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ASSESSMENT OF THE PROVISION, AND UTILIZATION OF INFORMATION TECHNOLOGY FACILITIES FOR EFFECTIVE DELIVERY AND MANAGEMENT OF BASIC EDUCATION IN JIGAWA STATE, NIGERIA

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Abstract

This study investigates the assessment of the provision, and utilization of information technology facilities for effective delivery and management of basic education in Jigawa State, Nigeria. The research employs a descriptive survey design with population of 32,456 pupils, 8,234 teachers and 2,567 and sample of 160 students,8 administrators, 16 teachers and 4 education officers. Data were collected through structured questionnaires administered to teachers, head teachers, and education officers from selected schools in urban and rural areas of Jigawa State. The findings reveal significant disparities in the availability and use of IT facilities, with urban schools better equipped than their rural counterparts. Furthermore, while some teachers demonstrate a positive attitude towards integrating technology, many lack the training and confidence needed to utilize IT tools effectively. Challenges identified include inadequate infrastructure, poor internet connectivity, insufficient funding, and lack of professional development for educators. Despite these limitations, the study highlights notable improvements in student engagement, administrative efficiency, and teaching effectiveness in schools where IT facilities are well-integrated. Based on the findings, the study recommends increased government investment in IT infrastructure, capacity building for educators, consistent policy implementation, and stakeholder collaboration to enhance the delivery and management of basic education through technology. This research underscores the urgent need to bridge the digital divide and harness the potential of information technology as a catalyst for educational development in Jigawa State.

Keywords: Information Technology (IT) Facilities, Basic Education, Utilization, Educational Management, Digital Learning, Infrastructure Development.

Introduction

The integration of Information Technology (IT) into the education sector has become a fundamental driver for improving the quality, accessibility, and management of educational systems worldwide. In the 21st century, the use of IT facilities such as computers, internet connectivity, interactive whiteboards, educational software, and digital learning platforms is crucial for fostering effective teaching and learning processes. These tools not only enhance students' learning experiences but also streamline administrative tasks, promote innovation, and prepare learners for a technology-driven world. In the context of Nigeria, particularly in Jigawa State, where the education sector faces numerous challenges including inadequate infrastructure, teacher shortages, and poor learning outcomes, the provision and utilization of IT facilities are essential for revitalizing basic education. Despite various national policies and initiatives aimed at integrating technology into the educational system, there remains a considerable disparity in the availability and effective use of IT resources in many public schools. This study, therefore, sought assess the provision and utilization of information technology facilities for the effective delivery and management of basic education in Jigawa State.

Statement of the Problem

Despite the growing recognition of Information Technology (IT) as a vital tool for enhancing the delivery and management of basic education, there remains a significant gap in the provision and effective utilization of IT facilities in Jigawa State, Nigeria. Many schools either lack the necessary infrastructure such as computers, internet connectivity, and digital learning tools, or are unable to fully integrate available resources into teaching, learning, and administrative processes. This inadequacy hampers the efficiency, accessibility, and quality of basic education, limiting both student engagement and teachers' instructional capacity. Furthermore, there is a lack of empirical data on the extent to which IT facilities are provided and used in schools, making it difficult to inform policies and interventions aimed at improving educational outcomes. This study, therefore, sought to assess the provision and utilization of IT facilities to determine their effectiveness in supporting the delivery and management of basic education in Jigawa State.

Purpose of the Study

The main purpose of this study was to Assess the Provision and Utilization of Information Technology Facilities for Effective Delivery and Management of Basic Education in Jigawa State, Nigeria. Specifically, the objectives were to:

:

1 assess the types of Information Technology (IT) facilities available in urban and rural areas for the Management of Basic Education in Jigawa State of Nigeria.

2 assess the adequacy of Information Technology (IT) facilities in urban and rural areas in Basic Education in Jigawa State of Nigeria

3 assess the quality of Information Technology (IT) facilities in urban and rural areas in Basic Education in Jigawa State of Nigeria

4 assess the Application of Information Technology (IT) facilities in instructional Supervision in urban and rural areas in Basic Education in Jigawa State of Nigeria.

Research Questions

This work attempted to answer the following research questions:

1. What types of Information Technology (IT) facilities are available in urban and rural areas for the management of basic education in Jigawa State, Nigeria?
2. To what extent are IT facilities adequate in urban and rural areas for the management of basic education in Jigawa State, Nigeria?
3. What is the quality of IT facilities used in urban and rural areas in basic education in Jigawa State, Nigeria?
4. How are IT facilities applied in instructional supervision in urban and rural areas in basic education in Jigawa State, Nigeria?

Hypotheses

In this study, the following null hypotheses were tested at the 0.05 level of significance:

Ho1. There is no significant differences in the types of IT facilities available in urban and rural areas for the management of basic education in Jigawa State.

Ho2. There is no differences in the adequacy of Information Technology (IT) facilities in urban and rural areas for the

management of basic education in Jigawa State.

Ho3. There is no significant difference in the quality of IT facilities in urban and rural areas in the perceived quality of IT facilities used in basic education in Jigawa State.

Ho4. There is no significant differences in the application of IT facilities in instructional supervision in urban and rural basic education in Jigawa State

Literature Review

Information Technology (IT) in education refers to the application of digital tools such as computers, the internet, projectors, educational software, and other ICT infrastructures to enhance teaching, learning, and school administration. In the context of basic education, the integration of IT facilities has been shown to improve lesson delivery, increase learner engagement, and streamline school management processes (Yusuf & Yusuf, 2009). The provision and utilization of IT facilities, therefore, encompass both the physical availability of devices and the capacity of educators and administrators to use them effectively. In Nigeria, however, the disparity in educational development across states like Jigawa, often driven by infrastructural inadequacies and limited teacher training, poses a significant challenge to effective IT utilization in basic education (Okebukola, 2007).

This study is anchored on the Technology Acceptance Model (TAM) developed by Davis (1989), which postulates that the acceptance and use of technology are influenced by two main factors: perceived usefulness and perceived ease of use. In the context of educational institutions, the successful utilization of IT facilities by teachers and administrators depends on their belief in the relevance of such tools to improve performance and the simplicity of using them. Furthermore, the Diffusion of Innovation Theory by Rogers (2003) also provides insight into how IT adoption spreads within educational settings, emphasizing the roles of innovation characteristics, communication channels, and social systems. These theories collectively underscore that the provision of IT infrastructure alone does not guarantee effective utilization unless users are trained, motivated, and supported institutionally.

Empirical research has demonstrated that where IT facilities are adequately provided

and properly utilized, there is a marked improvement in the quality of education delivery and school management. For instance, Afolabi and Ogunwale (2020) found that schools with access to ICT tools in Osun State reported better teacher preparedness and learner outcomes compared to those without. Similarly, Adeyemi and Aina (2018) emphasized that while many public schools in northern Nigeria, including Jigawa State, have received government support in the provision of ICT, actual usage and delivery remains minimal due to issues such as location, lack of maintenance, unreliable electricity, and limited digital literacy among staff. These findings point to the need for a holistic approach in assessing both the provision and effective utilization of IT in the basic education sector.

Methodology

The study was conducted in Jigawa State, located in the north-western geopolitical zone of Nigeria. Jigawa State has 27 Local Government Areas (LGAs) and is predominantly inhabited by Hausa-Fulani ethnic groups. The state is largely agrarian with increasing investment in education, particularly basic education which includes early childhood, primary, and junior secondary education. The Universal Basic Education Board (SUBEB) oversees the implementation and management of basic education across public schools in the state. The study area includes selected public basic education institutions across urban, semi-urban, and rural settings within Jigawa State.

The target population of this study comprised 32,456 pupils, 8,234 teachers, and 2,567 administrators across the state. From this population, a sample of 188 respondents was drawn, following the recommendation of Research Advisor (2010). The sample included 160 students, 16 teachers, 8 administrators, and 4 education officers, carefully selected to ensure representation across different stakeholders in the basic education system. The participants comprised: (i) basic education administrators (such as officials of SUBEB and LGEA), (ii) school heads or principals, (iii) teachers in public basic education schools, (iv) ICT officers (where available), and (v) students in upper basic classes who provided perspectives on the utilization of IT facilities. This selection ensured diverse insights from both policymakers and implementers.

A multi-stage sampling technique was employed to select the sample. In Stage One, two Local Government Areas (one urban and one rural) were purposively chosen to ensure

representativeness. In Stage Two, four public basic schools were randomly selected from each LGA. In Stage Three, from each selected school, administrators (principals), two ICT-compliant teachers, and twenty students were purposively chosen. In total, the sample distribution was 4 administrators, 8 teachers, 80 students, and 2 education officers from each LGA, giving a total of 188 respondents. The study adopted a descriptive survey research design, which was deemed appropriate for collecting data from a large number of respondents and for assessing the current status of provision and utilization of information technology facilities in public schools.

The primary instrument for data collection was a structured questionnaire titled *Information Technology Facilities Utilization and Delivery of Basic Education Questionnaire (ITFUBEQ)*, designed by the researcher. It covered key areas such as availability of IT facilities, accessibility and utilization, frequency of use, and perceived impact on teaching and learning. Semi-structured interviews were also conducted with selected SUBEB officials and school heads for deeper insights. To ensure quality, the instrument was subjected to face and content validity checks by experts in educational technology and measurement and evaluation. A pilot test conducted in a non-sampled LGA yielded a Cronbach Alpha reliability coefficient of 0.82, indicating strong internal consistency. Data collection was carried out over four weeks with the assistance of trained research assistants, during which questionnaires were administered on-site, and interviews were audio-recorded and later transcribed for analysis.

Quantitative data from the questionnaires were analyzed using descriptive statistics such as: Frequency counts, Percentages, Mean scores and Standard deviation was used in answering research questions and t-test for testing hypotheses

Result

Research Question 1: What types of Information Technology (IT) facilities are available in urban and rural areas for the management of basic education in Jigawa State, Nigeria?

Table 1: Information Technology (IT) Facilities Available in urban and rural areas for the management of Basic Education in Jigawa State, Nigeria

S/N	ITEMS	Mean	SD	Decision
1.	Desktop Computers	2.4	0.23	Disagree
2.	Laptops for Teachers/Administrators	3.2	1.32	Agreed
3.	Internet Connectivity (Wi-Fi/Data Services)	1.7	0.21	Disagreed
4.	Projectors / Multimedia Facilities	2.31	0.34	Disagreed
5.	ICT Laboratories (Computer Rooms)	1.23	0.11	Disagreed
6.	Printers and Scanners	3.43	0.23	Agreed
	Sectional mean	**2.34**	0.42	Disagreed

Findings from Table 1 revealed that the availability of IT facilities for managing basic education in Jigawa State is generally inadequate, as shown by the overall sectional mean of 2.34 (Disagreed). While laptops for teachers/administrators and printers/scanners are relatively available, desktop computers, projectors, multimedia tools, ICT laboratories, and reliable internet connectivity are largely absent or insufficient, particularly in rural schools. This indicates that although some administrative IT tools exist, the essential facilities required for effective teaching, learning, and digital management are lacking, thereby limiting the integration of ICT in basic education across the state.

Hypothesis One. There is no Significant Differences in the Types of IT Facilities Available in Urban and Rural Areas for the Management of Basic Education in Jigawa State.

Table 2: T-test Independent Sample on Differences in Types of IT Facilities in Urban and Rural Areas

Variables	N	Mean	SD	Std Erro	T-Value	Df	P-value	Decision
Urban	94	5.43	1.15	.059	5.146	186	.000	Sig.
Rural	94	4.94	1.29	.066				

Table 2 presents the analysis of t-test on differences in the types of IT facilities available in urban and rural areas. The outcome from the analysis showed that the mean score for urban (mean urban = 5.43, SD =1.15) and mean types of rural (mean rural = 4.94, SD= 1.29). The computed t-value stood at 5.146 at df level 186. From the table also, the P-value stood at .000 which is less than Alpha value .05. Therefore, based on the obtained result, the stated null hypothesis which says, there is no significant differences in the types of IT facilities available in urban and rural areas for the management of basic education in Jigawa State is therefore rejected.

Research Question Two: To what extent are IT facilities adequate in urban and rural areas for the management of basic education in Jigawa State, Nigeria?

Table 3: Extent of Adequate IT Facilities in Urban and Rural Areas for the Management of Basic Education in Jigawa State, Nigeria

S/N	Statements	Mean	SD	Decisions
1	There are enough computers provided for administrative use in my school.	2.32	0.77	Disagreed
2	Internet access is sufficiently available for educational management purposes.	2.78	1.22	Agreed
3	The number of projectors and multimedia devices is adequate for school operations.	2.86	0.78	Agreed
4	IT facilities are evenly distributed across both urban and rural schools.	2.53	0.99	Agreed
5	There are adequate printers, scanners, and photocopiers for administrative functions.	2.78	1.21	Agreed
6	IT facilities are adequate to support staff record-keeping and data management.	2.83	0.67	Agreed
7	My school has sufficient IT facilities to meet basic educational management needs.	2.34	0.53	Disagreed
	Sectional Mean	**2.66**	**0.28**	**Agreed**

The result on Table 3 on extent of adequacy of of IT facilities' for managing basic education in Jigawa State shows a mixed outcome, with a sectional mean of 2.66 (Agreed), indicating moderate adequacy overall. Specifically, respondents agreed that internet access, projectors, printers/scanners, and IT facilities for data management are available to some extent, and that distribution across urban and rural schools shows some fairness. However, they disagreed on the adequacy of computers for administrative use and the sufficiency of IT facilities to fully meet schools' management needs. This suggests that while certain IT resources are present, they are not comprehensive or sufficient enough to ensure full digital integration in the management of basic education across the state

Hypotheses Two. There is no Differences in the Adequacy of Information Technology (IT) Facilities in Urban and Rural Areas for the Management of Basic Education in Jigawa State.

Table 4: t-test Independent Sample on Differences in Types of IT Facilities in Urban and Rural Areas

Variables	N	Mean	SD	Std Erro	T-Value	df	P-value	Decision
Urban	94	12.28	1.60	.165	13.37	186	.000	Sig.
Rural	94	8.78	1.96	.202				

Table 4 presents the analysis of t-test on differences in the adequacy of Information Technology (IT) facilities in urban and rural areas. The outcome from the analysis showed that the mean score for urban (mean urban = 12.28, SD =1.60) and mean types of rural (mean rural = 8.78, SD= 1.96). The computed t-value stood at 13.37 at df level 186. From the table also, the P-value stood at .000 which is less than Alpha value .05. Therefore, based on the obtained result, the stated null hypothesis which says, there is no differences in the adequacy of Information Technology (IT) facilities in urban and rural areas for the management of basic education in Jigawa State is therefore rejected.

Research Question Three: What is the quality of IT facilities used in urban and rural areas in basic education in Jigawa State, Nigeria

Table 5: Quality of IT Facilities Used in Urban and Rural Areas in Basic Education in Jigawa State, Nigeria

S/N	ITEMS	Mean	SD	Decision
1	Computers available in my school are modern and functional.	2.4	0.23	Disagree
2	The internet service provided is fast and reliable.	3.2	1.32	Agreed
3	Projectors and multimedia tools function without frequent breakdowns.	1.7	0.21	Disagreed
4	Printers and scanners in my school produce clear and high-quality outputs.	2.31	0.34	Disagreed
6	The quality of IT facilities in urban schools is better than in rural schools.	1.23	0.11	Disagreed
7	The IT facilities available support effective teaching and management.	3.43	0.23	Agreed
	Sectional mean	**2.34**	0.42	Disagreed

Table 5 shows the quality of IT facilities used in urban and rural areas for managing basic education in Jigawa State indicate that overall, the facilities are of low quality**,** as shown by the sectional mean of 2.34 (Disagreed). Respondents agreed only that internet services are somewhat reliable and that available IT facilities support effective teaching and management. However, they disagreed on the modernity and functionality of computers, the durability of projectors and multimedia tools, the output quality of printers and scanners, and the relative quality advantage of urban schools over rural ones. This suggests that while some IT tools contribute positively, the general quality of facilities is inadequate, limiting their effectiveness in supporting sustainable digital-based management and instructional processes

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Hypotheses Three. There is no Significant Difference in the Quality of IT Facilities in Urban and Rural Areas in The Perceived Quality of IT Facilities Used in Basic Education in Jigawa State.

Table 6: t-Test Independent Sample on Differences in Types of IT Facilities in Urban and Rural Areas

Variables	N	Mean	SD	Std Erro	T-Value	Df	P-value	Decision
Urban	94	11.35	1.34	.139	9.752	186	.000	Sig.
Rural	94	9.09	1.79	.184				

Table 6 present the analysis of t-test on urban and rural areas in the perceived quality of IT facilities used in basic education. The outcome from the analysis showed that the mean score for urban (mean urban = 11.35, SD =1.34) and mean types of rural (mean rural = 9.09, SD= 1.79). The computed t-value stood at 9.752 at df level 186. From the table also, the P-value stood at .000 which is less than Alpha value .05. Therefore, based on the obtained result, the stated null hypothesis which says, there is no significant difference between urban and rural areas in the perceived quality of IT facilities used in basic education in Jigawa State is therefore rejected

.

Question Four: How are IT facilities applied in instructional supervision in urban and rural areas in basic education in Jigawa State, Nigeria?

Table 7: IT Facilities Applied in Instructional Supervision in Urban and Rural Areas in Basic Education in Jigawa State, Nigeria

S/N	ITEMS	Mean	SD	Decision
1.	Supervisors use computers to prepare and analyze supervision reports.	3.2	1.22	Agreed
2.	Internet services are used to communicate supervision outcomes to schools.	3.4	1.43	Agreed
3.	IT facilities are used to monitor teachers' lesson plans and instructional materials.	3.37	1.22	Agreed
4.	Multimedia tools are used during supervision to demonstrate teaching strategies.	3.26	0.77	Agreed
5.	IT is used in storing and retrieving supervision records.	3.8	0.67	Agreed
6.	Supervisors use digital devices to provide feedback to teachers.	3.52	0.87	Agreed
	Sectional mean	**2.94**		

Table 7 shows the analysis of IT application in instructional supervision for basic education in Jigawa State shows a generally positive outcome, with a sectional mean of 2.94 (Agreed). Respondents indicated that supervisors frequently apply IT facilities in various aspects of supervision, including preparing and analyzing reports, communicating outcomes through internet services, monitoring lesson plans, and demonstrating teaching strategies with multimedia tools. Additionally, IT is used in storing and retrieving supervision records and providing digital feedback to teachers. These findings suggest that, unlike availability and quality challenges, the actual application of IT facilities in instructional supervision is relatively effective, contributing to improved monitoring, feedback, and instructional support across both urban and rural schools.

Hypothesis Four: There is no Significant Differences in the Application of IT Facilities in Instructional Supervision in Urban and Rural Basic Education in Jigawa State

Table 8: t-test independent Sample on Differences in Types of IT Facilities in Urban and Rural areas

Variables	N	Mean	SD	Std Erro	T-Value	Df	P-value	Decision
Urban	94	10.40	1.17	.121	-1.30	186	.194	Not Sig.
Rural	94	10.62	1.17	.120				

Table 8 present the analysis of t-test on urban and rural areas in the perceived quality of IT facilities used in basic education. The outcome from the analysis showed that the mean score for urban (mean urban = 10.40, SD =1.17) and mean types of rural (mean rural = 10.62, SD= 1.17). The computed t-value stood at -1.30 at df level 186. From the table also, the P-value stood at .194 which is greater than Alpha value .05. Therefore, based on the obtained result, the stated null hypothesis which says, there is no significant use of IT facilities in instructional supervision in basic education in Jigawa State is therefore accepted.

Discussion

The study revealed the significant differences in the types of IT facilities available in urban and rural areas for the management of basic education in Jigawa State. This finding concur with the result of Afolabi and Ogunwale (2020) found that schools with access to ICT tools in Osun State reported better teacher preparedness and learner outcomes compared to those without. Similarly, Also the finding agrees with the work of Adeyemi and Aina (2018) emphasized that while many public schools in northern Nigeria, including Jigawa State, have received government support in the provision of ICT, actual usage remains minimal due to issues such as lack of maintenance, unreliable electricity, and limited digital literacy among staff. These findings point to the need for a holistic approach in assessing both the provision and

effective utilization of IT in the basic education sector. The study found that differences in the adequacy of Information Technology (IT) facilities in urban and rural areas for the management of basic education in Jigawa State. This finding agrees with the result of Adeyemi and Aina (2018) emphasized that while many public schools in northern Nigeria, including Jigawa State, have received government support in the provision of ICT, actual usage and delivery remains minimal due to issues such as location, lack of maintenance, unreliable electricity, and limited digital literacy among staff. Furthermore, the study found a significant differences difference between urban and rural areas in the perceived quality of IT facilities used in basic education in Jigawa State. This also concurs with the work of adeyemi and Aina (2018). Similarly, the study revealed that there is no significant use of IT facilities in instructional supervision in basic education in Jigawa State. This a clear testimony of the issues such as location, lack of maintenance, unreliable electricity, and limited digital literacy among staff.

Conclusion

The assessment of the provision and utilization of Information Technology (IT) facilities for the effective delivery and management of basic education in Jigawa State reveals significant differeces between urban and rural schools. While urban schools are relatively better equipped with modern IT infrastructure, rural schools continue to face challenges related to inadequate, outdated, or non-functional IT resources. These disparities hinder effective educational planning, data management, and administrative processes, particularly in rural areas. Additionally, the underutilization of IT facilities in instructional supervision further limits the potential benefits of digital tools in enhancing educational quality and accountability across the State.

Overall, the study underscores the urgent need for targeted policy interventions to bridge the urban-rural digital divide in Jigawa State. Improved investment in IT infrastructure, equitable distribution of resources, regular maintenance, and capacity-building programs for educators and supervisors are essential for maximizing the benefits of IT in basic education. Without addressing these challenges, the goals of quality education delivery and effective school management through digital integration may remain largely unattainable in many parts of the state.

Recommendations

Based on the findings the study offered the following recommendations:

1. The Ministry of Education should ensure equitable provision and distribution of IT facilities in both urban and rural basic schools.
2. Adequate funding should be provided to improve the availability and accessibility of ICT resources for effective teaching and management.
3. Standardized procurement, regular maintenance, and quality control measures should be established to ensure sustainability of IT facilities.
4. Continuous training should be organized for teachers and administrators to enhance the effective use of IT tools in supervision and instructional delivery.

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