Leveraging Technology on Provision and Management of School Plant in Tertiary Institutions in Kogi State

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DOI: https://dx.doi.org/10.47772/IJRISS.2025.903SEDU0730

Received: 24 November 2025; Accepted: 30 November 2025; Published: 10 December 2025

ABSTRACT

The study examine leverage technology on Provision and Management of School Plant in tertiary institutions in Kogi State. The study has two objectives among which is to evaluate the Impact of technology on School Plant Management. The research questions and hypotheses are in line with the research objectives. Descriptive Survey Research design was adopted,the population of the study includes all tertiary institutions in Kogi State, stratified random sampling technique was used to select four (4) tertiary institutions with 400 sample size which comprises the Deputy Vice-Chancellor Administrations, Dean of Faculties and Head of Departments. Structured questionnaires with four likert scale and it is tagged "Leveraging on Technology for Provision and Management of School Plant" (LOTFPAMOSP). The instrument was tested using test retest with a coefficient of 0.86. Simple percentage was used to answer the research questions and Pearson Product Moment correlation was used to test the hypotheses at 0.05 significance level. The finding shows that there is significant relationship between technology and school plants provision as technology facilities school plant provision in tertiary institutions. The study concludes that using technology in provision and management of school plants make utilization of school plant effectively and efficiently. The study recommend the use of Computerized Maintenance System (CMS) should be provided for tracking repairs and maintenance.

Keywords: Leveraging, Technology, Management and School Plant

INTRODUCTION

Leveraging technology on Provision and Management of School Plant became importance in this era of technology, using technology in the provision and management of school plant become easy and accessible for the growth and enhancement of education. Also leveraging on modern technology for provision and management of school plants can help to improve the management of physical resources by ensuring they meet the needs of students and staff while operating efficiently. School plant is the physical infrastructure and facilities of a school, including all the buildings, equipment and grounds used for educational purpose (Malik, 2022). While Isaac and Igbokwe (2023) see school plants as a process in which a suitable site is selected for instructional space, administrative space, circulation space and spaces of convenience are designed to facilitate teaching and learning process in the school system.

The management and provision of school plant through technology is the use of technological tools, systems and processes to efficiently manage and provide facilities for the functioning of a school (Babalola, 2023). In using technology to provide and management of school plant there are aspects to be considered by administrators or management of educational institutions and they are:

1. Planning and Design: Technology is needed when designing school buildings using Building Information Modeling (BIM) that is a design software to plan school layouts, ensuring optimal use of space and compliance with standards. The use of virtual simulations to test the usability and functionality of proposed school facilities.
2. Provision of Facilities: Digital platforms for procurement and inventory management of resources.

3. Maintenance and Monitoring through the use of smart maintenance systems that use sensors to track the condition of facilities and predict maintenance needs. Also through the use of computerized maintenance systems (CMMS) for scheduling and tracking repairs and upgrades.
4. Resource Optimized through energy management systems to minimize utility costs by automating energy use.
5. Safety and Security: This is through advanced surveillance systems, biometric access, and emergency alert systems to ensure safety likewise fire detection systems and disaster response tools that will help in case of emergency.
6. Sustainability: This can be achieved by incorporating ecofriendly technology and using green construction materials and practices monitored by technology.

Amos (2023) explains that provision and management of school plant through technology has numerous benefits to educational institutions if properly harness to meet the needs of education in the 21st century. Some of the benefits are highlighted as follows:

1. Cost-effectiveness: Preventive maintenance and optimized resource usage save money.
2. Safety: It enhanced security for students, staff and school properties.
3. Sustainability: It supports green initiatives and reduces environmental impact.
4. Better learning environment: It fosters effective teaching and learning because of well-maintained and technologically advanced facilities.
5. Efficiency: It streamlined operations to reduce manual effort and errors.

However, Lawson and Ezebe (2011) asserts that school plant management as a systematic process of rationalizing the provision, use and maintenance of school facilities or school plants within an educational institution to ensure their optimal utilization and achievement of educational objectives both in the immediate and in the future given the available resources, this concise with the study carried out by Nwokeke (2012) that looked at the management as the foundation of any educational establishment for the achievement of school policies and objectives, provision and management of school plant, effective maintenance of the school structures as well as its facilities and equipment to ensure effective teaching and learning. Thus school plant provision and management through technology should involve effective practices such as planning, supervision and maintenance of the school plants as well as evaluation of available school plants. However, Benjamin et al (2024) posit that technological resources including artificial intelligence (AI) plays significant role in managing educational resources such as school plant.

The theoretical framework are useful in promoting technology for the provision and maintenance of school plant. This first theory according to Abel (2023) is Asset/ facilities management theory which treats schools as portfolios of assets whose life cycle costs are minimized by planned maintenance, accurate inventories and integration of maintenance with budgeting processes, this help in enabling record keeping, scheduling and cost tracking.

Another theory is the Socio-technical Institutional Perspectives, this theory emphasizes on technology alone does not guarantee outcomes but organization processes, governance, finance and human capacity are needed in provision and maintenance of school plant facilities.

Diffusion and technology acceptance models deal with perception of usefulness, ease of use, compatibility with existing practices and observable benefits that influence school staff and administrators. These theories stresses that the expected impact of technology on school plant depend on both technical design and institutional fit.

Statement of the Problem

Provision and Management of school plant in tertiary institutions is required for effective teaching and learning process. However, the condition under which students learn has become so worrisome as most of the school buildings are dilapidated or not spacious enough to accommodate the large number of students, inadequate maintenance of the school plants also become an issue that need to be address Ololube (2015) posits that there is actual lack of educational facilities and few available ones are in a terrible state. From previous studies

carried out by researchers, it is also observed that poor attitude of human, and non-compliance to technology towards school plant facilities makes them to be in deplorable condition. Based on this the researchers decided to carry out this study on provision and management of school plants through technology in tertiary institutions in Kogi State.

The following objectives guide the study;

1. Evaluate the impact of technology in school plant management in tertiary institutions in Kogi State.
2. Examine the roles of technology on provisions of school plant in tertiary institutions in Kogi State.

Research Questions

The following research questions guides the study:

1. How does technology impact school plant management in tertiary institutions in Kogi State?
2. What are the roles of technology on provision of school plants in tertiary institutions in Kogi State?

Research Hypotheses

The following null hypotheses are postulated to guide the study:

HO_1: There is no significant relationship in the opinion of respondents on impact of technology and school plant management in tertiary institutions in Kogi State.

HO_2: There is no significant relationship in the opinion of respondents on the roles of technology and provision of school plants in tertiary institutions in Kogi State.

METHODOLOGY

The research used a descriptive survey design. The population of the study includes all tertiary institutions in Kogi State and a stratified random sampling was used to select four (4) tertiary institutions and four hundred (400) sample size includes the Deputy Vice-Chancellor Administration, Dean of Faculties and Head of Department. The instrument used was structured questionnaires with four point likert scales to elicit information from respondents. The questionnaire is tagged "Leveraging on technology for provision and management of school plant (LOTFPAMOSP). The instrument was validated by expert in the department of Educational Foundations. The reliability of the student was done using test re-test with a coefficient of 0.86. Simple percentage was used to answer the research questions Pearson Product Moment Correlation was used to test the hypotheses at 0.05 significant level.

RESULT

Table 1: How does technology impact school plant management in tertiary institutions in Kogi State?

S/N	ITEM STATEMENT	SA	F	A	F	D	F	SD	F
1.	Adoption of technology affects, the quality and reliability of school plant management	105	26.3%	110	27.5%	85	21.3%	100	25%
2.	Technology helps to reduce carbon foot print on management of school plant	160	40%	90	22.5%	50	12.5%	100	25%
3.	Using of apps to track maintenance request improve school plant management	240	60%	100	25%	30	7.5%	30	7.5%
4.	Exploring technology through the use of AI in school plant facilities help to improve surveillance and enhance campus security	180	45%	90	22.5%	60	15%	70	12.5%

5.	The use of smart maintenance systems in school plants help to reduce cost and improve facility longevity	200	50%	70	12.5%	150	37.5%	80	20%

Research Question2

What are the roles of technology on provision of school plants in tertiary institutions in Kogi State?

S/N	ITEM STATEMENT	SA	F	A	F	D	F	SD	F
6.	Technology will helps in equitable and efficient distribution of school plant facilities	140	35%	120	30%	40	10%	100	25%
7.	Technologies like 3D printing robotics or automated construction system speed up the process of school plants provision	120	30%	110	27.5%	120	30%	150	37.5%
8.	Technology help in sustainability innovation of provision of school plants	180	45%	120	30%	-	-	100	25%
9.	Through technology functional and sustainable school facilities through building information modeling (BIM) or computer-aided Design (CAD) are obtained	190	47.5%	100	25%	90	22.5%	120	30%
10.	Innovative in Data driven decision through technology enable administrators to make informed decisions on provision and utilization of school plants	130	32.5%	150	37.5%	100	25%	120	30%

Table 3

Hypothesis 1: Test of Relationship between technology and school plant management

VARIABLES	N	Mean	SD	R	R^2	0.05	Decision
Technology	261	2.62	1.18	0.851	0.720	0.000	Significant
School Plant Management	139	3.41	0.86				

The findings in table 3 shows that is a correlation between technology and school plant management in tertiary institutions in Kogi State as P=0.000 which is below the significance level of 0.05, so the hypothesis was retained. This shows that invariably that technology enhances school plant management in tertiary institutions in Kogi State.

Table 4

Hypothesis 2: There is no significant relationship between technology and provision of school plant

VARIABLES	N	Mean	SD	R	R^2	0.05	Decision
Technology	264	3.03	0.08	0.941	0.885	0.000	Significant
School Plant Provision	136	3.12	0.78				

The findings on table 4 shows significant relationship between technology and school plant provision in tertiary institutions in Kogi State as P=0.000 is below the significance level of 0.05. The hypothesis was rejected. The r^2 value of 0.885 suggests that 86.6% of the variables in technology and provision of school plant in tertiary institutions can be attributed to the support of technology in facilitating school plant provisions

DISCUSSION OF FINDINGS

From table 1 shows how does technology impact school plant management in tertiary institutions in Kogi State as respondents response on Item 1-5 have a high positive response of strongly agreed and agreed while few respondents are in a negative affirmation.

Item statement 1 shows that adoption of technology affects the quality and reliability of school plant management with 105 (26.3%) respondents strongly agreed and 110 (27.5%) agree respectively while 85 (21.3%) disagree and 100 (25%) strongly disagree respectively.

Item statement 2 to 5 that has technology helps to reduce carbon footprint on management of school plant, using of apps to track maintenance request improve school plant management, exploring technology through the use of AI in school plant facilities help to improve surveillance and enhance campus security all have a positive responses from respondents with 240 (60%) strongly agreed, 180 (45%) strongly agreed and 200 (50%) strongly agreed respectively. This is in line with the submission of Babalola (2023) posit that management and provision of school plant through the use of technological tools, systems and processes to efficiently to manage and provide facilities, equipment and infrastructure required for the functioning of a school. The finding is also in line with the view of Amos (2023) that opines that management of school plant through technology has numerous benefits among which are cost effectiveness and safety.

The findings from table 2 shows that in item statement 6, technology will help in equitable and efficient distribution of school facilities has 140 respondents (35%) strongly agree, 120 (30%) agree and 40 (10%) disagree, 100 (25%) strongly disagree. From item statement 2 that shows technologies like 3D printing, robotics or automated construction system speed up the process of school plants provision, the responses from respondents to this item statement is negative affirmative as 150 (37.5%) respondent strongly disagree and 120 (30%) disagree while 120 (30%) strongly agree and 110 (27.5%) agree respectively.

However, item statement 8-10 that has technology help in sustainability innovation of school provision of school plant, through technology functional and sustainable school facilities through Building Information Modeling (BIM) or Computer-Aided Design (CAD) are obtained. In response to this, all respondents strongly agreed having 180 (45%) 190 (47.5%) while 120 (30%) respondents agree and 100 (25%) agree respectively while 100 (25%) strongly disagree, 90 (22.5%) disagree and 120 (30%) strongly disagree. Item statement 10 which sought the opinion of respondents on innovative data driven decision though technology enable administrators to make informed decision on provision and utilization of school plants, in response 130 (32.5%) respondents strongly agree, 150 (37.5%) agree while 100 (25%) disagree and 120 (30%) strongly disagree. This is in line with the view of Abel (2023) that technological solutions can help to improve the provision of school plant and ensure that schools are adequately equipped with school plant to support teaching and learning while being cost-effective, sustainable and accessible.

CONCLUSION

Technology cannot be separated from education as it plays an important role in enhancing the growth and development of education. Provision and Management of school plants enable easy access to Provision and Management of School Plant.

However, the study concludes that there is a significant relationship between technology and school plants provision, and provision of school plant in tertiary institutions can be attributed to the support of technology in facilitating school plant provision. Likewise, correlation between technology and school plant management shows that technology enhances school plants management.

RECOMMENDATIONS

The study recommends that;

1. The management of tertiary institutions should put adequate technology in place such as the use of computerized maintenance systems (CMMS) for tracking repairs and maintenance for proper management of school plant.

2. School Plant Provision should be done using technology for effectiveness and efficiency.

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