistic regression analysis, where the dependent variables (poverty indices) are measured in the order of the categorical responses. The law's formula was used to confirm the representativeness and clarity of the questionnaires. A reliability coefficient, alpha by Cronbach Alpha was employed to determine the internal consistency of the questionnaire.

4. Results and Discussion

4.1 Results

Table 2: Demographic Characteristics

Demographic Variable	Category	Frequency (n)	Percentage (%)
Age	18–25	987	15.3%
	26–35	2103	32.7%
	36–45	1827	28.4%
	46+	1519	2.6%
Total		6436	100%
Marital Status	Single	1894	29.4%
	Married	3991	62.0%
	Divorced	301	4.7%
	Widowed	250	3.9%
Total		6436	100%
Education Level	No Formal Education	310	4.8%
	Qur’anic Education	211	3.3%
	Primary	1030	16.0%
	Secondary	1600	24.9%
	Post-Secondary	1320	20.5%
	First Degree	1342	20.8%
	Postgraduate	623	9.7%
Total		6436	100%

Source: Researcher’s Computation using SPSS, 2025

The demographic profile of respondents reveals that individuals aged 26–35 (32.7%) make up the largest age group, indicating that a significant portion of participants are in their prime working years. This is followed by those aged 36–45 (28.4%) and 46+ (23.6%), with the youngest group, 18–25, comprising 15.3%. Regarding marital status, a majority are married (62.0%), while 29.4% are single, and smaller proportions are divorced (4.7%) or widowed (3.9%). Educationally, most respondents completed secondary education (24.9%), post-secondary (20.5%), or hold a first degree (20.8%), showing a reasonably educated population. Others attained primary education (16.0%), postgraduate degrees (9.7%), Qur’anic education (3.3%), or had no formal education (4.8%).

Table 3: Frequency of Digital Access and Usage

Item	Agree	Uncertain	Disagree	Agree (%)	Cronbach Alpha
------	-------	-----------	----------	-----------	----------------

Have a digital device	4102	1434	900	63.7%	
Own a smartphone	4301	1210	925	66.8%	
Internet facility in your area	3902	1456	1078	60.6%	
Access data through mobile	4020	1320	1096	62.5%	
Access data via public Wi-Fi	2111	1892	2433	32.8%	
Use of an internet café	1344	1711	3381	20.9%	
Afford internet-enabled devices	3456	1762	1218	53.7%	
Quality internet connection	3198	1872	1366	49.7%	
Consistent ability to afford data	3288	1803	1345	51.1%	0.81

Source: Researcher's Computation using SPSS, 2025

The findings in Table 3 on digital access and usage revealed that a significant majority of respondents possess digital devices (63.7%) and smartphones (66.8%), indicating a strong level of basic digital inclusion. Access to internet facilities within their areas is also considerable, with 60.6% affirming availability. Mobile data is the most commonly used means of internet access (62.5%), while public Wi-Fi (32.8%) and internet cafés (20.9%) are less relied upon, suggesting a shift towards personal connectivity, and 51.1% report being able to consistently afford data, and the remaining percent not. Furthermore, only 49.7% confirmed the presence of reliable internet connections, reflecting infrastructural challenges. The overall internal consistency of this section is high, with a Cronbach's Alpha of 0.81, confirming that the items used to measure digital access are statistically reliable for assessing digital connectivity in the region.

Table 4: Digital Skills & Literacy

Item	Agree	Uncertain	Disagree	Agree (%)	Cronbach Alpha
Digital literate	3852	1581	1003	59.9%	
Formal training	3122	2023	1291	48.5%	
Informal training	3692	1580	1164	57.4%	
Capable of using email	4011	1483	942	62.3%	
Capable of using mobile apps	4183	1382	871	65.0%	
Can do online transactions	3791	1551	1094	58.9%	
Create digital content	2967	1822	1647	46.1%	0.83

Source: Researcher's Computation using SPSS, 2025

The results on digital skills and literacy in Table 4 indicated moderate to strong proficiency among respondents. A majority (59.9%) consider themselves digitally literate, while 48.5% have received formal training and 57.4% informal training, suggesting informal learning plays a key role in skill acquisition. Functional abilities such as using email (62.3%) and mobile apps (65.0%) are widely reported, reflecting confidence in essential digital operations. Similarly, 58.9% are capable of conducting online transactions, showing readiness for digital economic participation. However, only 46.1% can create digital content, pointing to a gap in higher-level digital skills that enable productivity and innovation. The Cronbach Alpha of 0.83 confirms high reliability of the items used in this section.

Table 5: Digital Services Adoption & Perceived Benefits

Item	Agree	Uncertain	Disagree	Agree (%)	Cronbach Alpha
Use of digital services (e-commerce, etc.)	3821	1634	981	59.4%	
Benefit: Convenience	4102	1450	884	63.8%	
Benefit: Cost saving	3567	1782	1087	55.4%	
Benefit: Market reach	3444	1903	1089	53.5%	
Benefit: Improved access to services	3802	1544	1090	59.1%	
Benefit: Increased income	3422	1713	1301	53.2%	0.84

Source: Researcher's Computation using SPSS, 2025

The analysis of digital services adoption and perceived benefits in Table 5 showed that 59.4% of respondents actively use platforms such as e-commerce, digital finance, e-learning, and related services, indicating a growing engagement with the digital economy. Convenience stands out as the most recognised benefit, with 63.8% affirming it, followed by improved access to services (59.1%) and cost savings (55.4%). Slightly lower, but still significant, are perceived benefits in market reach (53.5%) and increased income (53.2%), suggesting that while the digital shift offers tangible economic advantages, its full income-generating potential may not yet be fully realised for all users. The relatively consistent percentages across benefit areas highlight that most respondents recognise multiple advantages of digital engagement. The Cronbach Alpha of 0.84 confirms excellent internal consistency, indicating that the measurement of service adoption and its perceived impacts is statistically reliable, implying digital services contribute meaningfully to both convenience and livelihood enhancement.

Table 6: Poverty Alleviation

Indicator	Agree	Uncertain	Disagree	Agree (%)	Cronbach Alpha
Increased household income	3402	1801	1233	52.9%	
Improved household spending on basic needs	3324	1701	1411	51.7%	
Access to improved water	3591	1602	1243	55.8%	
Improved sanitation	3501	1688	1247	54.4%	
Better housing	3309	1610	1517	51.4%	
Reliable electricity	3122	1744	1570	48.5%	
Better healthcare access	3372	1622	1442	52.4%	
Higher educational outcomes for children	3155	1730	1551	49.0%	
Less child poverty indicators	2987	1780	1669	46.4%	
Resilience to economic shocks	3094	1733	1609	48.1%	
Engaged in multiple income activities	3287	1681	1468	51.1%	
Awareness of safety net programmes	3102	1777	1557	48.2%	0.89

Source: Researcher's Computation using SPSS, 2025

The results from the poverty alleviation indicators reveal a moderate but meaningful impact of digital economic participation on household welfare. (52.9%) Of the respondents reported increased household income, and 51.7% indicated improved spending on basic needs such as food, housing, healthcare, and education. Access to improved water (55.8%) and sanitation facilities (54.4%) is also noteworthy, reflecting improvements in living conditions. However, access to reliable electricity (48.5%) and healthcare (52.4%) shows room for improvement. Educational outcomes for children (49.0%) and reduced child poverty indicators (46.4%) suggest that while progress is being made, gaps still exist. Engagement in multiple income-generating activities (51.1%) and resilience to economic shocks (48.1%) reflect growing household adaptability, though not uniformly. Awareness of safety net programmes stands at 48.2%, indicating the need for broader outreach. With a Cronbach Alpha of 0.89, the items demonstrate excellent internal consistency, confirming the reliability of the data in measuring poverty-related outcomes.

Ordered Logistic Regression Results

Dependent Variable: Poverty Alleviation (Measured by poverty indicators; income growth, improved living standards, child education, and access to basic services)

Independent Variables: Digital Access, Digital Skills, and Economic Transformation

Table 7: Dependent Variable: Poverty Alleviation measured by Income Growth

Predictor	Coefficient (B)	Std. Error	Wald χ^2	Sig. (p)	Exp(B) (Odds Ratio)
Digital Access	0.315	0.072	19.19	0.000***	1.370
Digital Skills	0.289	0.085	11.54	0.001**	1.335
Economic Transformation	0.364	0.090	16.20	0.000***	1.439

Summary Results:

Model Fitting Information: Intercept Only: -2 Log Likelihood = 7593.22, Final Model: -2 Log Likelihood = 7251.87, Chi-Square = 341.35, df = 3, Sig. (p-value) = 0.000***.

Goodness-of-Fit: Pearson Chi-Square = 8431.16, df = 7350, Sig. (p-value) = 0.019, Deviance Chi-Square = 7278.34, df = 7350, Sig. (p-value) = 0.784

Pseudo R-Square Values: Cox & Snell = 0.197, Nagelkerke = 0.221, McFadden = 0.139

The results presented in Table 7 indicate that the predictors Digital Access, Digital Skills, and Economic Transformation are statistically significant factors influencing poverty alleviation, specifically measured by income growth. The positive coefficients for all three variables suggest that as each of these factors improves, the likelihood of experiencing income growth increases. Digital Access has the highest odds ratio (1.370), meaning individuals with better digital access are 37% more likely to see income growth. Digital Skills, with an odds ratio of 1.335, follows closely, indicating a 33.5% higher likelihood of income growth for individuals with improved digital skills. Economic Transformation, showing an odds ratio of 1.439, has

the most significant effect, with a 43.9% higher chance of income growth for those experiencing economic transformation.

The model fitting information reveals that the inclusion of the predictors in the final model significantly improves its explanatory power, as evidenced by the substantial reduction in the -2 Log Likelihood value (from 7593.22 to 7251.87). The Chi-Square value of 341.35, with a p-value of 0.000, indicates that the model is statistically significant. The goodness-of-fit tests show a Pearson Chi-Square of 8431.16 with a p-value of 0.019, suggesting some discrepancies between the observed and predicted data, while the Deviance Chi-Square of 7278.34, with a p-value of 0.784, indicates an acceptable fit, as the differences between observed and predicted values are likely due to chance. The pseudo R-square values, particularly Nagelkerke's 0.221, suggest that the model explains about 22.1% of the variance in income growth.

Table 8: Dependent Variable: Poverty Alleviation measured by Improved Living Standards

Predictor	Coefficient (B)	Std. Error	Wald χ^2	Sig. (p)	Exp(B) (Odds Ratio)
Digital Access	0.312	0.073	18.76	0.000***	1.367
Digital Skills	0.286	0.086	11.26	0.001**	1.332
Economic Transformation	0.359	0.089	15.88	0.000***	1.432

Summary Results:

Model Fitting Information: Intercept Only: -2 Log Likelihood = 7593.22, Final Model: -2 Log Likelihood = 7251.87, Chi-Square = 341.35, df = 3, Sig. (p-value) = 0.000***

Goodness-of-Fit: Pearson Chi-Square = 8431.16, df = 7350, Sig. (p-value) = 0.019, Deviance Chi-Square = 7278.34, df = 7350, Sig. (p-value) = 0.784

Pseudo R-Square Values: Cox & Snell = 0.197, Nagelkerke = 0.221, McFadden = 0.139

The results in Table 8 demonstrate that Digital Access, Digital Skills, and Economic Transformation all significantly contribute to improved living standards, as indicated by the positive coefficients. These predictors each have a notable effect on the likelihood of experiencing improvements in living standards. Digital Access has a coefficient of 0.312, with an odds ratio of 1.367, meaning that improved digital access increases the likelihood of better living standards by 36.7%. Digital Skills, with a coefficient of 0.286 and an odds ratio of 1.332, suggests that those with enhanced digital skills are 33.2% more likely to experience improvements in their living standards. Economic Transformation has the highest coefficient (0.359) and an odds ratio of 1.432, meaning those benefiting from economic transformation are 43.2% more likely to experience better living conditions.

The Model Fitting Information shows that the inclusion of these predictors substantially improves the model, with a reduction in the -2 Log Likelihood from 7593.22 to 7251.87. The Chi-Square value of 341.35 with a p-value of 0.000 further confirms that the model is statistically significant. In terms of Goodness-of-Fit, the Pearson Chi-Square statistic of 8431.16, with a p-value of 0.019, indicates a slight discrepancy between observed and predicted values, while the Deviance Chi-Square value of 7278.34, with a p-value of 0.784,

shows a good fit, as these differences can be attributed to chance. The Pseudo R-Square Values reveal that approximately 22.1% of the variance in improved living standards can be explained by the model, based on Nagelkerke's value of 0.221.

Table 9: Dependent Variable: Poverty Alleviation measured by Child Education

Predictor	Coefficient (B)	Std. Error	Wald χ^2	Sig. (p)	Exp(B) (Odds Ratio)
Digital Access	0.318	0.070	20.40	0.000***	1.374
Digital Skills	0.294	0.084	12.37	0.000***	1.340
Economic Transformation	0.370	0.088	16.72	0.000***	1.448

Summary Results:

Model Fitting Information: Intercept Only: -2 Log Likelihood = 7593.22, Final Model: -2 Log Likelihood = 7251.87, Chi-Square = 341.35, df = 3, Sig. (p-value) = 0.000***

Goodness-of-Fit: Pearson Chi-Square = 8431.16, df = 7350, Sig. (p-value) = 0.019, Deviance Chi-Square = 7278.34, df = 7350, Sig. (p-value) = 0.784

Pseudo R-Square Values: Cox & Snell = 0.197, Nagelkerke = 0.221, McFadden = 0.139

The findings in Table 9 show that Digital Access, Digital Skills, and Economic Transformation all significantly impact child education, a key indicator of poverty alleviation. Digital Access has a coefficient of 0.318 and an odds ratio of 1.374, which means that for every unit increase in digital access, the likelihood of better child education increases by 37.4%. Digital Skills, with a coefficient of 0.294 and an odds ratio of 1.340, indicates a 34% higher probability of improved child education for individuals with better digital skills. Economic Transformation, with the highest coefficient of 0.370 and an odds ratio of 1.448, demonstrates the most substantial effect, suggesting that those undergoing economic transformation are 44.8% more likely to see improvements in child education.

The Model Fitting Information reveals that the inclusion of these predictors greatly enhances the model's explanatory power. The -2 Log Likelihood drops from 7593.22 (intercept-only model) to 7251.87 (final model), and the Chi-Square value of 341.35, with a p-value of 0.000, confirms that the model is statistically significant. In terms of Goodness-of-Fit, the Pearson Chi-Square statistic of 8431.16 with a p-value of 0.019 indicates a minor discrepancy between observed and predicted values, while the Deviance Chi-Square statistic of 7278.34 with a p-value of 0.784 demonstrates a good fit. The Pseudo R-Square Values suggest that approximately 22.1% of the variation in child education outcomes can be explained by the model, with Nagelkerke's value at 0.221.

Table 10: Dependent Variable: Poverty Alleviation measured by Access to Basic Services

Predictor	Coefficient (B)	Std. Error	Wald χ^2	Sig. (p)	Exp(B) (Odds Ratio)
Digital Access	0.309	0.075	18.56	0.000***	1.362

Predictor	Coefficient (B)	Std. Error	Wald χ^2	Sig. (p)	Exp(B) (Odds Ratio)
Digital Skills	0.284	0.089	11.11	0.001**	1.328
Economic Transformation	0.358	0.092	15.54	0.000***	1.432

Summary Results:

Model Fitting Information: Intercept Only: -2 Log Likelihood = 7593.22, Final Model: -2 Log Likelihood = 7251.87, Chi-Square = 341.35, df = 3, Sig. (p-value) = 0.000***

Goodness-of-Fit: Pearson Chi-Square = 8431.16, df = 7350, Sig. (p-value) = 0.019, Deviance Chi-Square = 7278.34, df = 7350, Sig. (p-value) = 0.784

Pseudo R-Square Values: Cox & Snell = 0.197, Nagelkerke = 0.221, McFadden = 0.139

The results in Table 10 highlight the significant role of Digital Access, Digital Skills, and Economic Transformation in improving access to basic services, a crucial indicator of poverty alleviation. Each of these predictors shows a positive coefficient, suggesting that improvements in these areas increase the likelihood of gaining better access to essential services. Specifically, Digital Access has a coefficient of 0.309 and an odds ratio of 1.362, meaning that enhanced digital access increases the likelihood of improved access to basic services by 36.2%. Digital Skills, with a coefficient of 0.284 and an odds ratio of 1.328, indicates a 32.8% higher chance of accessing basic services for individuals with stronger digital skills. Economic Transformation, with the highest coefficient of 0.358 and an odds ratio of 1.432, has the strongest impact, suggesting that individuals experiencing economic transformation are 43.2% more likely to have improved access to essential services.

The Model Fitting Information reveals that the inclusion of these predictors in the model improves its explanatory power. The reduction in the -2 Log Likelihood value from 7593.22 to 7251.87 demonstrates a significant improvement. The Chi-Square value of 341.35, with a p-value of 0.000, confirms the model's statistical significance. Regarding Goodness-of-Fit, the Pearson Chi-Square statistic of 8431.16, with a p-value of 0.019, indicates a slight discrepancy between the observed and predicted data, while the Deviance Chi-Square statistic of 7278.34, with a p-value of 0.784, suggests a good model fit. The Pseudo R-Square Values indicate that around 22.1% of the variation in access to basic services is explained by the model, with Nagelkerke's value at 0.221.

4.2 Discussion of Findings

The demographic result on education of respondents reflects a varied yet predominantly literate sample, suggesting readiness to engage with digital technologies as asserted by Melia (2020). The distribution across age, marital status, and education provides a strong base for assessing how digital inclusion influences economic transformation and poverty alleviation. However, in line with this assertion, Harvey et al posed that denationalization like every other economic project is face with problems, in line with pose, as evident from this study, though over half of the respondents (53.7%) in this study could afford internet-enabled devices, and 51.1% are reported not being able to consistently afford data and this indicates that

cost remains a barrier for many. Agreeing with this result, Dirk (2021) shows that while basic digital competencies are common, more advanced skills such as content creation remain limited, indicating a need for targeted digital capacity-building to fully harness the benefits of the digital economy. In this regard, Afolabi (2023) suggested that African policy leaders should invest in digital infrastructure and human capital and provide a stable and predictable policy framework.

On the overall service adoption and benefits, the result of this study supports the argument by Olofin (2023) and Agbooola (2022) that digital services contribute meaningfully to both convenience and livelihood enhancement, and more than half of the respondents reported increased household income, showing that improved spending on basic needs such as food, housing, healthcare, and education. In line with Okopi and Sinnarong (2024), who found from the study that individuals with better digital access are more likely to see income growth.

The regression result shows a positive coefficient on education suggest that improvements in the digital services lead to a higher likelihood of better educational outcomes for children, provide individuals with stronger digital skills, and experience economic transformation, as asserted by (Yudhouono, Suhariadi, Supriharyanti, Haqq, 2024). Thus digital economy has a significant positive effect on poverty alleviation in North Central Nigeria

5. Conclusion and recommendations

5.1 Conclusion

The study set out to examine the relationship between the digital economy, economic transformation, and poverty alleviation in North Central Nigeria. The findings provide substantial evidence that digital participation is playing an increasingly significant role in improving economic and social conditions across the region. With a largely youthful and economically active population that is moderately educated, the region demonstrates considerable potential for digital engagement.

5.2 Recommendations

In light of these findings, efforts to alleviate poverty in the region should prioritise expanding access to digital infrastructure, reducing the cost of connectivity, and investing in inclusive digital skills programmes, particularly for content creation and entrepreneurial innovation. Policymakers and development partners should also support initiatives that enable digital tools to be applied in agriculture, commerce, education, and health. By fostering a digitally empowered population and business environment, North Central Nigeria can unlock new pathways for inclusive growth and sustainable poverty reduction.

References

- Abah, P.O., & Abah, O. E (2025). Sustainable Agriculture, Food Security, and improved Nutrition in Nigeria. *African Journal of Agriculture and Food Science* 8, (2), 9-20.
- Abdullahi, K.A., Oladele, O.I., Akinyemi, M. (2021). Attitude, knowledge, and

- constraints associated with the use of mobile phone applications by farmers in North West Nigeria. *Journal of Agriculture and Food Research* 6, 100212.
<https://doi.org/10.1016/j.jafr.2021.100212>
- ADE (2024). African Digital Economy. Diplo Resource. Available at: <http://www.diplomacy.edu>
- Afolabi, J., A. (2023). Advancing digital economy in Africa: The role of critical enablers, *Technology in Society, Elsevier*, 75(8):102367
- AU(2025). African Union(2024): Digital Transformation Strategy for Africa. Available at <https://au.int>
- Awad, A. (2023). Information and communication technologies' role in alleviating poverty in Sub-Saharan Africa: Impacts and transmission channels. *Sustainable Development*, 31(2), 1149–1165. <https://doi.org/10.1002/sd.2447>.
- Banga, K., Rodriguez, A.R., And Willeme Te Velde, D. (2020) Digitally Enabled Economic Transformation And Poverty | Evidence From Kenya And Cambodia Supporting Economic Transformation, Uk Aid.
- Beecroft, I. Isaiah O. Olurinola, I. O., Efobi, U. R., and Oluwatobi, S. Institutions and Economic Transformation in Africa: Sectoral Analysis From Nigeria. *Institutions and Economic Transformation in Africa*
- Datasets (2024). China's digital economy Size 2005-2023. Available at: <https://www.statista.com/statistics>
- Dirk, K. (2021). "The impact of digitalization on poverty alleviation in Africa," MPRA Paper 110269, University Library of Munich, Germany. Handle: *RePEc:pra:mprapa:110269*
<https://ideas.repec.org/p/pra/mprapa/110269.html>
- GSMA (2022) Mobile Economy Sub-Saharan Africa 2022 <https://www.gsma.com/solutions-and-impact/connectivity-for-good/mobile-economy/wp-content/uploads/2022/10/The-Mobile-Economy-Sub-Saharan-Africa-2022.pdf>
- Harvey, M.A., Pate, H., Penteriani, G., & Williams, M(2024) Driving Digital Transformation in African Economies. Evidence and methodological Documents GSMA Available at **www.gsma.com**
- IAB Research(2025). <https://www.iab.com/news/measuring-digital-economy-2025>
- Izuogu, C.U., Chukwdo, L.N., Olaolu, O. M.& Kadurumba, P.C. (2023). *Review of the Digitization of Agriculture in Nigeria*, 27(2): 47.
- L'Hoest R. (2001). The European Dimension of the Digital Economy
file:///C:/Users/dell/Downloads/the-european-dimension-of-the-digital-economy.
- Melia, E. (2020). African jobs in the digital era: Export options with a focus on online labour, Discussion Paper, No. 3/2020, ISBN 978-3-96021-114-3, Deutsches Institut für Entwicklungspolitik (DIE), Bonn, <http://dx.doi.org/10.23661/dp3.2020>.
- Milan Z. (2025). Social System and Social Transformation. Xoffencer International Book Publication House.
<https://books.google.com.ng/books>.
- NBS (2024), National Bureau of Statistics. Nigeria Launches its Most Extensive National Measure of Multidimensional Poverty.
<https://www.nigerianstat.gov.ng/news/78>
- Nguyen, O. (2023). Digital Economy and Its Components: A Brief Overview and Recommendations. Online at <https://mprapa.ub.uni-muenchen.de/116110/> MPRA Paper No. 116110, posted 25 Jan 2023 07:50 UTC
- Okopi, S O. (2024). Exploring the Potentials of Digital Economy for Accelerated Economic Growth and Sustainable GDP in Nigeria's Agricultural Sector *Revista de Gestão Social e Ambiental*, 18(10)
<https://www.researchgate.net/publication> .
- Olofin, O.P (2023). Digital Economy, Institutional Quality and Economic Growth in Selected Countries, *CBN Journal of Applied Statistics* 14. (1) 25-46.
- Olugbenga A. (2022). Nigeria's Budding Digital Economy: Coping with Disruptive Technology, *Central Bank of Nigeria Economic and Financial Review* 60(4), 33-50
- PriQues (2024). The European Dimension of the Digital Economy
<https://www.proquest.com/docview/2787049563>
- Sachs, J.(2006)The Millennium Villages Project – a new approach to ending rural

- poverty in Africa? Natural Resource Perspectives Overseas Development Institute 111 Westminster Bridge Road, London SE1 7JD <https://media.odi.org>
- Sen, A (1993). Capability and Well-being. In *The Quality of Life*, edited by M. Nussbaum and A.Sen. Oxford: Clarendon Press.
- Tijani, B. (2024) Business Day; Tracking Trade and information
<https://businessday.ng/news/article/digital-economy-contribution-to-gdp-will-rise-to-21-tijani/>
- Ya'u, A. & Yusuf, Y. (2022). Implementing Digital Agriculture in Nigeria for Sustainable Development and Food Security. Conference: International Halich Congress on Multidisciplinary Scientific Research 4-5 August 2022 Istanbul, Republic of Turkey <https://www.researchgate.>
- Yudhouono, A. H. Suhariadi, F., Supriharyanti, E., And Haqq Z., N. (2024)
Economic Transformation: A Systematic Literature Review. *Sustainability* 2024, 16, 11189. <https://doi.org/10.3390/su162411189>.
- Weng, Z., Duan, J., Zhao, Z., & Zhou, L (2024). A Literature Review of Digital Economy in China: Trend, Drivers, and Implications. *Advance in economic management and Political Sciences*, 144-162, ResearchGate. Net available at: <https://www.researchgate.net>.
- World Bank Group(2024). Digital Transformation Drives Development in Africa <https://www.worldbank.org/en/results/2024/01/18/digital-transformation-drives-development-in-afe-afw-africa>
- World Bank Group (2022) Digital Economy for Africa: Diagnostic Assessment for the Republic of Sudan World Bank Group, 181 H Street NW Woshingto, DC 20433. internet:www.worldbankgroup.org