Contemporary Journal of Social Science and Humanities | *ISSN 2766-757X*
Published by AIR JOURNALS | *https://airjournal.org/cjssh*
12011 WestBrae Pkwy, Houston, TX 77031, United States
airjournals@gmail.com; enquiry@airjournal.org

RESEARCH ARTICLE

Effect of the Digital Economy System on Organizational Sustainability in South East Nigeria

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Citations - APA

Igwilo, R. N. & Adim, C. G. (2025). Effect of the Digital Economy System on Organizational Sustainability in South East Nigeria. *Contemporary Journal of Social Science and Humanities 6(2), 35-47. DOI: https://doi.org/10.5281/zenodo.18446886*

ABSTRACT

The study examined the effect of the Digital Economy System on organizational sustainability in Enugu State, South-East Nigeria. The specific objectives of the study were to examine the effect of digital literacy on organizational sustainability and evaluate the effect of digital infrastructure on organizational sustainability in Enugu State, South-East Nigeria. The study adopted a descriptive research design. Data were collected using a structured questionnaire with a five-point Likert scale. The data were analyzed using multiple linear regression. The result revealed that digital literacy has a significant positive effect on organizational sustainability with a P-value of (0.001 < 0.05). Digital infrastructure has a significant positive effect on organizational sustainability with a P-value of (0.001 < 0.05) in Enugu state, South East, Nigeria. The study concluded that the Digital Economy System has a significant positive effect on organizational sustainability in Enugu state South East Nigeria. The study recommended that Organizations in Enugu State should invest deliberately in building staff digital competence through regular in-house training on core digital tools (e-payments, spreadsheets/accounting software, CRM tools, inventory systems, digital communication platforms), since digital literacy significantly improves sustainability. These efforts will enhance efficiency, reduce operational waste, improve decision-making, and support innovation.

Keywords: *Digital Economy System; Organizational Sustainability; South East Nigeria*

Introduction

The emergence of the digital economy has redefined global business landscapes, altering how organizations create value, interact with customers, and achieve sustainability. The digital economy, broadly defined as economic activity enabled by digital technologies such as artificial intelligence (AI), big data analytics, cloud computing, blockchain, and the Internet of Things (IoT), has become a fundamental driver of organizational transformation and long-term competitiveness (Organisation for Economic Co-operation and Development (OECD, 2023). In the digital era, organizations leverage technology not only to improve operational efficiency but also to foster environmental responsibility, innovation, and economic resilience, which are key pillars of organizational sustainability (World Bank, 2023).

According to the International Monetary Fund (IMF, 2022), the digital economy encompasses the full range of economic activities facilitated through digital inputs, including e-commerce, digital payments, data processing, and online services. These innovations create new business models and accelerate productivity growth while reducing transactional barriers. Organizational sustainability, on the other hand, refers to the capacity of a business to operate efficiently and profitably over the long term without compromising environmental, social, or economic well-being (Elkington, 1997; UNDP, 2023). Under this paradigm, the digital economy acts as both a catalyst and an enabler of sustainability, facilitating cleaner production, efficient resource utilization, and better stakeholder engagement.

Nigeria, Africa's largest economy, is undergoing a gradual but promising digital transformation. The growth of mobile connectivity, fintech, e-commerce, and digital service platforms has created new opportunities for both public and private sector organizations (National Bureau of Statistics (NBS, 2023). According to the *Nigeria Digital Economy Policy and Strategy (NDEPS)* 2020–2030, the federal government aims to diversify the economy through digital innovation, enhance job creation, and build efficient systems across sectors (Federal Ministry of Communications, Innovation and Digital Economy (FMCIDE, 2023). In the South-East region comprising Abia, Anambra, Ebonyi, Enugu, and Imo States, micro, small, and medium enterprises (MSMEs) form the backbone of economic activity. The adoption of digital technologies by these firms is critical for improving efficiency, expanding market access, and guaranteeing long-term sustainability (Agu & Onwuka, 2022).

Despite the digital shift, many organizations in South-East Nigeria face barriers such as inadequate digital infrastructure, low broadband penetration, skills deficits, cybersecurity concerns, and unreliable energy supply (Okeke & Eze, 2023). These challenges hinder the full exploitation of digital opportunities and slow the attainment of sustainability goals. Yet, firms that successfully adopt digital tools report enhanced productivity, improved customer engagement, and reduced operational costs, all of which contribute to economic and environmental sustainability (UNCTAD, 2023). Empirical studies suggest that digitalization enhances sustainability performance by improving operational efficiency, data-driven decision-making, transparency, and innovation (OECD, 2022). Digital tools allow organizations to track energy usage, automate processes, and streamline logistics, thereby reducing waste and resource intensity. Moreover, technologies such as blockchain ensure supply chain transparency and traceability, while artificial intelligence supports smarter demand forecasting and risk management. These efficiencies directly support the triple bottom line of sustainability, economic growth, social equity, and environmental protection (Elkington, 1997; UNDP, 2023).

In the brewery, manufacturing, and service sectors of South-East Nigeria, the adoption of digital systems such as cloud-based ERP (Enterprise Resource Planning), mobile marketing, and e-payment technologies enables organizations to adapt more readily to market changes and sustain operations amid global economic uncertainties. For instance, during and after the COVID-19 pandemic, firms that had embraced digital platforms demonstrated higher adaptability and business continuity compared to those operating manually (Nwankwo & Eze, 2022). While the digital economy presents significant opportunities for sustainability, it also introduces challenges. The digital divide, marked by disparities in digital literacy and infrastructure access, continues to constrain rural and small organizations in southern Nigeria. Additionally, concerns about cybersecurity, data privacy, and high technology acquisition costs remain barriers to full adoption (KPMG, 2023). However, ongoing government initiatives such as the National Digital Innovation and Entrepreneurship Centre, the Broadband Plan 2020–2025, and digital skills training programs are gradually addressing these limitations (FMCIDE, 2023).

If strategically harnessed, digitalization can advance sustainability by reducing paperwork and travel emissions, promoting green innovations, and opening global markets for local enterprises. Sustainable organizations are now those that embed digital capabilities in every value chain dimension to drive resilience and efficiency (World Economic Forum (WEF), 2023).

The digital economy system serves as a powerful engine for achieving organizational sustainability by promoting efficiency, innovation, and resilience. However, the degree to which organizations in South-East Nigeria have adopted and benefited from digital transformation remains varied. The uneven adoption of digital technologies amidst infrastructural, financial, and skill constraints continues to limit sustainability outcomes. Consequently, understanding the effect of the digital economy system on organizational sustainability in this region is crucial for policy formulation, capacity building, and strategic investment aimed at fostering inclusive, sustainable development in Nigeria's evolving digital landscape.

Statement of the Problem

The rapid integration of digital technologies into economic systems has transformed business operations globally, yet the specific impact of the Digital Economy System on organizational sustainability in South-East Nigeria remains insufficiently explored. Despite the potential benefits of digital tools such as increased efficiency, improved access to markets, and enhanced decision-making, many organizations in this region face significant challenges in adopting and leveraging these technologies. Issues such as inadequate infrastructure, limited digital literacy, and socio-economic disparities hinder the effective implementation of digital solutions. Consequently, organizations struggle to achieve sustainability in their operations, impacting their economic viability and long-term growth.

This study seeks to investigate the relationship between the Digital Economy System and organizational sustainability in South-East Nigeria, addressing critical questions: How do digital technologies influence operational practices, resource management, and overall organizational resilience? What barriers prevent organizations from fully embracing the digital economy, and how can these challenges be overcome? Understanding these dynamics is essential for policymakers and business leaders aiming to foster a more sustainable and competitive economic environment in South-East Nigeria. Without a comprehensive analysis, strategies to enhance digital engagement and sustainability may be poorly informed, limiting the potential for economic development in the region.

Objectives of the Study

The main objective of the study is to examine the effect of the Digital Economy System on organizational sustainability in South East Nigeria. The specific objectives of the study were to;

i. Examine the effect of digital literacy on organizational sustainability in South East Nigeria.
ii. Evaluate the effect of digital infrastructure on organizational sustainability in South East Nigeria.

Hypotheses of the Study

i. Digital Literacy has no significant effect on organizational sustainability in South East Nigeria.
ii. Digital infrastructure has no significant effect on organizational sustainability in South East Nigeria.

Review of Related Literature

Conceptual Review

Digital Economy

The digital economy enables the electronic buying and selling of goods and services. As the global economy increasingly relies on various digital technologies, the activities of the digital economy are becoming more integrated worldwide (Xianbin & Qiong, 2021). The emergence of the World Wide Web and smartphones in the late 1980s and 1990s marked a significant development in the growth of the digital economy. The technologies discussed in the literature have consistently supported the digitization and transformation of environmental and business operations, leading to substantial changes (Feng et al., 2022). The term "digital economy" refers to economic activities and transactions facilitated through digital technologies, including but not limited to cellphones, the internet, computers, and tablets. The concept gained notable popularity in the 2010s; however, its origins can be traced back to the advent of the internet and the spread of personal computers in the 1980s (Begazo et al., 2023). The digital economy is transforming economic growth and innovation while helping achieve various sustainable development goals. Its influence spans multiple sectors, from boosting efficiency and productivity to expanding access to education and enhancing environmental management. The integration of technologies such as artificial intelligence, big data analytics, and the Internet of Things has revolutionized traditional business models, optimized operations, and generated new job opportunities.

Digital Literacy

Digital literacy encompasses the skills needed to access, manage, understand, communicate, evaluate, and create information safely using digital technologies. It includes competencies like ICT literacy, information literacy, computer literacy, and media literacy (Hufad et al. 2019). Seen as a set of interconnected skills vital for success in the digital age, digital literacy has evolved in various dimensions recognized by countries and governments. In today's digital economy, proficiency in digital tools is crucial for employment, entrepreneurship, and economic mobility. It helps individuals adapt to job market changes, learn new skills, and leverage technology for innovation. Countries with a digitally skilled workforce can compete globally and promote sustainable growth (Bejaković & Mrnjavac, 2020). Digital literacy also empowers individuals by providing access to information, resources, and opportunities previously out of reach, fostering social inclusion and reducing barriers related to geography, socioeconomic status, and physical ability. This is especially critical in developing nations, where women often face digital disadvantages (Anzak and Sultana, 2020). Overall, research indicates that digital literacy positively influences individuals, communities, and nations worldwide (Promrub 2022).

Digital Infrastructure

Digital infrastructure encompasses all the physical and software components needed to deliver digital goods, services, and products. Businesses depend on it to operate effectively and stay competitive in a rapidly connected global market. It drives success, fuels transformation, and links people worldwide. Moreover, digital infrastructure has the potential to transform business operations, enhance customer service, improve efficiency, reduce costs, and provide a competitive edge (Wrike, 2023). It is essential for the smooth operation of business activities, offering the hardware and software resources that allow employees to work efficiently. Additionally, digital infrastructure supports secure data storage and backups, protecting vital business information from loss or unauthorized access, which helps ensure continuity and quick recovery from disasters or system failures (Obialor and Effiom, 2023).

Organizational Sustainability

Organizational sustainability refers to a system's capacity to endure and adapt to changing conditions while maintaining its core functions and processes (Bennett, Peterson, & Gordon, 2023). This emphasizes resilience and flexibility as key components, highlighting the importance of sustaining critical services amid environmental shifts. It combines economic growth, social fairness, and environmental protection to ensure a balanced approach to progress. This definition stresses the interconnectedness of economic, social, and environmental factors, supporting a holistic view of sustainable development. Furthermore, organizational sustainability describes an organization's ability to operate in a way that meets present needs without compromising future generations' ability to meet their own, respecting ecological limits (Choi & Lim, 2024). It also includes the idea of intergenerational equity and the importance of natural boundaries in sustainability efforts. As a complex concept, organizational sustainability involves environmental responsibility, social equality, and economic stability, aiming to create a balanced framework for long-term growth (Nguyen, Pham, & Hoang, 2024). It highlights the need for a balanced strategy that considers various sustainability aspects to achieve sustained success (Zhou, 2024). This involves continually improving processes to reduce environmental impact while enhancing social and economic outcomes, emphasizing the importance of ongoing advancement across these areas (Zhou, 2024).

Theoretical Review

Digital Transformation Theory

Digital transformation involves integrating digital technologies into all areas of a business, fundamentally changing how organizations function and deliver value to customers. The Digital Transformation Theory states that this process is more than just adopting new technologies; it requires a complete shift in organizational culture, leadership, and processes. For SMEs, this may include implementing cloud computing, e-commerce, mobile payments, data analytics, and CRM tools (Vial, 2019). The theory suggests that digital transformation improves agility, helping businesses respond quickly to market changes, increase efficiency, and offer personalized customer experiences. It highlights key enablers like technology access, leadership support, organizational readiness, and digital skills (Kane et al., 2015). However, it also recognizes challenges such as resistance to change, limited technical expertise, and financial constraints, which are especially significant for SMEs. With fewer resources than larger firms, SMEs encounter unique barriers in adopting digital technologies (Matt et al., 2015). The theory also emphasizes that digital transformation is a continuous process that requires ongoing investment in technology and skills development.

Empirical Review

Wrike (2023) conducted a study on optimizing digital infrastructure services for business success. The study aimed to investigate how IT infrastructure services can be optimized for business success in the USA. The researcher used a survey research design with a population consisting of 180 IT firms in the USA. Multiple regression analysis was employed for data analysis. The study revealed that optimizing IT infrastructure services significantly impacts business success in the USA.

Kuri (2024) conducted a study on how a strong digital infrastructure network benefits and revolutionizes businesses. The study aimed to examine the relationship between robust digital infrastructure networks and business revolutions in Japan. The researcher used correlation analysis for data analysis and interpretation. The results show that digital infrastructure significantly correlates with business revolutions.

Obiolar and Ebito (2024) conducted a study on the effect of Digital Infrastructure on International Business Connectedness of Coca-Cola Plc., Owerri, South-East, Nigeria**.** The study aimed to ascertain the influence of IT virtualization on the international business connectedness of Coca-Cola Plc, Owerri, South-East, Nigeria. The study adopted a survey research design, and Simple regression analysis was used. The result revealed that digital infrastructure has a significant positive effect on the international business connectedness of Coca Cola Plc, Owerri, South-South, Nigeria.

Ibrahim and Aduah (2025) conducted a study on digital literacy, digital intelligence, and small and medium enterprises' (SMEs) sustainability. The study aimed to examine how digital literacy and digital intelligence influence the business sustainability of SMEs in Ghana. The mediating role of digital technology usage. The study adopted the cross-sectional research design and survey approach. The result revealed a statistically significant positive effect of digital literacy on business sustainability.

Methodology

The first is to examine the effect of the Digital Economy System on organizational sustainability in Enugu state South East Nigeria. It attempts to study the effect of digital literacy and digital infrastructure on organizational sustainability in Enugu State, Nigeria. It employs a quantitative research method, i.e., structured questionnaires for the data collection from the target respondents. The population of this study comprises individuals, businesses, and organizations in Enugu State, Nigeria, that are engaged in or affected by activities related to digital literacy and digital infrastructure. Given the broad and undefined nature of this group, spanning formal and informal sectors, waste management enterprises, artisans, digital infrastructure, and entrepreneurs, the study assumes an infinite population. This assumption allows for the generalization of findings across a wide and diverse range of participants without the need to specify a fixed population size. The infinite population model is appropriate in this context, as the total number of individuals and entities involved in digital literacy and digital infrastructure activities in Enugu State cannot be precisely enumerated due to their dynamic and decentralized nature. As per Yamane (1967), when the population is unlimited, the required sample size with a 95 percent confidence level is 405 units.

The sample is studied using a convenience sample so that respondents are diverse enough to represent the population. This approach assures efficient data collection, yet reliability and generalizability in research findings. For this study, the data will be collected through a face-to-face and online survey. The questionnaire was developed to collect information regarding the effect of the Circular Economy on enhancing job creation in Enugu State, Nigeria. This study utilizes a structured questionnaire as the primary research instrument. The questionnaire is divided into four sections. Demographic profile (Part 1), digital literacy (Part 2). digital infrastructure (Part 3). Enhancing organizational sustainability in Enugu state (Part 4). The validity of the questionnaire will be assessed using the Item-Objective Congruence (IOC) method. Three academic experts will evaluate the content validity of the questionnaire to ensure that the measurement items align with the research objectives. The evaluation criteria are as follows:

i. +1: The item is relevant to the research objectives.
ii. 0: Uncertain if the item is relevant.
iii. -1: The item is not relevant to the research objectives.

The IOC index is calculated using the formula by Rovinelli and Hambleton (1977):

$$\text{IOC} = \frac{\Sigma \text{R}}{\text{N}}$$

Where: ΣR = Total rating score from all experts for each item
N = Number of experts

The item is considered valid if the calculated IOC index is ≥ 0.5. Items scoring below this threshold will be revised based on expert recommendations. Before the formal data collection, a pilot test with 35 participants will be conducted to assess the questionnaire's reliability. Cronbach's alpha coefficient will be used to measure internal consistency. Hair et al. (2010) state that a Cronbach's alpha value of 0.70 or higher indicates acceptable reliability. The results of the reliability test are shown in Table 1 below:

Table 1: Reliability Test

Variable	Cronbach's Alpha
Digital literacy	0.812
Digital infrastructure	0.724
Organizational sustainability	0.750

Data Analysis

Descriptive Statistics

Descriptive statistics will be applied to analyze demographic profile, digital literacy, digital infrastructure, and organizational sustainability. The analysis will include absolute frequency, percentage distribution, arithmetic mean, and standard deviation. To interpret the arithmetic mean, the criteria defined by Best (1970) will be used:

i. 1.00 – 1.49: Strongly Disagree
ii. 1.50 – 2.49: Disagree
iii. 2.50 – 3.49: Neutral
iv. 3.50 – 4.49: Agree
v. 4.50 – 5.00: Strongly Agree

Continuous data will be analyzed with adjusted mean classification based on Weiers (2008) to ensure comprehensive interpretation, eliminating gaps between category boundaries.

Inferential Statistics

Inferential statistics will be used to test the research hypotheses:

H1: Digital Literacy has no significant effect on organizational sustainability in Enugu state South East Nigeria.
H2: Digital infrastructure has no significant effect on organizational sustainability in Enugu state South East Nigeria.

Multiple Linear Regression Analysis will be applied.

Analysis Results

Table 2: Frequency and Percent Distribution of Respondents by Demographic Profile

Demographic profile	*Classification*	*Frequency*	*Percent (%)*
Gender	Male	192	47.4
	Female	213	52.6
	Total	405	100.0
Age	Under 20	78	19.3
	20–25	123	30.4
	26–35	108	26.7
	36–45	96	23.7
	Total	405	100.0
Educational Background	High School	139	34.3
	Diploma	60	14.8
	Bachelor's Degree	80	19.8
	Master's Degree	74	18.3
	Doctoral Degree	52	12.8
	Total	405	100.0
City of Residence	Ogui-Asata	125	30.9
	Abakpa Nike	92	22.7
	Agbani Road	106	26.2
	Emene	82	20.2
	Total	405	100.0

Table 2 shows the demographic characteristics of the 405 respondents, which reveal a balanced distribution across gender, age, educational background, and city of residence. In terms of gender, 52.6% (213) of respondents were female, while 47.4% (192) were male. This shows a fairly even representation, with a slight female majority. The age

distribution indicates that the majority of respondents were young adults. The largest group was between 20–25 years (30.4% or 123 respondents), followed by those aged 26–35 years (26.7% or 108), and 36–45 years (23.7% or 96). The youngest group, those under 20, made up 19.3% (78) of the sample. This suggests a youthful and economically active population, relevant for studies focused on employment and job creation. Regarding educational background, a significant proportion (34.3% or 139 respondents) had a high school education, while 19.8% (80) had a bachelor's degree. Others held a diploma (14.8%), a master's degree (18.3%), or a doctoral degree (12.8%). This shows a fairly educated population, with over 60% having attained post-secondary education. Lastly, the city of residence data shows that respondents were drawn from various parts of Enugu. The largest group resided in Ogui-Asata (30.9%), followed by Agbani Road (26.2%), Abakpa Nike (22.7%), and Emene (20.2%). This geographic spread supports the representativeness of the sample across different urban areas of Enugu State.

Research Question One

What is the effect of digital literacy on organizational sustainability in Enugu State, Nigeria?

Table 3: Descriptive Statistics of Reusing Product

Measurement Item	*Mean*	*Std. Deviation*	*Meaning*	*Ranking*
Digital literacy in my community has led to the creation of new income-generating opportunities.	2.2227	.83706	Disagree	2
Digital literacy has provided sustainable jobs for youth and low-income earners in my area.	3.1817	.78182	Agree	1
Training and awareness on digital literacy have increased employment potential in the local economy.	2.9432	.83621	Disagree	3

The descriptive statistics presented in Table 3 assess respondents' perceptions of how digital literacy products contribute to enhancing organizational sustainability in Enugu State. Using a benchmark mean value of 3.0 as the minimum acceptable threshold for agreement, only one out of the three measurement items met this criterion. Specifically, the statement "digital literacy has provided sustainable jobs for youth and low-income earners in my area" had a mean score of 3.1817 (SD = 0.78182), indicating that respondents generally agreed with this assertion. It was ranked 1st, reflecting the strongest perceived impact among the items measured. On the other hand, the other two statements did not meet the minimum acceptance threshold. The item "digital literacy in my community has led to the creation of new income-generating opportunities" recorded a mean score of 2.2227 (SD = 0.83706), which implies a general disagreement among respondents. It was ranked 2nd. Similarly, the statement "Training and awareness on product reuse have increased employment potential in the local economy" had a mean score of 2.9432 (SD = 0.83621), which, although closer to the acceptance threshold, still fell short and was therefore interpreted as a disagreement, ranking 3rd. In summary, the data suggest that while respondents recognize the potential of digital literacy in generating sustainable employment, they remain less convinced about its broader impact on income generation and employment awareness efforts in their communities.

Research Question Two

How does digital infrastructure affect organizational sustainability in Enugu State, Nigeria?

Table 4: Descriptive Statistics of Digital Infrastructure

Measurement Item	*Mean*	*Std. Deviation*	*Meaning*	*Ranking*
Digital infrastructure activities in my community have led to the establishment of new small-scale businesses.	3.0010	.70725	Agree	3
The digital infrastructure has created job opportunities for youths and informal sector workers in my area.	3.0227	.78770	Agree	2
Digital infrastructure initiatives have increased organizational sustainability in sorting and processing industries.	3.2657	.79773	Agree	1

The descriptive statistics presented in Table 4 evaluate the perceived impact of digital infrastructure on organizational sustainability in Enugu State. Using a benchmark mean of 3.0 as the minimum acceptable threshold for agreement, all three measurement items exceeded this value, indicating general agreement among respondents on the positive role of digital infrastructure in enhancing employment opportunities. The highest-rated statement was "digital infrastructure initiatives have increased demand for labour in waste collection, sorting, and processing industries," which had a mean score of 3.2657 (SD = 0.79773), ranking 1st. This suggests that respondents strongly perceive digital infrastructure as a driver of labour demand in waste management activities.

The second-highest mean, 3.0227 (SD = 0.78770), was for the statement "The digital infrastructure of materials has created job opportunities for youths and informal sector workers in my area," indicating that digital infrastructure is seen as beneficial for vulnerable groups like the youth and informal workers. It was ranked 2nd.

Lastly, the item "digital infrastructure activities in my community have led to the establishment of new small-scale businesses" received a mean score of 3.0010 (SD = 0.70725), still above the acceptance threshold, and ranked 3rd. While the lowest of the three, it still reflects a positive view of digital infrastructure's contribution to entrepreneurial and small-scale employment development. In summary, respondents generally agree that digital infrastructure contributes meaningfully to organizational sustainability in Enugu State, particularly by increasing labour demand in the waste sector and supporting employment among youths and the informal workforce.

Multiple Regression Analysis

Digital Literacy and digital infrastructure for the Enhancement of organizational sustainability.

The results obtained from the Multiple Linear Regression Analysis of Internal Factors on Organizational Sustainability Behavior are presented in Table 5.

Table 5: The Results of Multiple Linear Regression of digital literacy and digital infrastructure on the Enhancement of organizational sustainability

Model		*Unstandardized Coefficients*		*Standardized Coefficients*	*t-value*	*Sig.*
		B	Std. Error	*Beta*		
1	(Constant)	.976	.121		8.175	<.001*
	Digital literacy	.277	.073	.258	3.700	<.001*
	Digital infrastructure	.244	.091	.212	2.969	.008

Dependent Variable: Enhancement of organizational sustainability

Table 5 presents the results of the multiple linear regression analysis, which reveal that both digital literacy and digital infrastructure have significant positive impacts on enhancing organizational sustainability. The intercept, with a coefficient of 0.976 and a t-value of 8.175 ($p < 0.001$), indicates a statistically significant base level of organizational

sustainability when both independent variables are zero. This suggests that even without any digital literacy or digital infrastructure, organizational sustainability still exists, although this is likely minimal. For digital literacy, the unstandardized coefficient is 0.277, with a standardized beta of 0.258 and a t-value of 3.700 ($p < 0.001$). This shows that for each unit increase in digital literacy, organizational sustainability is expected to increase by 0.277 units. The relationship is statistically significant, with the p-value being less than 0.001, indicating that digital literacy plays a strong role in enhancing organizational sustainability in Enugu State.

For digital infrastructure, the unstandardized coefficient is 0.244, with a standardized beta of 0.212 and a t-value of 2.969 ($p = 0.008$). This suggests that digital infrastructure also has a positive effect on organizational sustainability, with an increase of 0.244 units in organizational sustainability for each unit increase in digital infrastructure. While the effect is significant, the p-value is higher than that for digital literacy, indicating a slightly weaker but still important relationship. Overall, the results highlight the importance of both digital literacy and digital infrastructure in enhancing organizational sustainability, with digital literacy having a marginally stronger effect. The results are shown in terms of the predicted value of the enhancement of organizational sustainability ($\hat{Y}$) in equation (1) and Table 5.

$$\hat{Y} = 1.019 + 0.272X_1 + 0.325X_2 \quad \text{..... (1)}$$

Discussion of Findings

The demographic profile of respondents provided important insights into the characteristics of individuals participating in this study. The sample consisted of a fairly balanced gender distribution, with 52.6% female and 47.4% male respondents, reflecting a relatively equitable representation of both genders. Age-wise, the majority of participants fell within the 20–25 years age group (30.4%), followed closely by those aged 26–35 years (26.7%). This suggests a youthful demographic, likely reflective of the labor force most affected by organizational sustainability. In terms of educational background, respondents were mostly high school graduates (34.3%), followed by those holding Bachelor's degrees (19.8%) and Master's degrees (18.3%). This distribution suggests a well-educated sample with the potential for adaptation to new employment opportunities arising from recycling and digital literacy. The diversity in the city of residence, with participants from Ogui-Asata (30.9%), Abakpa Nike (22.7%), Agbani Road (26.2%), and Emene (20.2%), also indicates that the findings can be generalized to various areas of Enugu State.

The descriptive statistics for digital literacy and digital infrastructure revealed significant insights into how these activities are perceived to impact organizational sustainability. The item " digital infrastructure has increased demand for labour in waste collection, sorting, and processing industries" scored the highest mean of 3.2657, indicating strong agreement among respondents that digital infrastructure positively impacts labour demand in waste-related industries. This was followed by the item on job opportunities for youths and informal sector workers, which scored 3.0227, suggesting that digital infrastructure is recognized as a source of employment for vulnerable groups. The lowest mean score, 3.0010, was recorded for the establishment of small-scale businesses through digital infrastructure, indicating that while there is acknowledgment of entrepreneurship opportunities, they are less prominent than labour demand and organizational sustainability.

The results from the multiple linear regression analysis further underline the significance of both digital literacy and digital infrastructure in fostering organizational sustainability. The regression model demonstrated that both independent variables had a statistically significant and positive effect on enhancing organizational sustainability. Specifically, digital literacy had the largest impact, with an unstandardized coefficient of 0.277 and a standardized beta of 0.258, making it the strongest predictor. This suggests that digital literacy directly contributes to organizational sustainability by stimulating small business opportunities and employment in the digital infrastructure sector. On the other hand, digital infrastructure also had a positive effect on organizational sustainability, with a coefficient of 0.244 and a standardized beta of 0.212, although its impact was slightly weaker than that of digital literacy. These results affirm that both activities are essential for organizational sustainability, with digital infrastructure contributing to labor demand in waste management industries and digital literacy fostering entrepreneurial opportunities.

In conclusion, the findings of this study strongly support the idea that digital literacy and digital infrastructure are effective strategies for enhancing organizational sustainability in Enugu State. The positive impact of both activities aligns with global sustainability goals, where waste management and material digital literacy are critical not only for environmental sustainability but also for fostering economic growth and organizational sustainability. Given the significant effect observed, it is recommended that policymakers and local governments in Enugu State prioritize the promotion of digital infrastructure and digital literacy to further stimulate local employment, particularly for youth and low-income workers. Additionally, further efforts should be made to raise awareness and provide training on these activities to increase their effectiveness in enhancing organizational sustainability.

Conclusion

In conclusion, the findings indicate that the Digital Economy System is not just an add-on to organizational life in Enugu State, but a practical driver of long-term sustainability. As organizations increasingly operate in a market shaped by digital transactions, online visibility, and data-informed decision-making, the ability to adapt digitally becomes closely tied to how well they survive, remain relevant, and grow over time.

Most importantly, digital literacy shows a significant positive effect on organizational sustainability in South East Nigeria. This suggests that when owners, managers, and employees possess the skills to use digital tools confidently, whether for communication, record-keeping, marketing, customer engagement, or basic analytics, organizations become more efficient, more responsive to change, and better positioned to compete. Digital literacy strengthens internal operations, reduces avoidable errors, improves service delivery, and supports innovation, all of which contribute to sustained performance and resilience.

Similarly, digital infrastructure has a significant positive impact on organizational sustainability in Southeastern Nigeria. Reliable internet connectivity, stable power support, access to functional devices, and the availability of secure digital platforms enable organizations to apply digital skills in meaningful ways. With improved infrastructure, firms can scale operations, reduce transaction costs, reach broader markets beyond Enugu, and build more consistent relationships with customers and suppliers. In other words, digital infrastructure turns digital capability into real organizational outcomes.

Overall, the evidence points to a clear implication: organizational sustainability in Enugu State is increasingly linked to investments in people (digital literacy) and systems (digital infrastructure). Strengthening both areas will help organizations remain competitive, adaptable, and economically viable in a rapidly evolving digital environment, while also supporting broader regional development across South East Nigeria.

Recommendations

Given that digital literacy and digital infrastructure both have a significant positive effect on organizational sustainability in South East Nigeria, the following recommendations are proposed to strengthen the Digital Economy System and deepen its sustainability outcomes in Enugu State.

i. Organizations in Enugu State should invest deliberately in building staff digital competence through regular in-house training on core digital tools (e-payments, spreadsheets/accounting software, CRM tools, inventory systems, digital communication platforms), since digital literacy significantly improves sustainability. These efforts will enhance efficiency, reduce operational waste, improve decision-making, and support innovation.
ii. Digital infrastructure significantly supports sustainability; organizations, especially SMEs, should not rely on ad hoc arrangements. They should: partner with internet service providers (ISPs) for business-friendly broadband packages; explore shared infrastructure models (e.g., clusters of businesses jointly funding reliable connectivity, backup power, or shared IT support).

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