

Impact of digital literacy on service delivery by staff of Kogi State Polytechnic, Lokoja

Joseph A. Adekeye^{1*} and Yakubu Glory Ojochogu²

¹Department of Public Administration, Federal University, Lokoja, Kogi State, Nigeria.

²Confluence University of Science and Technology, Osara, Kogi State, Nigeria.

Accepted 1 June, 2026

ABSTRACT

This paper examined the impact of digital literacy on service delivery by the staff of Kogi State Polytechnic, Lokoja. It assesses staff digital literacy levels and the relationship between digital competence and service efficiency. The paper adopted a descriptive research design in sourcing the required data. A total of 331 questionnaires were administered to respondents, out of which 275 were completed and returned properly. Frequency distribution tables, percentages, and charts were used for descriptive analysis, while hypotheses for the study were tested through the use of regression analysis. The findings of the study revealed that the staff of Kogi State Polytechnic possess moderate digital literacy, which significantly enhances speed, accuracy, responsiveness, and overall quality in terms of service delivery. Major barriers identified include inadequate training, limited access to updated hardware and software, inconsistent power supply, and low institutional support. Therefore, the paper recommends a targeted digital literacy training programme, improved ICT infrastructure, and institutional policies that promote continuous professional development and incentivize the effective use of digital tools.

Keywords: Digital literacy, service delivery, ICT, staff performance, capacity building.

*Corresponding author. Email: joseph.adekeye@fulokoja.edu.ng. Tel: +2348060326463.

INTRODUCTION

Digital literacy refers to the ability of Information Communication Technology (ICT) users to locate, evaluate, adopt, process and manipulate data with the aid of digital technologies such as machine learning, e-mail, learning management systems, office software and institutional databases (Inakefe et al., 2023; Tabasum et al., 2024). Polytechnic staff perform diverse administrative, academic, and student support roles, all of which increasingly rely on digital technologies to achieve efficiency and accuracy in service delivery (Sokari, Olayemi and Haliru, 2019; Sani and Musa, 2019). In Nigeria, and Kogi State Polytechnic in particular, Lokoja, the integration of Information and Communication Technology (ICT) into administrative and academic processes has the potential to improve service delivery, enhance accessibility to information, and support better engagement with students and other stakeholders (Achimugu, Mohammed and Abdul, 2024; Ukomadu, 2024).

The adoption and effective use of digital tools among polytechnic staff remain uneven despite the inherent potentials. Variations in digital competence, combined with infrastructural limitations such as inconsistent power supply, low internet bandwidth, and outdated hardware often hinder the full realization of ICT benefits (Alazigha and Amanawa, 2024; Olabimitan, Ogunmodede and John, 2025). Digital literacy allows staff to provide services such as managing e-library resources, facilitating online communication, and automating routine administrative tasks, which in turn can increase speed, accuracy, and responsiveness in service delivery (Sokari et al., 2019; Inakefe et al., 2023). Nevertheless, anecdotal evidence at Kogi State Polytechnic indicates that key processes, including student registration, results processing, and record-keeping, still experience delays and errors. For instance, the electronic processing of students' results has proven particularly challenging, suggesting that access to technology alone does not guarantee improved

outcomes (Achimugu et al., 2024).

The enumerated challenges above raise important questions about the underlying causes of inefficiencies in service delivery. It is unclear whether these issues arise primarily from inadequate digital skills among staff, insufficient infrastructure, organizational barriers, or a combination of these factors (Ukomadu, 2024; Tabasum et al., 2024). Examining the impact of staff digital literacy on service delivery is therefore essential to understanding how ICT investments translate into practical improvements in institutional operations. (Olabimitan et al., 2025; Alazigha and Amanawa, 2024).

This paper aims to assess the digital literacy levels of staff at Kogi State Polytechnic, examine the relationship between digital literacy and service delivery quality, identify barriers to effective ICT adoption, and propose strategies for improving service delivery through capacity building. The research is guided by questions that explore the extent of staff digital literacy, the influence of these skills on service efficiency, the obstacles hindering ICT use, and the best approaches to enhance digital competence within the institution.

Statement of problem

Service delivery within many polytechnics continues to face persistent challenges, including delays, inefficiencies, and errors in administrative and academic processes despite the growing integration of Information and Communication Technology (ICT) in Nigerian tertiary institutions. At Kogi State Polytechnic, Lokoja, key operations such as student registration, results processing, and record management are still characterized by inconsistencies and operational difficulties, even with the availability of digital systems (Achimugu, Mohammed and Abdul, 2024).

Evidence suggests that the benefits of digital technologies are not fully realized due to uneven levels of competence among staff despite the fact that ICT adoption is widely recognized as a catalyst for improved efficiency, accessibility, and institutional performance (Alazigha and Amanawa, 2024; Olabimitan, Ogunmodede and John, 2025). Digital literacy, which encompasses the ability to effectively use digital tools for information processing, communication, and task execution, plays a crucial role in determining how well staff can utilize available technologies to enhance service delivery (Inakefe et al., 2023; Tabasum et al., 2024).

The mere availability of ICT infrastructure does not automatically translate into improved service outcomes in many institutional settings, including Kogi State Polytechnic. This is because staff may lack the necessary skills, confidence, or institutional support required to effectively operate digital systems such as learning management systems, student information systems, and other administrative platforms (Sokari, Olayemi and Haliru,

2019; Sani and Musa, 2019). In addition, infrastructural constraints such as poor internet connectivity, inconsistent power supply, and limited access to up-to-date hardware further compound the problem, restricting the effective use of digital tools (Alazigha and Amanawa, 2024).

Limited empirical attention has been paid to the specific influence of staff digital literacy on service delivery outcomes within polytechnic environments in Nigeria, despite previous studies examining ICT adoption and its role in enhancing organizational performance (Olabimitan, Ogunmodede and John, 2025; Sokari et al., 2019; Inakefe et al., 2023). This creates a gap in understanding whether inefficiencies in service delivery are primarily driven by inadequate digital skills, infrastructural limitations, or a combination of both (Ukomadu, 2024; Tabasum et al., 2024).

Therefore, there is a need for a focused investigation into how digital literacy affects service delivery among staff of Kogi State Polytechnic, Lokoja. Addressing this gap will provide empirical evidence to guide institutional policies, improve capacity-building initiatives, and enhance the effective utilization of ICT for improved service delivery.

Objective of the paper

The objectives of this paper are:

1. To examine the effect of digital literacy on service delivery among staff of Kogi State Polytechnic, Lokoja.
2. To determine the effect of educational qualification on service delivery among staff of Kogi State Polytechnic, Lokoja.
3. To assess the effect of frequency of ICT use on service delivery among staff of Kogi State Polytechnic, Lokoja.

Research questions

1. What effect does digital literacy have on service delivery among staff of Kogi State Polytechnic, Lokoja?
2. What effect does educational qualification have on service delivery among staff of Kogi State Polytechnic, Lokoja?
3. What effect does the frequency of ICT use have on service delivery among the staff of Kogi State Polytechnic, Lokoja?

Statement of hypotheses

This paper seeks to test the following hypotheses:

H0₁: Digital literacy has no significant effect on service delivery among staff of Kogi State Polytechnic, Lokoja.

H0₂: Educational qualification has no significant effect on service delivery among staff of Kogi State Polytechnic,

Lokoja.

H0₃: Frequency of ICT use has no significant effect on service delivery among staff of Kogi State Polytechnic, Lokoja.

Conceptual clarification

Digital technology

Digital technology is broadly defined as the collection of electronic tools, systems, and resources used to generate, process, store, and communicate information in digital form. These technologies include computers, internet platforms, databases, learning management systems (LMS), and communication tools such as email, which are widely applied in organizational and educational settings to enhance operational efficiency (Sokari, Olayemi and Haliru, 2019; Achimugu, Mohammed and Abdul, 2024). In tertiary institutions, digital technology plays a central role in facilitating administrative processes, academic activities, and communication between staff and students.

However, scholarly discussions suggest that the mere presence of digital technology does not automatically lead to improved organizational outcomes. While some studies emphasize the transformative potential of ICT in improving efficiency and service delivery, others argue that technological investments often fail to yield expected results due to poor utilization, lack of user competence, and inadequate institutional support (Alazigha and Amanawa, 2024). This raises an important question: can digital technology truly enhance service delivery if users are not adequately equipped to use it effectively? The gap between technology availability and effective utilization remains a critical concern, particularly in developing institutional contexts.

In the context of this paper, digital technology is conceptualized as the specific ICT tools and systems deployed within Kogi State Polytechnic, Lokoja for administrative and academic functions. These include LMS, student information systems (SIS), institutional databases, and communication platforms. The study takes the position that while digital technology is already present within the institution, its effectiveness in improving service delivery depends largely on how well staff are able to utilize these tools. Therefore, the focus is not on access to technology, but on its effective use in achieving improved service outcomes.

Digital literacy

Digital literacy refers to the ability to access, evaluate, utilize, and communicate information using digital technologies. It encompasses a range of competencies, including technical skills, cognitive abilities, and problem-solving capacities required to function effectively in a

digital environment (Inakefe et al., 2023; Tabasum et al., 2024). In organizational contexts, digital literacy extends beyond basic computer use to include the ability to navigate institutional systems, adapt to new technologies, and apply digital tools in performing work-related tasks efficiently.

Despite its recognized importance, there is ongoing debate in the literature regarding the depth and scope of digital literacy required for effective performance. Some scholars view digital literacy as a basic operational skill, while others argue that it involves higher-order competencies such as critical thinking, adaptability, and continuous learning. In many developing contexts, including Nigeria, digital literacy levels among staff are often uneven, with individuals demonstrating competence in general ICT use but facing challenges with specialized systems and advanced applications (Sokari, Olayemi, and Haliru, 2019). This raises a key question: is basic digital familiarity sufficient to drive improved performance, or is a higher level of competence required to fully harness digital technologies?

In this paper, digital literacy is conceptualized as the level of competence and confidence staff possess in using institutional digital technologies to perform their duties effectively. It includes the ability to use systems such as LMS, SIS, and other digital platforms to enhance efficiency, accuracy, and responsiveness in service delivery. The study adopts the position that digital literacy is a critical determinant of how effectively digital technologies are utilized and, consequently, how well service delivery outcomes are achieved within the Polytechnic.

Service delivery

Service delivery has been widely conceptualized as the process through which organizations provide services to meet the needs and expectations of users in an efficient, timely, and satisfactory manner. According to Olabimitan, Ogunmodede and John (2025), service delivery reflects the extent to which services meet expected standards of quality and user satisfaction. Similarly, West (2012) emphasizes that effective service delivery in public institutions is characterized by accessibility, responsiveness, reliability, and efficiency. In educational institutions, service delivery encompasses administrative processes, academic support services, communication systems, and the overall quality of services provided to students and stakeholders.

However, there is considerable debate regarding the factors that most significantly influence service delivery outcomes. While some scholars emphasize the role of infrastructure and policy frameworks, others argue that human capacity and competence are equally, if not more, important. For example, Alazigha and Amanawa (2024) note that despite increased digitalization in public

institutions, service delivery challenges persist due to inadequate user competence and weak institutional support systems. This raises a critical issue: can improvements in infrastructure alone guarantee better service delivery, or does the effectiveness of service delivery depend more on the ability of staff to utilize available resources efficiently?

In light of this paper, service delivery is conceptualized as the extent to which staff effectively use digital technologies to provide timely, accurate, responsive, and high-quality services within Kogi State Polytechnic, Lokoja. This study takes the position that service delivery is not solely determined by the availability of digital technologies, but is significantly influenced by staff digital literacy and competence. Therefore, enhancing digital skills, alongside improving institutional support and infrastructure, is essential for achieving meaningful improvements in service delivery.

Theoretical framework

This paper is anchored in the Social Cognitive Theory (SCT) developed by Bandura (1986), which explains how individuals acquire knowledge and skills through observation, interaction, and experience within a social environment. The theory emphasizes that learning is not limited to direct personal experience but also occurs by observing others' behavior and the outcomes of those behaviors. It further highlights the role of self-efficacy, an individual's belief in their ability to perform a task, in influencing behavior and performance.

In the context of this paper, Social Cognitive Theory provides a relevant framework for understanding how staff at Kogi State Polytechnic, Lokoja develop digital literacy skills. Staff members do not learn to use digital technologies in isolation; rather, they acquire these skills through workplace interactions, peer support, training sessions, and continuous engagement with digital systems. By observing colleagues and practicing regularly, staff gradually build the confidence and competence required to effectively use digital tools in their daily tasks (Sokari, Olayemi and Haliru, 2019; Sani and Musa, 2019).

Although digital technologies have already been introduced and adopted within the Polytechnic, the key concern is how effectively these technologies are utilized to improve service delivery. Social Cognitive Theory

suggests that the ability of staff to use digital tools efficiently depends largely on their level of digital literacy and confidence. Staff who are more digitally competent are better positioned to utilize systems such as learning management systems, student information systems, and other administrative platforms, leading to improved efficiency, accuracy, and responsiveness in service delivery (Inakefe et al., 2023; Tabasum et al., 2024).

The theory also recognizes the influence of environmental factors such as institutional support, availability of training, and access to functional ICT infrastructure. Supportive environments encourage skill development and continuous learning, while inadequate training, poor infrastructure, and limited support can hinder the effective use of digital technologies (Alazigha and Amanawa, 2024). This aligns with the realities observed in many Nigerian institutions, where the presence of ICT facilities does not automatically translate into improved performance outcomes.

Therefore, Social Cognitive Theory provides a strong theoretical basis for this paper by explaining how digital literacy is developed through social learning processes and how it influences the effective use of digital technologies for improved service delivery among staff of Kogi State Polytechnic, Lokoja.

METHODOLOGY

This paper adopted a descriptive survey research design to examine the impact of digital literacy on service delivery at Kogi State Polytechnic, Lokoja. This design was chosen because it allows for data collection from a large staff population while providing both descriptive insights and the ability to test relationships between variables. In addition to descriptive analysis, regression techniques were used to determine the predictive effect of digital literacy on service outcomes.

The population of this paper consists of all staff of Kogi State Polytechnic, totaling 1,921 personnel, according to the most recent report from the institution's Human Resources Department. This includes 777 academic staff, 855 non-academic staff, and 289 junior staff. Including all staff categories ensures that the paper captures diverse experiences and interactions with digital tools across different roles within the institution.

Table 1. Population distribution of staff by category.

Staff category	Number of staff
Academic Staff	777
Non-Academic Staff/Administrative Staff	1144
Total	1,921

Source: Human Resources Department, Kogi State Polytechnic, Lokoja (2026).

Using the Taro Yamane formula, the sample size is calculated as:

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

Where:

n = sample size

N = population size (1,921)

e = margin of error (commonly 0.05 for 95% confidence)

$$n = \frac{1921}{1 + 1921(0.05^2)}$$

$$n = \frac{1921}{1 + 1921(0.0025)}$$

$$n = \frac{1921}{1 + 4.8025}$$

$$n = \frac{1921}{5.8025}$$

$$n \approx 331$$

The sample size is approximately 331 respondents.

A stratified random sampling technique was employed to ensure proportional representation of each staff category. Using Yamane's formula for a 5% margin of error, the minimum sample size was determined to be 331 respondents. The sample was allocated proportionally, with each category allocated respondents based on its share of the total population, as follows: 154 academic staff and 177 non-academic and administrative staff. This approach ensures that findings are representative of the entire population and minimizes sampling bias.

Table 2. Distribution of sample size by staff category.

Staff category	Population (N)	Computation	Sample Size (n)
Academic staff	777	$\frac{777}{1,921} \times 331$	154
Non-academic staff/Administrative staff	1144	$\frac{1144}{1,921} \times 331$	177
Total	1,921		331

Source: Author's computation using data from Human Resources Department, Kogi State Polytechnic, Lokoja (2026).

To collect data, a structured questionnaire was developed. The instrument was divided into four sections. Section A gathered demographic information, including age, gender, staff category, highest educational qualification, years of service, and frequency of ICT use in daily work. Section B assessed respondents' digital literacy, focusing on their confidence, competence, and ability to effectively use digital tools. Section C measured service delivery, including efficiency, accuracy, responsiveness, and overall quality of services provided by staff. Section D captured barriers to digital literacy and ICT use, such as inadequate training, poor infrastructure, lack of institutional support, and resistance to adopting new technologies. Highest educational qualification and frequency of ICT use were included as control variables in the analysis, as these factors can influence both digital literacy and service delivery outcomes.

The validity of the questionnaire was ensured through review by three experts in Educational Technology and Measurement, who assessed clarity, relevance, and alignment with the research objectives. A pilot study was conducted with 30 staff members from a similar institution, and reliability analysis using Cronbach's Alpha showed values above 0.7 for all sections, indicating good internal consistency and reliability.

Data were collected both in person and electronically to achieve a high response rate. Participants were informed about the purpose of the paper, assured of confidentiality, and told that participation was voluntary. The collected data were analyzed using SPSS and Excel. Descriptive statistics, including frequencies, percentages, and mean scores, were used to summarize the characteristics of respondents, their digital literacy levels, service delivery, and barriers. Multiple regression analysis was used to determine the predictive effect of digital literacy on service delivery while controlling for the highest educational qualification and frequency of ICT use. The regression model is expressed as:

$$SD = \beta_0 + \beta_1 DL + \beta_2 EDU + \beta_3 FICT + \epsilon$$

Where:

SD = Service Delivery; DL = Digital Literacy; EDU = Highest Educational Qualification (control variable); $FICT$ = Frequency of ICT Use (control variable); β_0 = Intercept; $\beta_1, \beta_2, \beta_3$ = Regression coefficients; and ϵ = Error term

The significance level for all statistical tests was set at 0.05, and findings were interpreted based on their statistical and practical significance.

RESULTS

This section presents the findings of the paper on the impact of digital literacy on service delivery by staff of Kogi State Polytechnic, Lokoja. Out of 331 questionnaires distributed, 275 were completed and returned, giving a

response rate of 83%. The results cover respondents' demographic information, levels of digital literacy, service delivery, barriers to ICT use, and the relationships between these variables using both descriptive and inferential statistics.

Table 3. Distribution of administered and returned questionnaires.

Staff category	Questionnaires administered	Questionnaires returned	Percentage returned (%)
Academic staff	154	135	49.1
Non-academic/ Administrative staff	177	140	50.9
Total	331	275	100

Source: Field Survey, 2026.

Table 4. Demographic characteristics of respondents.

Variable	Category	Frequency (f)	(%)
Gender	Male	165	60.0
	Female	108	39.3
	Prefer not to say	2	0.7
	Total	275	100
Age	20–29	39	14.0
	30–39	85	31.0
	40–49	96	35.0
	50 and above	55	20.0
	Total	275	100
Staff category	Academic staff	135	49.0
	Administrative/Non-teaching	140	51.0
	Total	275	100

Source: Field Survey, 2026.

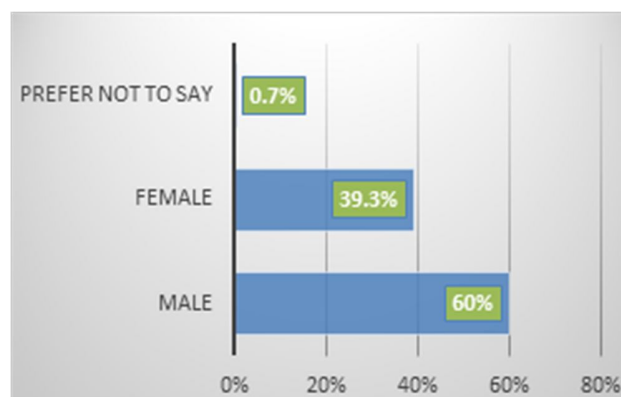


Figure 1. Gender Distribution of the Respondents. Source: Field survey, 2026.

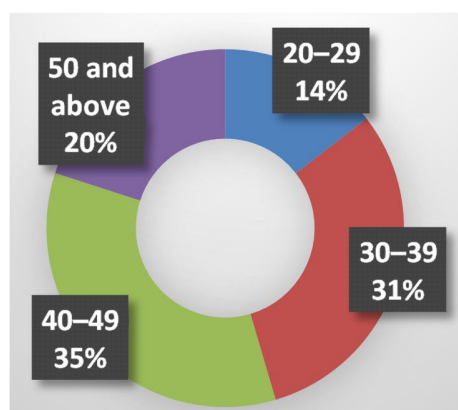


Figure 2. Age distribution of the respondents.
Source: Field survey, 2026.

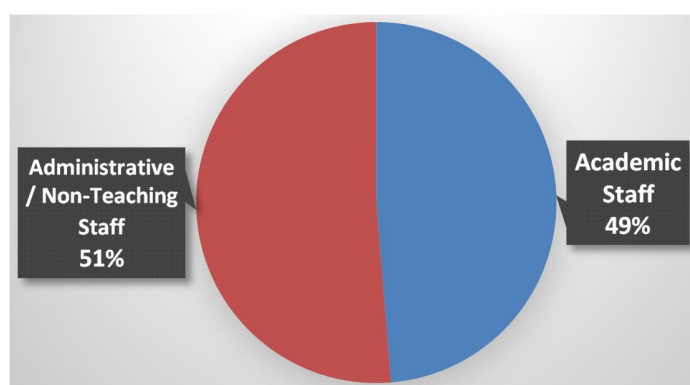


Figure 3. Staff category of the respondents. Source: Field survey, 2026.

Table 5. Educational level, years of service, and frequency of ICT use of respondents.

Variable	Category	f	%
Highest educational qualification	ND/HND	50	18.2
	Bachelor's Degree (B.Sc / B.A / B.Tech)	130	47.3
	Master's Degree (M.Sc / M.A / M.Tech / MBA)	85	30.9
	Doctorate (Ph.D)	10	3.6
	Others	0	0.0
Years of service	Less than 5 years	55	20.0
	5–10 years	70	25.5
	11–15 years	65	23.6
	16–20 years	50	18.2
	Above 20 years	35	12.7
Frequency of ICT use	Daily	130	47.3
	Several times a week	90	32.7
	Occasionally (once a week or less)	40	14.5
	Rarely / Never	15	5.5

Source: Field survey, 2026.

The demographic characteristics of the respondents presented above indicate a predominantly male workforce, with 60% male, 39.3% female, and only 0.7% preferring not to disclose their gender, suggesting a male-dominated staff population consistent with trends in many polytechnic institutions in Nigeria. Most respondents were between 30 and 49 years old (65.4%), indicating a largely mid-career staff population, while fewer were in the youngest (20–29 years, 14.5%) and oldest (50 years and above, 20%) age brackets, suggesting a reasonable mix of experience levels. In terms of educational qualifications, nearly half of the staff (47.3%) held a Bachelor's degree, 30.9% had a Master's degree, 18.2% had ND/HND qualifications, and only a few (3.6%) possessed a Doctorate. This shows that most staff have a solid tertiary education, which may positively influence their ability to adopt and use digital

technologies effectively.

The staff were almost evenly distributed across categories, with administrative/non-teaching staff accounting for 51.3% and academic staff 48.7%, ensuring that perspectives from all functional groups were captured. Respondents' years of service were varied, with the largest groups having 5–10 years (25.5%) and 11–15 years (23.6%) of experience, while fewer had served more than 20 years (12.7%) or less than 5 years (20%), reflecting a balanced mix of early-career and experienced staff. Regarding ICT usage, nearly half of the respondents (47.3%) reported using ICT daily, 32.7% used it several times a week, 14.5% occasionally, and 5.5% rarely or never, suggesting that most staff regularly interact with digital tools, which could positively influence their digital literacy and the quality of service delivery.

Table 6. Respondents' level of digital literacy.

Statement	1	2	3	4	Min	Max	Mean	Std. Dev.
I am confident in using digital tools (computers, software, and online platforms) to perform my work tasks efficiently.	32 (11.6%)	57 (20.7%)	88 (32.0%)	98 (35.6%)	1	4	2.92	0.77
I can effectively use institutional systems such as the LMS and Student Information System (SIS).	62 (22.5%)	50 (18.2%)	72 (26.2%)	91 (33.1%)	1	4	2.70	0.90
I can search for, evaluate, and use online information to support my work.	35 (12.7%)	52 (18.9%)	82 (29.8%)	106 (38.5%)	1	4	2.94	0.67
I regularly update and improve my digital skills to keep up with new technologies.	40 (14.5%)	62 (22.5%)	71 (25.8%)	102 (37.1%)	1	4	2.85	0.83
I can assist colleagues or students in using digital tools when required.	49 (17.8%)	62 (22.5%)	71 (25.8%)	93 (33.8%)	1	4	2.76	0.87

Source: Field survey, 2026

The results in Table 6 indicate that the staff of Kogi State Polytechnic, Lokoja, generally possess a moderate level of digital literacy. On a 4-point scale, mean scores ranged from 2.70 to 2.94, showing that while staff are fairly competent in using digital tools, there is room for improvement. Staff reported being relatively confident in using computers, software, and online platforms to perform work tasks efficiently (Mean = 2.92), and they are most proficient in searching for, evaluating, and applying online information to support their work (Mean = 2.94). However, competence in using institutional systems such as the Learning Management System (LMS) and Student Information System (SIS) was lower (Mean = 2.70), indicating that staff experience some difficulty with specialized digital platforms. Respondents were moderately proactive in updating their digital skills to keep pace with new technologies (Mean = 2.85) and moderately

able to assist colleagues or students in using digital tools when required (Mean = 2.76). The variability in scores, particularly for institutional systems and peer support, suggests differences in experience and confidence among staff. Overall, these findings imply that while staff can effectively perform general digital tasks, targeted training, especially on institutional systems and peer mentoring, could further enhance their digital competence and, consequently, improve the efficiency, accuracy, and responsiveness of service delivery.

The results in Table 7 show that staff of Kogi State Polytechnic, Lokoja, perceive their digital skills as moderately enhancing service delivery. On a 4-point scale, mean scores ranged from 2.78 to 2.91, indicating a generally positive, though not exceptional, impact of digital literacy on work performance.

Table 7. Respondents' perception of service delivery.

Statement	1	2	3	4	Min	Max	Mean	Std. Dev.
My digital skills enable me to complete work tasks more quickly and efficiently.	35 (12.7%)	56 (20.3%)	87 (31.5%)	98 (35.5%)	1	4	2.91	0.70
Using ICT tools improves the accuracy of the services I provide.	48 (17.4%)	45 (16.3%)	81 (29.3%)	101 (36.6%)	1	4	2.85	0.78
I am able to respond to students, colleagues, and other stakeholders promptly because of my digital skills.	41 (14.9%)	67 (24.3%)	79 (28.6%)	88 (31.9%)	1	4	2.78	0.83
Digital tools help me manage administrative and academic tasks with less error and duplication.	41 (14.9%)	62 (22.5%)	71 (25.7%)	101 (36.6%)	1	4	2.84	0.76
My ability to use digital tools positively impacts the overall quality of service delivery at the Polytechnic.	38 (13.8%)	56 (20.3%)	73 (26.4%)	108 (39.1%)	1	4	2.91	0.70

Source: Field survey, 2026.

Staff reported that their digital skills enable them to complete tasks more quickly and efficiently (Mean = 2.91) and improve the accuracy of services provided (Mean = 2.85). They are also moderately able to respond promptly to students, colleagues, and other stakeholders (Mean = 2.78), and digital tools help them manage administrative and academic tasks with fewer errors and less duplication (Mean = 2.84). Overall, respondents recognized that their

ability to use digital tools positively influences the quality of service delivery at the Polytechnic (Mean = 2.91). The relatively consistent scores suggest that most staff experience a tangible benefit from digital skills, though there remains potential to further enhance efficiency, responsiveness, and overall service quality through targeted digital literacy development and supportive institutional measures.

Table 8. Barriers to digital literacy and ICT use among staff.

Statement	1	2	3	4	Min	Max	Mean	Std. Dev.
Inadequate training limits my ability to effectively use digital tools.	31 (11.3%)	55 (20.0%)	87 (31.6%)	102 (37.1%)	1	4	2.95	0.71
Poor internet connectivity and irregular power supply affect my work efficiency.	21 (7.6%)	55 (20.0%)	89 (32.4%)	110 (40.0%)	1	4	3.05	0.63
Limited access to up-to-date hardware and software hinders my ability to perform tasks digitally.	31 (11.3%)	50 (18.2%)	95 (34.5%)	99 (36.0%)	1	4	2.95	0.78
Lack of institutional support and guidance affects my use of ICT in work processes.	39 (14.2%)	59 (21.5%)	76 (27.6%)	101 (36.7%)	1	4	2.87	0.84
Resistance to adopting new technologies among staff makes it difficult to fully utilize digital tools.	47 (17.1%)	56 (20.4%)	70 (25.5%)	100 (36.4%)	1	4	2.80	0.89

Source: Field survey, 2026.

The results in Table 8 highlight the key barriers to digital literacy and effective ICT use among staff of Kogi State Polytechnic, Lokoja. On a 4-point scale, mean scores

ranged from 2.80 to 3.05, indicating that staff generally perceive these obstacles as moderate to significant. The most prominent barrier reported was poor internet

connectivity and irregular power supply (Mean = 3.05), which directly affects work efficiency. Staff also identified inadequate training (Mean = 2.95) and limited access to up-to-date hardware and software (Mean = 2.95) as major constraints on their ability to use digital tools effectively. Additionally, lack of institutional support and guidance (Mean = 2.87) and resistance to adopting new technologies among colleagues (Mean = 2.80) further hinder the full utilization of ICT in work processes. The standard deviations indicate some variability in perceptions, with barriers related to resistance to change showing the widest range, suggesting differences in individual experiences and adaptability. These findings imply that while staff possess moderate digital skills, infrastructural limitations, insufficient training, and organizational support gaps significantly restrict the potential impact of digital literacy on service delivery.

Regression analysis

This section presents the results of the multiple regression analysis conducted to examine the impact of digital literacy on service delivery among staff of Kogi State Polytechnic, Lokoja.

The following hypotheses was tested:

H0₁: Digital literacy has no significant effect on service delivery among staff of Kogi State Polytechnic, Lokoja.

H0₂: Educational qualification has no significant effect on service delivery among staff of Kogi State Polytechnic, Lokoja.

H0₃: Frequency of ICT use has no significant effect on service delivery among staff of Kogi State Polytechnic, Lokoja.

The regression results are presented in Table 9.

Table 9. Multiple regression results.

Dependent Variable: Service Delivery (SD)					
	B (Unstandardized)	Std. Error	Beta (Standardized)	t	p-value
(Constant)	.95	.18	–	5.28	.001
Digital Literacy (DL)	.50	.07	.46	7.14	.001
Highest Educational Qualification (EDU)	.15	.05	.14	2.91	.004
Frequency of ICT Use (FICT)	.08	.06	.07	1.33	.184
Model summary					
R	R ²	Adjusted R ²	Std. Error of the Estimate	F	p-value
.764	.584	.582	.37	50.78	.001

Source: Field survey, 2026.

The multiple regression results in Table 9 indicate that digital literacy has a strong and statistically significant positive impact on service delivery among staff of Kogi State Polytechnic, Lokoja. Hence, the hypothesis which state that digital literacy has no significant effect on service delivery among staff of Kogi State Polytechnic, Lokoja is rejected. Specifically, the standardized beta coefficient for digital literacy ($\beta = 0.46$, $p < 0.001$) shows that for every one-unit increase in digital literacy, service delivery improves by nearly half a standard deviation, holding other factors constant. This suggests that staff with higher digital competence are more efficient, accurate, and responsive in performing administrative and academic tasks.

The highest educational qualification also has a positive and significant effect ($\beta = 0.14$, $p = 0.004$), indicating that more formally educated staff tend to deliver better services, likely due to greater familiarity with ICT tools or analytical skills. However, the frequency of ICT use was not a significant predictor ($\beta = 0.07$, $p = 0.184$), implying that simply using digital tools more often does not guarantee higher service quality; rather, it is the quality

of digital literacy that drives better outcomes.

The model explains 58.4% of the variance in service delivery ($R^2 = 0.584$), which is substantial, indicating that digital literacy and education together are strong predictors of staff performance in service delivery. The model's overall significance ($F = 50.78$, $p < 0.001$) confirms the reliability of these findings.

The regression results clearly support the ideas from both the Technology Acceptance Model (TAM) and the Diffusion of Innovation (DOI) Theory. According to TAM, staff with higher digital literacy are more likely to find ICT systems easier to use and more useful, which directly improves their service delivery. This is seen in the strong link between digital literacy and better performance in tasks like using the LMS and SIS. The DOI Theory also explains that as staff improve their digital skills, they see more benefits from using new technologies, making them more willing to adopt and integrate these tools into their work. The fact that frequency of ICT use didn't significantly impact service delivery suggests that it's not just about using digital tools more often, but about being skilled in

using them. This aligns with DOI's idea that how and how well technology is used matters more than how frequently it's used. The regression findings show that improving digital literacy is key to enhancing service delivery and helping staff adopt new technologies effectively at Kogi State Polytechnic.

DISCUSSION

The paper found that the staff of Kogi State Polytechnic, Lokoja, possess a moderate level of digital literacy, with stronger competence in general digital tasks such as using computers and accessing online information, but relatively lower proficiency in institutional systems like the Learning Management System (LMS) and Student Information System (SIS). This suggests that while staff are comfortable with basic ICT tools, there are gaps in specialized digital skills required for institutional operations. These findings are consistent with earlier studies, which show that digital competence in many developing institutions tends to be uneven, with limitations in system-specific applications (Sokari, Olayemi and Haliru, 2019; Sani and Musa, 2019).

The results further revealed that digital literacy has a positive effect on service delivery, as staff reported improvements in efficiency, accuracy, and responsiveness. However, the impact remains moderate, largely due to key barriers such as poor internet connectivity, irregular power supply, inadequate training, and limited institutional support. These constraints reduce the effectiveness of ICT utilization despite its availability, supporting previous findings that infrastructural and organizational challenges hinder optimal service delivery in Nigerian institutions (Alazigha and Amanawa, 2024; Olabimitan, Ogunmodede and John, 2025).

The regression analysis confirms that digital literacy is a significant predictor of service delivery, while frequency of ICT use is not, indicating that competence matters more than mere usage. This aligns with the Social Cognitive Theory (Bandura, 1986), which explains that skills are developed through learning, interaction, and experience within supportive environments. Therefore, improving staff digital competence through training, collaboration, and institutional support is critical for enhancing service delivery at the Polytechnic.

Conclusion

This paper examined the impact of digital literacy on service delivery by staff of Kogi State Polytechnic, Lokoja. The findings indicate that staff possess moderate digital literacy, which positively influences the speed, accuracy, responsiveness, and overall quality of service delivery. Regression analysis confirmed that digital literacy is a strong predictor of effective service delivery, while higher

educational qualifications also contribute modestly. Key barriers identified include inadequate training, limited access to updated hardware and software, poor internet connectivity and power supply, lack of institutional support, and resistance to adopting new technologies. The paper demonstrates that improving digital competence among staff is essential for maximizing the benefits of ICT tools and enhancing overall service efficiency in the Polytechnic.

RECOMMENDATIONS

Based on the findings, the paper recommends the following:

Given the moderate level of digital literacy, particularly the lower competence in institutional systems such as LMS and SIS, the Polytechnic should implement regular, targeted training programmes focused on both general ICT skills and specialized institutional platforms to enhance staff competence.

Considering that digital literacy significantly influences service delivery, the Polytechnic should establish continuous professional development policies, including workshops, peer-learning initiatives, and incentives, to encourage staff to continuously improve their digital skills.

In response to the major infrastructural barriers identified, especially poor internet connectivity and irregular power supply, the institution should invest in reliable internet services, stable power supply, and updated hardware and software to create an enabling environment for effective ICT utilization.

Since the findings showed that frequency of ICT use alone does not improve service delivery, management should focus on improving the quality of ICT usage by providing guidance, technical support, and supervision to ensure that digital tools are used effectively and efficiently.

REFERENCES

- Achimugu, H., Mohammed, I. N., & Abdul, A. (2024). Information communication technology and the management of the Federal University, Lokoja, and Kogi State Polytechnic, Lokoja, Kogi State, Nigeria. *International Journal of Capacity Building in Education and Management*, 6(5), 1-18.
- Alazigha, F. E., & Amanawa, D. E. (2024). Digital communication and public service delivery: An examination of the challenges and opportunities in contemporary Nigeria. *International Journal of Academic and Applied Research*, 8(9), 177-183.
- Inakefe, G. I., Bassey, V. U., Ikeanyibe, O. M., Nwagboso, C. I., Agbor, U. I., Ebegbulem, J., ... & Ike, G. U. (2023). Digital literacy and e-governance adoption for service delivery in cross river state civil service. *International Journal of Electronic Government Research*, 19(1), 1-23.
- Ng, W. (2012). Can we teach digital natives digital literacy? *Computers & Education*, 59(3), 1065-1078.
- Olabimitan, A. O., Ogunmodede, K., & John, S. (2025). E-Governance and public service delivery: Evidence from Nigeria. *ORGANIZE: Journal of Economics, Management and Finance*, 4(1), 110-122.

- Sani, O. J., & Musa, A. (2019). Influence of ICT competencies on job performance among library personnel in tertiary institutions in Lokoja, Kogi State, Nigeria. *Samaru Journal of Information Studies*, 19(1), 62-76.
- Sokari, V., Olayemi, K. J., & Haliru, Z. A. (2019). The Application of ICT in the Circulation Services of the University Library, Federal University, Lokoja-Kogi State, Nigeria.
- Tabasum, T., Khan, S. A. K., Khan, S. A., & Hussain, M. (2024). Is e-governance reduced poverty and enhancing social welfare? Analyzing the efficiency of public service delivery, digital literacy, and accessibility. *Journal of Childhood Literacy and Societal Issues*, 3(1), 34-50.
- Ukomadu, C. (2024). Evaluation of e-Governance readiness of local government councils in Nigeria: Focus on Lokoja Local Government Council of Kogi State, Nigeria. *INNOVATIONS*, 2(4), 7-18.
- UNESCO (2018). *Digital skills critical for jobs and social inclusion*. UNESCO report.
- West, D. M. (2012). *How to make digital government work for everyone*. Brookings Institution.

Citation: Adekeye, J. A. and Ojochogu, Y. G. (2026). Impact of digital literacy on service delivery by staff of Kogi State Polytechnic, Lokoja. *African Educational Research Journal*, 14(3): 584-595.
