

Impact of Principals' Decision Making and Supervisory Strategies on School Plant Maintenance in Public Secondary Schools in North Central Nigeria

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DOI: <https://doi.org/10.60787/tjesds.vol2no2.146>

Abstract

This study investigated the impact of principals' decision-making and supervisory strategies on school plant maintenance in public secondary schools in North Central Nigeria. Two research questions guided the study, while two null hypotheses were formulated and tested at the 0.05 level of significance. A descriptive survey research design was adopted. The population comprised 37,061 teachers in 5,701 public secondary schools in North Central Nigeria. A sample of 395 teachers was selected through a multistage sampling procedure involving purposive, proportionate, and simple random sampling techniques. Data were collected using a researcher-developed questionnaire titled Principals' Administrative Strategies and School Plant Maintenance Questionnaire (PASSPMQ), structured on a four-point Likert-type scale. The instrument was validated by three experts, and Cronbach's alpha coefficients of 0.92 and 0.91 were obtained for the decision-making and supervisory strategy sections, respectively. Mean and standard deviation were used to answer the research questions, while chi-square goodness-of-fit test was used to test the hypotheses at the 0.05 level of significance. The findings revealed that principals' decision-making positively impact school plant maintenance in public secondary schools in North Central Nigeria. Similarly, principals' supervisory strategy was found to have a positive impact on school plant maintenance. Based on the findings, it was recommended that principals should ensure that maintenance-related decisions are informed and inclusive, involving teachers and relevant stakeholders in prioritizing and planning maintenance tasks.

Keywords: Principals' administrative strategies, school plant maintenance, decision-making strategy, supervisory strategy.

Introduction

Effective maintenance of school facilities is essential to the provision of safe, functional, and conducive learning environments. Well-maintained classrooms, laboratories, libraries, furniture, water facilities, and other components of the school plant not only support teaching and learning but also extend the useful life of educational infrastructure and promote the efficient use of scarce resources. Globally, however, approaches to school plant maintenance differ considerably according to the availability of financial resources, governance structures, policy frameworks, and prevailing institutional cultures. Despite these differences, there is increasing recognition of the need for systematic, preventive, and sustainable approaches to facility management.

In developed countries such as the United States, Canada, and member states of the European Union, school plant maintenance is generally supported by established standards and institutional procedures that emphasize regular facility inspections, Computerized Maintenance Management Systems (CMMS), preventive maintenance, and environmentally sustainable practices. In contrast, maintenance practices in many developing countries, including Nigeria, India, and Kenya, tend to be more reactive, with repairs often undertaken only after facilities have deteriorated or become dysfunctional. Limited financial resources, weak institutional maintenance systems, and inadequate monitoring frequently contribute to this situation. Consequently, Non-Governmental Organizations (NGOs) and international development agencies often complement government efforts in the provision and rehabilitation of school infrastructure, although sustaining such interventions remains a challenge. Countries such as Finland and Singapore, on the other hand, have incorporated school maintenance into broader educational and environmental objectives by promoting sustainability and encouraging stakeholders, including students, to participate in facility management (UNESCO, 2020; World Bank, 2019; Sahlberg, 2015). These international experiences demonstrate that effective school plant maintenance is not simply a technical issue but also a managerial responsibility requiring deliberate administrative action.

School plant maintenance may be understood as a systematic process of preserving educational facilities and ensuring that they remain functional and fit for their intended purposes. Bua (2024) defines school plant maintenance as the process of keeping school facilities in a condition close to their original state through activities such as sweeping, scrubbing, dusting, mopping, repairs, replacement, and renovation. Similarly, Oko-Jaja (2023) views school plant maintenance as a process involving facility record keeping, supervision of utilization, planning for upkeep, motivation of users, and evaluation of available facilities. The author further observes that many school facilities fail to withstand the test of time because of negligence and the indifferent attitudes of some administrators who perceive such facilities merely as government property. These conceptualizations point to the fact that the physical condition of school facilities is closely associated with the quality of administrative attention devoted to their use, protection, and maintenance.

The importance of effective school plant maintenance is particularly evident in its contribution to the quality of the teaching and learning environment. According to UNESCO (2019), a well-maintained school plant is indispensable for providing a safe, healthy, and supportive environment for learners and teachers. In Nigeria, however, many secondary schools continue to experience problems associated with dilapidated buildings, inadequate facilities, poor sanitation, and deteriorating infrastructure (Federal Ministry of Education, 2018). Such conditions can disrupt instructional activities, compromise the safety of school users, and negatively influence educational outcomes. The persistence of these challenges has consequently drawn attention to the

role of school principals, who, in addition to providing instructional and administrative leadership, are responsible for ensuring the effective management and maintenance of school facilities.

Principals' administrative strategies encompass the approaches through which school leaders coordinate human, material, and financial resources to achieve institutional goals. Umar (2019) describes principals' administrative responsibilities as including instructional programmes, personnel administration, physical resource management, and school-community relations. Within the context of school plant maintenance, these responsibilities extend to the management of classrooms, laboratories, furniture, water facilities, libraries, administrative buildings, and other infrastructure necessary for effective teaching and learning. Principals are therefore strategically positioned to influence how school facilities are utilized, protected, monitored, and maintained. Through effective coordination of staff and collaboration with relevant stakeholders, they can create an organizational environment in which the maintenance of school facilities becomes a shared institutional responsibility.

Building on this perspective, Amaefule, Akulue, and Okoli (2022) describe administrative strategies as techniques employed in managing school affairs, while Ughamadu, Obiagwu, and Nwanne (2024) conceptualize them as mechanisms for goal setting, resource allocation, and staff motivation. These perspectives imply that effective school plant maintenance requires more than the availability of physical and financial resources; it also requires appropriate administrative decisions and sustained supervisory attention. Principals must, for instance, determine which maintenance needs require immediate attention, decide how available resources should be allocated, establish priorities, assign responsibilities, and monitor compliance with established maintenance procedures.

Indeed, several administrative strategies have been identified as important to effective facility management. Ughamadu et al. (2024) identify planning, organizing, coordinating, motivating, directing, evaluating, staff development, and budgeting as essential components of effective facility maintenance. Similarly, Ngeripaka, Nkporbu, and Acheya (2019) identify discipline, supervision, delegation, monitoring, motivation, communication, and leadership as strategies that promote accountability, proper utilization of facilities, continuous infrastructure monitoring, and effective implementation of maintenance policies. Although these strategies are interrelated, decision-making and supervision are particularly important because they directly influence what maintenance actions are prioritized, how they are implemented, and whether established maintenance standards are consistently followed.

Decision-making strategy refers to the systematic process through which a principal identifies a problem, considers available alternatives, and selects the most appropriate course of action for achieving predetermined educational objectives. Ezuehie (2024) conceptualizes decision-making as a process through which a school principal selects the most appropriate and workable option from several alternatives to solve problems or accomplish institutional goals. Similarly, Tonwe (2019) notes that decision-making in school administration follows a logical and sequential process that culminates in choices capable of stimulating administrative action and improving school operations. In the context of school plant maintenance, decision-making is particularly relevant because principals routinely determine maintenance priorities, allocate available resources, approve repairs, respond to facility related emergencies, and establish rules for the proper utilization of school facilities. Sound decisions can therefore facilitate timely maintenance interventions, reduce unnecessary expenditure, and prevent minor defects from developing into major structural problems.

The quality of principals' decision-making may also be influenced by the extent to which relevant stakeholders are consulted and involved in matters concerning school facilities. Participatory decision-making can provide principals with information about the actual condition of facilities and the maintenance needs experienced by teachers, students, and other users. It may also promote a sense of ownership and accountability among stakeholders, thereby encouraging them to protect school property. Thus, where principals make informed, timely, and contextually appropriate decisions concerning school plant maintenance, available resources may be utilized more effectively and maintenance activities may be implemented with greater consistency.

Closely related to decision-making is the supervisory strategy adopted by the school principal. Supervisory strategy refers to the systematic monitoring, inspection, guidance, and regulation of school activities and resources to ensure that established standards and objectives are achieved (Edeh, Madukwe, Ge, & Obongofio, 2024). Idris, Jada, and Garba (2025) conceptualize supervisory strategy as an administrative mechanism through which principals systematically monitor, inspect, and regulate the utilization of school facilities to ensure their proper use and sustainability. In school plant management, supervision involves regular inspection of classrooms, laboratories, furniture, sanitation facilities, electrical installations, and other physical resources to identify defects, misuse, or signs of deterioration. Effective supervision enables principals to detect maintenance needs at an early stage and initiate appropriate corrective measures before problems become more costly or hazardous.

Furthermore, effective supervision promotes accountability among those who use school facilities. When teachers and students understand that school property is regularly inspected and that inappropriate use is addressed, they are more likely to exercise caution in the use of such facilities. Similarly, Okeke (2022) observes that supervisory practices can contribute to the effective management of school facilities and the maintenance of a safe and conducive learning environment. Supervision, therefore, is not merely an inspection exercise; it is a continuous administrative process through which principals provide direction, monitor compliance, identify emerging problems, and ensure that maintenance decisions are translated into practice.

The relevance of decision-making and supervisory strategies becomes more apparent when the persistent challenges confronting school plant maintenance in Nigeria are considered. Bua (2024) identifies inadequate funding, the absence of dedicated maintenance budgets, weak maintenance culture, over-enrolment, and inconsistent electricity supply as major impediments to effective facility maintenance. However, financial and infrastructural constraints alone may not fully explain the continued deterioration of school facilities. Administrative priorities, the timeliness of decisions, the allocation of available resources, and the extent to which facilities are regularly monitored may equally determine whether existing resources are used efficiently. Onyekachi, Onuoha, and Clifford (2022) observe that many principals devote greater attention to routine administrative functions than to instructional supervision and facility maintenance. Such competing administrative demands may result in inadequate attention to the condition and utilization of school facilities. Ohia (2019) further reports incidents involving collapsing school structures that resulted in fatalities and could have been prevented through timely maintenance interventions. These concerns underscore the importance of proactive administrative decision-making and continuous supervision.

The consequences of inadequate school plant maintenance extend beyond the physical deterioration of buildings and facilities. Ekpoh (2018) and Ohia (2019) report that deteriorating school facilities can negatively affect students' academic performance and hinder the attainment of educational objectives. When classrooms, laboratories, libraries, furniture, and other

instructional facilities are poorly maintained, teachers may experience difficulties in delivering instruction, while students may be exposed to uncomfortable or unsafe learning conditions. Consequently, effective maintenance should be viewed as an integral component of educational management rather than as an isolated technical responsibility. The manner in which principals make decisions about maintenance priorities and supervise the use and upkeep of facilities may therefore have important implications for the quality and sustainability of school infrastructure.

Existing empirical evidence provides some support for the relationship between principals' administrative strategies and school plant maintenance. For instance, Offor and Obiekwe (2024), in a study conducted in Anambra State, found that principals' participatory decision-making behaviour had a high and significant relationship with school facilities maintenance in public secondary schools. This finding suggests that the manner in which principals involve themselves and relevant stakeholders in decision-making may influence the effective management and maintenance of school facilities. Similarly, Okereke (2022) reported that principals, to a large extent, evaluate and control decisions that influence school plant maintenance. This finding reinforces the view that decisions concerning school facilities are an important aspect of principals' administrative responsibilities. However, effective decision-making must be complemented by continuous monitoring to ensure that decisions are properly implemented.

With regard to supervisory strategy, Okeke (2022) found that teachers agreed that principals employed supervisory strategies in the maintenance of school facilities in secondary schools in Anambra State. In a related study, Anebi (2021) found a significant relationship between principals' supervisory strategies and aspects of school facilities maintenance, including building inspection, furniture repairs, routine checks of laboratory equipment, and inspection of the general cleanliness of the school environment in secondary schools in Benue State. These findings suggest that regular supervision may contribute to early identification of maintenance needs and encourage responsible utilization of school facilities.

Although these studies provide useful empirical insights, their findings cannot automatically be generalized to all public secondary schools in North Central Nigeria because they were conducted in different geographical and institutional contexts. Moreover, relatively limited empirical attention has been given to the combined contribution of decision-making and supervisory strategies to school plant maintenance across the North Central geopolitical zone. This geographical and empirical gap provides a justification for further investigation into the impact of principals' decision-making and supervisory strategies on school plant maintenance in public secondary schools in the zone.

Statement of the Problem

School plant maintenance remains a persistent challenge in public secondary schools in North Central Nigeria. Classrooms, laboratories, libraries, furniture, sanitation facilities, and other essential facilities continue to experience deterioration and inadequate maintenance, thereby creating uncondusive learning environments, disrupting teaching and learning, and reducing the useful life of school infrastructure.

The problem may partly be associated with how principals make decisions about maintenance priorities, allocation of available resources, repair needs, and the utilization of school facilities. Similarly, inadequate supervision may result in poor monitoring of facilities, delayed identification of defects, misuse of school property, and failure to implement necessary maintenance measures. Thus, the effectiveness of school plant maintenance may depend substantially on the quality of principals' decision-making and supervisory practices.

Despite the administrative responsibility of principals for school facilities, there is limited empirical evidence on the extent to which their decision-making and supervisory strategies determine school plant maintenance in public secondary schools across North Central Nigeria. This gap necessitates an investigation into the impact of principals' decision-making and supervisory strategies on school plant maintenance in the region.

Purpose of the Study

The main purpose of the study was to investigate the impact of principals' decision-making and supervisory strategies on school plant maintenance in public secondary schools in North Central Nigeria. Specifically, the study sought to:

1. find the impact of principals' decision-making strategy on school plant maintenance in public secondary schools in North Central Nigeria; and
2. find the impact of principals' supervisory strategy on school plant maintenance in public secondary schools in North Central Nigeria.

Research Questions

The following research questions guided the study:

1. What is the impact of principals' decision-making strategy on school plant maintenance in public secondary schools in North Central Nigeria?
2. What is the impact of principals' supervisory strategy on school plant maintenance in public secondary schools in North Central Nigeria?

Hypotheses

The following null hypotheses were formulated and tested at the .05 level of significance:

1. Principals' decision-making strategy has no significant impact on school plant maintenance in public secondary schools.
2. Principals' supervisory strategy has no significant impact on school plant maintenance in public secondary schools in North Central Nigeria.

Methodology

The research design adopted for this study is the descriptive survey research design. According to Nworgu (2015), a descriptive survey research design is a type of research design that systematically gathers and describes information about a population, situation, or phenomenon. Similarly, Afolabi (2020) explains that this design is used to observe, describe, and document aspects of a situation as they occur naturally, often employing questionnaires or interviews as data collection tools.

The population of the study comprised 37,061 teachers in 5,701 public secondary schools in North Central Nigeria (Federal Ministry of Education, 2025). A sample of 395 teachers was used for the study. The study adopted a multistage sampling procedure. First, purposive sampling was used to select Kogi, Benue, Nasarawa, and the Federal Capital Territory (FCT) from the North Central region. Second, proportionate sampling was used to allocate respondents across the selected states and the FCT according to their teacher populations. Third, simple random sampling was used to select teachers from 50 public secondary schools. A sampling frame containing teachers in the selected schools was prepared, and teachers were selected by balloting without replacement until the required number was obtained.

Data were collected using a researcher-developed instrument titled Principals' Administrative Strategies and School Plant Maintenance Questionnaire (PASSPMQ). The instrument was structured on a four-point Likert-type scale: Strongly Agree (SA) = 4, Agree (A) = 3, Disagree (D) = 2, and Strongly Disagree (SD) = 1. The instrument was subjected to face and content validation by three experts comprising two specialists in Educational Management and one specialist in

Science and Mathematics Education from the Faculty of Education, Rev. Fr. Moses Orshio Adasu University, Makurdi. Their observations and suggestions were incorporated into the final version.

To establish reliability, the questionnaire was administered to 30 teachers in two public secondary schools within the study population but outside the schools selected for the main study. The responses were analysed using Cronbach's alpha. Reliability coefficients of 0.92 for principals' decision-making strategy and 0.91 for principals' supervisory strategy were obtained, with an overall coefficient of 0.92. The coefficients exceeded the 0.70 benchmark reported by Emaikwu (2021) and were considered adequate for the study.

The data collected for the study was analysed using descriptive statistics of Mean and Standard deviations to answer the research questions. The cut-off point of 2.50 was used to determine positive responses on the items of the questionnaire. The cut-off point of 2.50 was used such that any mean score less than 2.50 will be regarded as a negative response. Chi-square (χ^2) test of goodness fit was used to test the hypotheses at 0.05 level of significance. The null hypotheses were rejected when the p-value is below the predetermined alpha level ($P < 0.05$) and was retained with a positive impact when the p-value was equal to or greater than the alpha level ($P \geq 0.05$).

Results

Research Question 1:

What is the impact of principals' decision-making strategy on school plant maintenance in public secondary schools in North Central Nigeria?

Table 1:

Mean Scores and Standard Deviation Rating on Impact of Principals' Decision-Making Strategy on School Plant Maintenance in Public Secondary Schools in North Central Nigeria.

S/No	Item Description	N	SA	A	D	SD	X	STD	Decision
1	Principals make informed decisions on matters of maintenance	395	175	150	45	25	3.16	0.92	Agree
2	Principals respond immediately when broken furniture are reported	395	182	140	45	28	3.21	0.91	Agree
3	The principal involves teachers in decisions about school building maintenance.	395	168	150	50	27	3.11	0.96	Agree
4	Teachers' opinions are valued when maintenance issues are discussed.	395	170	148	49	28	3.17	0.90	Agree
5	The principal encourages collective decisions on repair priorities.	395	145	178	45	27	3.20	0.89	Agree
Cluster Mean							3.17		Agree

Source: Field Work, 2026

Table 1 shows mean ratings of 3.16, 3.21, 3.11, 3.17, and 3.20 with corresponding standard deviation values of 0.92, 0.91, 0.96, 0.90, and 0.89 respectively. The result indicated that

the respondents agreed that principals make informed decisions on matters of maintenance, principals respond immediately when broken furniture are reported, the principal involves teachers in decisions about school building maintenance, teachers' opinions are valued when maintenance issues are discussed, and the principal encourages collective decisions on repair priorities. The cluster mean of 3.17 is above the benchmark mean score of 2.50. This implies that principals' decision-making strategy has a positive impact on school plant maintenance in public secondary schools in North Central Nigeria.

Research Question 2:

What is the impact of principals' supervisory strategy on school plant maintenance in public secondary schools in North Central Nigeria?

Table 2:

Mean Scores and Standard Deviation Rating on Impact of Principals' Supervisory Strategy on School Plant Maintenance in Public Secondary Schools in North Central Nigeria.

S/No	Item Description	N	SA	A	D	SD	X	STD	Decision
6	Principals monitor compliance with maintenance regulations on sporting facilities	395	169	151	51	24	3.17	0.89	Agree
7	The principal regularly inspects classrooms furniture.	395	146	174	52	23	3.19	0.88	Agree
8	Principal's supervisory visits help identify maintenance needs.	395	180	140	45	30	3.22	0.86	Agree
9	The principal checks that repairs are done properly.	395	148	172	46	29	3.18	0.88	Agree
10	The principal supervises cleaning work personally.	395	178	145	45	27	3.19	0.90	Agree
Cluster Mean							3.19		Agree

Source: Field Work, 2026

Table 2 shows mean ratings of 3.17, 3.19, 3.22, 3.18, and 3.19 with corresponding standard deviation values of 0.89, 0.88, 0.86, 0.88, and 0.90 respectively. The result indicated that the respondents agreed that principals monitor compliance with maintenance regulations on sporting facilities, the principal regularly inspects classroom furniture, principals' supervisory visits help identify maintenance needs, the principal checks that repairs are done properly, and the principal supervises cleaning work personally. The cluster mean of 3.19 is above the benchmark mean score of 2.50. This implies that principals' supervisory strategy has a positive impact on school plant maintenance in public secondary schools in North Central Nigeria.

Test of Hypotheses

Hypothesis 1:

Principals' decision-making strategy has no significant impact on school plant maintenance in public secondary schools in North Central Nigeria.

Table 3:

Chi-square Analysis of Impact of Principals' Decision-Making Strategy on School Plant Maintenance in Public Secondary Schools in North Central Nigeria.

Responses	Observed Frequency	Expected Frequency	P	Df	χ^2	Decision
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SA	175	98.8				
A	140	98.8	.0000	3	148.04	Sig.
D	50	98.8				
SD	30	98.8				
Total	395					

Source: Field Work, 2026

Table 3 shows that Chi-square calculated value of 148.04 at 3 degree of freedom; $P=0.000$ is less than 0.05. with this result, the null hypothesis which states that principals' decision-making strategy has no significant impact on school plant maintenance in public secondary schools in North Central Nigeria was therefore, rejected. This means that principals' decision-making strategy has positive significant impact on school plant maintenance in public secondary schools in North Central Nigeria.

Hypothesis 2:

Principals' supervisory strategy has no significant impact on school plant maintenance in public secondary schools in North Central Nigeria.

Table 14:

Chi-square Analysis of Impact of Principals' Supervisory Strategy on School Plant Maintenance in Public Secondary Schools in North Central Nigeria.

Responses	Observed Frequency	Expected Frequency	P	Df	χ^2	Decision
SA	170	98.8				
A	150	98.8	.0000	3	155.82	Sig.
D	47	98.8				
SD	28	98.8				
Total	395					

Source: Field Work, 2026

Table 4 shows that Chi-square calculated value of 155.82 at 3 degree of freedom; $P=0.000$ is less than 0.05. with this result, the null hypothesis which states that principals' supervisory strategy has no significant impact on school plant maintenance in public secondary schools in North Central Nigeria was therefore, rejected. This means that principals' supervisory strategy has positive significant impact on school plant maintenance in public secondary schools in North Central Nigeria.

Discussion of Findings

The first finding of this study revealed that principals' decision-making strategy has a positive impact on school plant maintenance in public secondary schools in North Central Nigeria. This suggests that when principals make informed decisions, involve teachers in maintenance related matters, and encourage collective decision making, it enhances the effective maintenance and sustainability of school facilities. This finding is in line with the finding of Offor and Obiekwe (2024), who found that principals' participatory decision-making behaviour has a high and significant relationship with school facilities maintenance in public secondary schools. It also

agrees with the finding of Okereke (2022), whose study revealed to a large extent that principals evaluate and control decisions that influence school plant maintenance. The result highlights the importance of inclusive and well-informed decision making as an effective administrative strategy for improving school plant maintenance and ensuring proper management of school facilities.

The second finding of this study revealed that principals' supervisory strategy has a positive impact on school plant maintenance in public secondary schools in North Central Nigeria. This suggests that regular monitoring, inspection of facilities, and hands-on supervision by principals contribute significantly to the proper maintenance and sustainability of school plants. This finding is in line with the finding of Okeke (2022), whose study revealed that teachers agreed on the effectiveness of principals' supervision strategies for school plant maintenance in secondary schools in Anambra State. It also agrees with the finding of Anebi (2021), who found a significant relationship between principals' supervisory strategies and activities such as building inspections, furniture repairs, laboratory equipment checks, and general cleanliness of the school environment. The result underscores the importance of continuous and structured supervision as an administrative strategy for enhancing school plant maintenance.

Conclusion

Based on the results of the study, it was concluded that principals' decision-making strategy, and supervisory strategy have positive impact on school plant maintenance in public secondary schools in North Central Nigeria.

Recommendations

Based on the findings of the study, the following recommendations were made:

1. Principals should ensure that maintenance-related decisions are informed and inclusive, involving teachers and relevant stakeholders in prioritizing and planning maintenance tasks. Collaborative decision-making ensures effective allocation of resources, timely completion of repairs, and improved management of school facilities in public secondary schools in North Central Nigeria.
2. Principals should engage in regular supervisory activities, including routine inspections of classrooms, laboratories, furniture, and other facilities. Active supervision helps ensure compliance with maintenance regulations, identifies issues early, and promotes accountability among teachers and students in the upkeep of school plant in public secondary schools in North Central Nigeria.

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