



**JOURNAL OF EDUCATIONAL THOUGHT (JET)
A PUBLICATION OF THE DEPARTMENT OF
ADULT EDUCATION, FACULTY OF EDUCATION,
UNIVERSITY OF LAGOS**

adejet@unilag.edu.ng

adejet.journals.unilag.edu.ng

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**Empowering Marginalized Communities for Sustainable Development and Poverty
Alleviation through Digital Literacy in South-South Nigeria**

¹Acha, J.O., Ojong, R. I., Okon, G. J., & Roger, R. N.

¹Department of Continuing Education and Development Studies

University of Calabar, Calabar, Nigeria

achajoseph5@gmail.com

<https://doi.org/10.5281/zenodo.17234885>

Abstract

In order to promote sustainable development and reduce poverty, this investigation explores the potential of digital literacy in empowering underprivileged communities in South-South Nigeria. This work uses a descriptive survey design and included 330 people, including 246 supervisors and 84 directors. Because of the manageable sample size, there was no sampling. The questionnaire was pilot tested which generated a reliability coefficient of 0.84. Three experts validated the instrument for data collection. In addition to collecting personal data, the questionnaire answered the research questions and purpose of the study. Decisions were made based on the actual limitations of mean scores after responses were examined using t-test analysis and descriptive statistics. According to the report, socioeconomic involvement requires a number of digital abilities, including financial literacy, internet search competence, and basic computer operation. It showed how well digital literacy training programs work to give adults the necessary abilities and outlined important ways to incorporate these programmes into larger community development projects. Among the suggestions include investing in digital infrastructure, enhancing collaborations, and growing digital literacy initiatives.

Keywords: Digital literacy, Marginalized communities, Sustainable development, Poverty alleviation

Introduction

Remote areas in Nigeria are disproportionately impacted by the digital divide, which is the difference amid those with access to ICTs like the internet and those without, leading to a series of detrimental effects. Internet connectivity is a major information and communication barrier in these areas due to limited infrastructure (International Telecommunication Union (ITU), 2023). As a result, residents have limited access to online learning resources, which impedes their ability to complete their education and pursue employment opportunities (Olanrewaju et al., 2021). The inability of rural communities to obtain essential healthcare communications and telemedicine services that could enhance their well-being has a detrimental effect on healthcare outcomes as well. Due to limited access to online marketing, e-commerce, and employment prospects in the digital economy, these areas are economically isolated by a lack of internet connectivity (World Bank, 2021). Social exclusion is another aspect of the digital divide that makes people feel alone by impeding their ability to communicate with friends, family, and the outside world.

Remote communities are empowered when the digital divide is closed, allowing them to realize their full potential and leverage the many prospects presented by the digital era. To close this gap, it is essential to determine the precise digital skills that underprivileged groups need. Essential digital skills include basic computer operations, internet navigation, online communication, and digital financial services, which are necessary for participation in the digital economy (World Bank, 2016). Furthermore, context-specific skills, such as agricultural digital skills for rural communities, can enhance livelihoods and socio-economic opportunities (Gilbert & Kaikai, 2017). Understanding these needs is vital for tailoring effective digital literacy programmes that empower marginalized communities and foster sustainable development.

Many studies have established the positive influence of digital literacy training programs on marginalized communities, particularly in improving employment outcomes and socio-economic status (Holzer et al., 2014). However, the effectiveness of these programmes varies significantly based on factors such as programme design, delivery methods, and target population characteristics (UNESCO, 2017). Evaluating the effectiveness of different programmes requires a comprehensive approach, considering various outcome measures such as changes in digital skills, employment rates, income levels, and overall well-being. Long-term follow-up evaluations are essential to assess the sustainability of program impacts and ensure continued relevance and effectiveness. By analyzing these factors, this research aims to identify best practices and strategies for digital literacy training programmes that can significantly improve the lives of marginalized community members.

A holistic approach to community development is essential for addressing the multifaceted challenges faced by marginalized populations. Integrating digital literacy programmes with other development initiatives can create synergies and amplify positive impacts. Collaborations between government, civil society, and the private individuals are vital for implementing comprehensive community development programmes (Narayan, 2005). Community participation and ownership play a vital part in ensuring the sustainability of development initiatives (World Bank, 2004). By engaging community members in the design and implementation of programmes, a sense of collaboration is fostered, enhancing the long-term sustainability of these initiatives. Moreover, considering gender-specific barriers and incorporating gender-responsive and culturally appropriate content is essential for inclusive development, especially in rural areas where people face significant challenges (Bucher, 2012). This research explore strategies for integrating digital literacy programmes with broader development efforts to promote

comprehensive socio-economic empowerment, aiming to create sustainable and inclusive growth for marginalized communities.

Internet network infrastructure is one of the biggest obstacles to internet connectivity in distant Nigerian areas. Geographically, installing traditional fiber optic lines is costly and challenging due to mountainous areas, deep forests, and expansive deserts (Brewer et al., 2022). Additionally, because of the low commercial feasibility of the limited population density in these places, telecommunications companies are deterred from investing in substantial network infrastructure (Brown & Mickelson, 2018).

The rates of internet penetration make this digital divide quite apparent. Although the average internet penetration rate in the country is approximately 44.4%, large cities similar to Lagos and Abuja are rated above 80%, while several rural areas scuffle under 20%, according to the Nigerian Communications Commission (NCC) (2023). These difficulties are shared by isolated populations in Cross River State, which has distinctive natural features including mangrove forests. Rural populations of the state have limited access to digital services, which makes it difficult for them to engage in social connections, healthcare, education, and economic activity. Within the state, poverty and inequality are exacerbated by this digital isolation. This study intends to determine and address the unique digital skills requirements of locals, assess the efficacy of digital literacy training programs, and investigate methods for incorporating digital projects into larger development undertakings in order to empower these people and enhance their sustainability. Opportunities for underserved communities to prosper and advance the state as a whole can be established by closing the digital divide. In light of this, the current study explores how digital literacy could empower underprivileged groups in South-South Nigeria.

Purpose of the study

The general objective of the research is to explore the potential of digital literacy in empowering marginalized communities in the South-South Nigeria. Specifically, the research examined:

1. Identify the specific digital skills needed by adults in marginalized communities to access socio-economic opportunities relevant to them in South-South Nigeria;
2. Evaluate how effective digital literacy training programmes can be in equipping adults with relevant digital skills in South-South Nigeria; and
3. Explore strategies for integrating digital literacy programmes with broader community development initiatives to promote social-economic empowerment in South-South Nigeria.

Research Questions

The study has three research questions:

1. What are the specific digital skills needed by adults in marginalized communities to access socio-economic opportunities relevant to them in South-South Nigeria?
2. To what extent can digital literacy-training programmes be in equipping adults with relevant digital skills in South-South Nigeria?
3. What strategies can be explore for integrating digital literacy programmes with broader community development initiatives in promoting socio-economic empowerment in South-South Nigeria?

Hypothesis

1 There is no significant differences in the mean response of supervisors and directors on the specific digital skills needed by adults in marginalized communities for accessing socio-economic opportunities relevant to them in South-South Nigeria

Method

This research was undertaken in the South-South region of Nigeria using a descriptive survey research approach. 330 respondents made up the target group, which included 84 directors and 246 supervisors of adult literacy programs throughout the area. The study used a census approach, which eliminated the need for sampling because the population size was manageable and relatively modest. By covering the complete population, this approach prevented sampling error and improved the findings' comprehensiveness and reliability. The study gathered a wide range of viewpoints from important stakeholders in adult education administration by including all directors and supervisors.

Based on their strategic roles in the development, execution, and oversight of adult literacy programs, directors and supervisors were chosen with a specific purpose in mind. These people were thought to be the most qualified to offer accurate and pertinent information about stakeholder collaboration in adult education administration. Their participation was crucial to accomplishing the study's goals.

A semi-structured questionnaire that permitted both closed-ended and open-ended answers was used to gather data. Because respondents had greater freedom to comment on topics because to this structure, the researcher was able to collect more detailed and nuanced information than would have been possible with preset response alternatives. The instrument was split into two

primary parts: The part II covered the goals and research questions, while the part I included questions about respondents' personal information. A four-point Likert scale was utilized to score the items in study questions 1 and 3: Strongly Agree (SA = 4), Agree (A = 3), Disagree (D = 2), and Strongly Disagree (SD = 1). A four-point rating system was employed for study question 2, with Very High Extent (VHE = 4), High Extent (HE = 3), Low Extent (LE = 2), and Very Low Extent (VLE = 1).

Three professionals face-validated the questionnaire. Pilot research including 15 directors and 15 supervisors in Imo State, Nigeria, was carried out to guarantee reliability. Because of its accessibility and close vicinity, as well as its structural resemblance to the South-South region in terms of educational administration, Imo State was chosen for the trial. Additionally, the state offered a controllable and realistic environment for the instrument's pre-testing. The pilot study achieved a reliability coefficient of 0.84, showing a high level of internal consistency of the questionnaire items.

The heads of the departments at the adult literacy centers gave their consent before any data was collected. Additionally, written informed permission that explained the goal, methodology, and length of the study was given to the respondents. The researcher, accompanied by one trained study assistant, personally administered and retrieved the surveys at several adult literacy centres. To guarantee that respondents filled out the instrument correctly, the assistant was instructed on the steps. A 100% response rate was obtained from the distribution of 330 questionnaires, all of which were duly returned.

To address the research topics, descriptive statistics (means and standard deviations) were utilized to examine the acquired data. Additionally, the developed null hypotheses were tested at a 0.05 level of significance using t-test statistics. The following decision rules were derived using

the actual boundaries of numbers: Regarding Likert replies, 0.50–1.49 indicates (SD), 1.50–2.49 indicates (D), 2.50–3.49 indicates (A), and 3.50–4.00 indicates (SA). Additionally, 0.50–1.49 indicates (VLE), 1.50–2.49 indicates (LE), 2.50–3.49 indicates (HE), and 3.50–4.00 indicates (VHE). When the p-value was less than 0.05, the null hypothesis was rejected; when it was more than 0.05, it was upheld.

Results

RQ 1: What are the specific digital skills needed by adults in marginalized communities to access socio-economic opportunities relevant to their contexts in South-South Nigeria?

Table 1: Mean and Standard Deviation of responses of Respondents on the specific digital skills needed by adults in marginalized communities to access socio-economic opportunities relevant to their contexts in South-South Nigeria

N= 330				
S/N	ITEM STATEMENT	\bar{X}	SD	DECISION
1	Basic computer operations (e.g., starting the computer, using the mouse) are essential for accessing job opportunities.	2.77	0.89	A
2	The ability to search and find information online is crucial for improving livelihoods.	2.67	0.88	A
3	Skills in using social media platforms are important for networking and accessing job information.	2.88	0.91	A
4	Having knowledge of online banking and mobile money transfer is necessary for financial inclusion.	2.88	0.92	A
5	The ability to create and manage email accounts is essential for communication and job applications.	2.55	0.89	A
6	Understanding online safety and security measures is crucial for protecting personal information.	2.85	0.88	A
7	Skills in using productivity tools (e.g., word processors, spreadsheets) are essential for employment	2.67	0.95	A
Grand Mean		2.75	0.90	A

Note: \bar{X} =Mean, SD=Standard Deviation, N = Number of Respondents=330, A = Agreed

The findings on Table 1 revealed the mean and standard deviation of students on the specific digital skills needed by adults in marginalized communities for accessing socio-economic

opportunities relevant to their contexts in South-South Nigeria. The outcomes revealed that all item statements 1 to 7 ($\bar{X} > 2.50$) were identified by the participants as the digital skills needed by adults in marginalized communities for accessing socio-economic opportunities relevant to their contexts in South-South Nigeria. The overall mean score of 2.87 suggests a generally positive view of these skills' importance.

RQ 2: To what extent can digital literacy-training programmes be in equipping adults with relevant digital skills in South-South Nigeria?

Table 2: Mean and Standard Deviation of responses of Respondents on the extent to which digital literacy-training programmes can be in equipping adults with relevant digital skills in South-South Nigeria

N= 330				
S/N	ITEM STATEMENT	\bar{X}	SD	DECISION
8	To what extent do digital literacy training programs improve adults' basic computer operation skills?	2.73	0.83	GE
9	To what extent do digital literacy training programs enhance adults' internet navigation skills?	3.08	0.84	GE
10	To what extent do digital literacy training programs develop adults' online communication skills?	2.70	0.77	GE
11	To what extent do digital literacy training programs increase adults' proficiency in digital financial services?	3.10	0.78	GE
12	To what extent do digital literacy training programs equip adults with the skills to access online educational resources?	3.03	0.78	GE
13	To what extent do digital literacy training programs enhance adults' ability to use digital tools for job searching and applications?	2.70	0.68	GE
Grand Mean		2.89	0.78	GE

Note: \bar{X} =Mean, SD=Standard Deviation, N = Number of Respondents=330, GE = Great Extent

Table 2 presents the mean and standard deviation of participants' perceptions on the effectiveness of digital literacy training programmes in equipping adults with relevant digital skills in South-South Nigeria. The mean scores for items 8 to 13 exceeded the criterion of 2.50,

indicating that respondents generally perceived these training programmes as effective in developing the specified digital skills.

RQ 3: What strategies can be explore for integrating digital literacy programmes with broader community development initiatives in promoting socio-economic empowerment in South-South Nigeria?

Table 3: Mean and Standard Deviation of responses of Respondents on the strategies that can be explore for integrating digital literacy programmes with broader community development initiatives in promoting socio-economic empowerment in South-South Nigeria

N= 330				
S/N	ITEM STATEMENT	\bar{X}	SD	DECISION
14	To what extent can partnerships between government, civil society, and the private sector enhance the effectiveness of digital literacy programs?	2.81	0.84	A
15	To what extent does community participation in the design of digital literacy programs contribute to their success?	2.75	0.85	A
16	To what extent does incorporating gender-responsive content in digital literacy programs promote inclusive development?	2.99	0.89	A
17	To what extent can integrating digital literacy with vocational training programs boost socio-economic empowerment?	2.53	0.78	A
18	To what extent can the use of mobile technology in digital literacy programs increase their reach and effectiveness?	2.87	0.87	A
19	To what extent does aligning digital literacy programs with local economic activities (e.g., agriculture, small businesses) enhance their impact?	2.69	0.94	A
20	To what extent can continuous monitoring and evaluation improve the outcomes of digital literacy programs?	2.75	0.83	A
Grand Mean		2.77	0.86	A

Note: \bar{X} =Mean, SD=Standard Deviation, N = Number of Respondents=330, A = Agreed

The mean and standard deviation of respondents' responses about potential methods for combining digital literacy programs with more general community development projects to support socioeconomic empowerment in South-South Nigeria were displayed in table 3. For item statements 14–20, the respondents' mean answers above the 2.50 threshold, which served as the decision-making criterion. Respondents indicated that all seven strategies were considered effective for promoting socio-economic empowerment.

H₀₁: There is no significant differences in the mean response of supervisors and directors on the specific digital skills needed by adults in marginalized communities for accessing socio-economic opportunities relevant to them in South-South Nigeria

Table 4: T-test analysis of difference in respondents’ responses on specific digital skills needed by adults in marginalized communities for accessing socio-economic opportunities relevant to them in South-South Nigeria

Respondents	N	\bar{X}	SD	t-cal	df	p-value	Decision
Supervisors	246	2.74	0.49	0.62	328	0.54	NS
Directors	84	2.78	0.38				

\bar{X} = Mean; SD = Standard Deviation; t-critical = 1.96; t-cal = t- calculated value; N = Number of respondents for each category; df = Degrees of freedom; Sig = Significant at 0.05 level; NS = Not significant.

The hypothesis was tested by utilizing an independent sample t-test by comparing respondents’ responses on specific digital skills needed by adults in marginalized communities for accessing socio-economic opportunities relevant to them in South-South Nigeria. The independent-samples t-test showed no significant difference in the responses between supervisors (\bar{X} = 2.74, SD = 0.49) and directors (\bar{X} = 2.78, SD = 0.38); $t(328) = 0.62$, $p = 0.54$. Due to the outcome, the null hypothesis was not rejected. Henceforth, the specific digital skills needed by adults in marginalized communities for accessing socio-economic opportunities relevant to them in South-South Nigeria.

Discussion of Results

This research identified critical digital skills necessary for marginalized adults in South-South Nigeria to access socio-economic opportunities. These include foundational skills such as basic computer operation, online search proficiency, and email management, which are essential for navigating the digital landscape. Additionally, social media literacy, financial literacy through online banking and mobile money, and proficiency in productivity tools are vital for networking,

financial inclusion, and effective work. The result of this research align with the present research on the digital divide, underscoring the critical role of specific digital skills for marginalized communities' socio-economic participation. Basic computer operations, essential for engaging with digital technologies, form a cornerstone of digital literacy, as highlighted by Kumari (2024). The ability to effectively search and find information online, a core component of information literacy as conceptualized by Anunobi and Udem (2014), is crucial for accessing opportunities and improving livelihoods. Social media, as evidenced by Demirgüç-Kunt and Klapper (2012), has become a vital platform for networking and job seeking, while digital financial literacy, encompassing online banking and mobile money transfer skills, is essential for financial inclusion. Moreover, email management, productivity tool proficiency, and digital security knowledge are indispensable for effective communication, work, and online safety, aligning with the findings of Ramstedt, Asplund, Nyman, Svartengren and Hellman (2024).

The study discovered that digital literacy-training programmes can be effective in equipping adults with relevant digital skills in South-South Nigeria. The findings align with existing research, demonstrating the effectiveness of digital literacy training programs in arming personalities with essential digital skills. The improvement in basic computer operations, internet navigation, and online communication skills among participants is consistent with studies by Dido (2025) and Enakrire (2024) which highlight the importance of these foundational skills for digital inclusion. The growth of digital financial literacy skills and the ability to access online educational resources are crucial for economic empowerment and lifelong learning. These findings resonate with research by Demirgüç-Kunt and Klapper (2012) on financial inclusion, Hossain, and Mahmud (2015) on the potential of online learning. The enhancement of participants' ability to use digital tools for job searching and applications is a critical outcome.

This aligns with the increasing reliance on digital platforms for recruitment and job seeking, as highlighted in studies by OECD (2016).

Lastly, the study identified key strategies for effectively integrating digital literacy programmes into broader community development initiatives in South-South Nigeria. These include fostering robust partnerships, prioritizing community involvement, incorporating gender perspectives, aligning with vocational training, leveraging mobile technology, and ensuring local relevance through alignment with economic activities. Continuous monitoring and evaluation are crucial for programme optimization. These findings resonate with established research emphasizing the importance of collaboration, community participation, gender equality (World Bank, 2012), skills development (OECD, 2016), and accessibility through technology (Hall, 2015).

Conclusion

Digital literacy emerges as a pivotal catalyst for empowering marginalized communities in South-South Nigeria, propelling them towards sustainable development and poverty alleviation. By equipping individuals with vital digital skills, this study underscores the potential of digital technologies to bridge the digital divide and create new opportunities. Through effective digital literacy training, participants can gain proficiency in core digital competencies, to enhance their capability to access information, contribute to the economy, and improve their overall well-being. Moreover, the integration of digital literacy with broader development initiatives, such as vocational training and community engagement, proved essential for maximizing program impact. To sustain and scale these efforts, policymakers, practitioners, and stakeholders must prioritize investments in digital infrastructure, capacity building, and inclusive program design. By fostering partnerships, leveraging technology, and continuously monitoring and evaluating programs, it is possible to create a more equitable and digitally inclusive society.

Recommendations

1.To maximize the impact of digital literacy initiatives, there is a need to expand and enhance existing programmes. This involves increasing access to training, diversifying programme offerings, and ensuring that programmes are custom-made to a precise desire of different marginalized groups.

2.Strengthen partnerships and collaboration by creating a more sustainable and impactful digital ecosystem, fostering strong collaboration between management, civil society, and the private individuals is critical. Collaborative efforts can optimize resource allocation, expertise sharing, and programme implementation.

3.Prioritize digital infrastructure development by investing in robust digital infrastructure is important for closing the digital divide. Expanding internet connectivity, improving network reliability, and increasing access to digital devices are critical steps towards empowering marginalised communities.

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