

# MAINTENANCE MANAGEMENT OF PHYSICAL FACILITIES IN TERTIARY INSTITUTION OF LEARNING IN NIGER STATE

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**Abstract:** This research is aimed at evaluating the maintenance management of physical facilities in tertiary institutions of learning in Niger State. The study adopted the descriptive survey research design. The population for this study covered the selected 93 building structures in the three institutions (Federal University of Technology, Minna, Federal Polytechnic, Bida and Federal College of Education Kontagora) 9,331 students and the 3586 staff who have adequate knowledge and experience of both maintenance management and condition of buildings in the selected institution and this give a total of 12,917 populations. A sample of 392 participants was used for this study. The data generated for this study was analyzed with appropriate statistical techniques. The techniques included frequency, percentages and mean score. All analysis was done using Statistical Package for Social Science (SPSS) version 20. It is observed from the study that lack of building maintenance and management decision play an important role in the physical condition of buildings which in turn affected staff productivity and students' academic achievements. It can also be concluded from the study that building maintenance is an area of study that has been a neglected sector of the construction industry universally and for this reason, the performance of tertiary educational buildings in terms of their maintenance and management are far below best practices. The study recommended a proactive approach to maintenance should be adopted, the reactive approach is not suitable especially as human lives are involved. Maintenance department should provide models and other approaches or framework of effective implementation of building maintenance process. There is need to post maintenance staff to students' hostel blocks, classroom blocks, Faculty buildings; library complex, theater complex and offices who will closely monitoring the conditions of buildings.

**Keywords:** Physical Facilities, Maintenance Management, Tertiary Institution of Learning.

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## 1. INTRODUCTION

Physical facilities constitute an important factor resource for the implementation of educational programmes in Niger state. Its management is very important because when physical facilities are poorly managed, the desired educational objectives will not be achieved. This is the reason why the National University Commission (NUC), National Board for Technical Education (NBTE) and other education bodies developed a manual guiding Vice Chancellor, Rectors, Principal Officers, Works department heads, Deans of faculty/schools and Heads of departments in the management of physical facilities. This manual is for the management of resources/facilities in the tertiary institutions in Nigeria. The manual has provision for planning, procurement, utilization, maintenance, safety and supervision of physical facilities. Facilities maintenance management is an integral part of the overall management of the institution of learning. The actualization of

the goals and objectives of education require the provision, maximum utilization and appropriate management of the physical facilities. This will improve the quality of teaching and learning. A direct relationship exists between the quality of school facilities provided and the quality of the products of the institution of learning. This indicates that the physical environment of a tertiary institution of learning is a major determining factor in the attainment of its objectives.

Maintenance management of facilities does not only stop at derivable benefit by staff and students but also on the life-span of the equipment. An equipment or instrument that is well maintained and managed shall take more time being used than those not maintained. Facilities such as buildings, offices, hostels, stores, staff quarters to mention but a few, can have long life span when not over worked and not misused. Maintenance management of physical facilities could help in hazard reduction among students and staff in tertiary institution of learning (Ezenwegbu 2020).

Many researchers, administrators, and educational planners, have confirmed that institutional facilities in Nigerian school are inadequate and the few available ones are being over utilized due to the astronomical increase in school enrolment. Similarly, Owuamanam (2005) noted that poor management of infrastructural facilities and lack of maintenance for the available facilities was the major problems facing our educational institutions in Niger state and in Nigeria at large. The tertiary institution facilities are grossly poor managed to match the student population and maintenance of school facilities will enhance teaching and learning and improve academic performance of students more also increases workers' productivity. Researchers like Wilcockson (1994), Lawal (1996), Ajayi (1999) and Owoeye (2000) have long identified the importance of school facilities in teaching and learning while noting that mismanagement, deterioration and lack of maintenance of these facilities will spell doom for the researcher and students in the teaching and learning activities. Negligence in the maintenance of school facilities has many negative consequences. When school facilities are not well managed and maintained, they can constitute health hazard to students and staff that use the facilities and the even large amount of money invested on the school facilities can be wasted without maintenance.

The situation of physical facilities in Niger state is disturbing and calls for thorough investigations into both the remote and immediate causes, as no meaningful academic work in sciences may be attained without adequate, well maintained and functional physical facilities. The researcher is worried that if the present situation of poor management of physical facilities in our tertiary institutions of learning continue, it may affect lecturers and students' academic activities, thus, affecting our basic education system.

It was against this backdrop that the researches seek to evaluating the maintenance management of physical facilities in tertiary institutions of learning in Niger State with major focus on Federal University of Technology, Minna, Federal Polytechnic, Bida and Federal College of Education Kontagora which stand to be federal government owned institutions of learning in the state.

The study tends to answer the following research questions;

1. What are the conditions of building elements/components and services in Niger State?
2. What is the effect of poor maintenance of physical facilities on academic activities in the selected tertiary institutions of learning in Niger state?
3. What are the factors responsible for deterioration of physical facilities in Niger state tertiary institutions of learning?

## **2. METHODOLOGY**

The study adopted the descriptive survey research design. The population for this study covered the selected 93 building structures in the three institutions (Federal University of Technology, Minna, Federal Polytechnic, Bida and Federal College of Education Kontagora) 9,331 students and the 3586 staff who have adequate knowledge and experience of both maintenance management and condition of buildings in the selected institution and this give a total of 12,917 populations.

A sample of 351 participants was used for this study. The data generated for this study was analyzed with appropriate statistical techniques. The techniques included frequency, percentages and mean score. All analysis was done using Statistical Package for Social Science (SPSS) version 20.

## **3. EMPIRICAL REVIEW**

Ogunoh (2014) carried out a study on evaluation of the building maintenance practices in Nnamdi Azikiwe University, Awka. The aim of this research was to evaluate the building maintenance practices in Nnamdi Azikiwe University, Awka and their implications on the achievement of educational goal and objectives. This is with a view to developing effective

and efficient maintenance management procedures to improve building maintenance in the institution. Five research questions and three hypotheses were formulated. The study was a survey research method. Data were collected using questionnaire. The population of the study was 1300 which includes the staff and students of the area of study. The researcher analyzed the data collected using mean, regression analysis and the following findings were made: Infrastructure support in form of tools, equipment and instruments are grossly inadequate; Nature and types of buildings in the institution comprised of lecture theaters, classroom blocks, auditorium, libraries, laboratories, workshops, hostel blocks, clinical sciences building, offices and others. Some of the buildings were not effectively managed and maintained; Lack of maintenance culture, poor design and construction, function and use of buildings, wear and tear, fungal/termite attack, poor funding and aging are some of the factors found to be responsible for deterioration of buildings in the institution.

Olaitan, (2006) carried a study on the “Assessment of the management of school facilities in Kaduna State Secondary Schools”. The research adopted survey method of research in order to describe events and situations found at various schools. She used checklist of assessment in the questionnaire in respect of respondent’s opinion so that it will enable the researcher to elicit the responses accordingly and the population of the study are 190 principals and 7026 teachers.

The main findings of the researcher showed that some schools have the available facilities, while others did not have enough as stated before. Most of the general responses from the respondents on facilities in school showed facilities available to some extent while in schools facilities were inadequate, even the available once were in critical condition, the renovation, replacement and reconstruction most especially in the rural Secondary Schools. This research is related to my research because she assesses the management of school facilities in secondary school in Kaduna state which related evaluation of availability and maintenance of facilities.

The researcher carried out a good research in the state but the only area this differs from the current research work is that the current research covers tertiary educational institutions while her own was within secondary school but the area of uniqueness was study facilities.

Maina, and Jumare (2013) conducted a study on “Assessment of the provision and maintenance of teaching and learning facilities of agricultural Science in Secondary Schools in Zaria Metropolis. The researcher used survey method of design for the study. It was considered suitable due to the nature of the research that made use of sampled opinions for measuring respondent’s opinion and making generalization in the entire population. The researchers used self-developed questionnaire for data collection which was validated and realizable through the use of pilot test.

The research made the following findings, that; the facilities for teaching and learning Agricultural Science were inaccurate; The major sources of these facilities given by the government and school managers were not maintained; Lastly, the respondents did not know who the individual responsible for maintaining these facilities, whether it the government or schools’ managers. This research is basically related to present topic of investigation in tertiary institution in Kaduna State.

Ehimetalor (2001) carried out a study on school facilities management and practice in Nigeria. The purpose of the study was to identify the available school facilities and how they are managed in Nigerian tertiary institutions. The researcher developed six research questions and six null hypotheses were formulated and tested at 0.05 level of significance. The population of the study was 215 academic and non-academic staff of Colleges of Education in the South-South zone of Nigeria. No sampling was made from the population. The instrument used was the questionnaire. He made use of Chi Square in his analysis. The findings of the study include the following; The Federal Government has for the past five or six years made efforts to earmark for education certain amount of money for the provision and maintenance of facilities; In 1998, six federal universities got N105.75m each and then Colleges of Education got N60.8m each for provision and renovation of their physical structures. These amounts do not seem to represent anything significant to the infrastructure already in their worst states.

The findings acknowledge efforts made to improve the physical facilities in Nigerian tertiary educational institutions, though; nothing was reported about how the financial provisions assisted private institutions which invariably should be given some grants to operate. However, finding number three expresses doubt that the provisions made were anything significant compared to the actual state of infrastructure in both our public and private Colleges of Education. Ehimetalor’s study is related to the present study because both of them studied the management of facilities in Nigerian tertiary institutions.

Ekoro (2000) studied perceived strategies for improving the administration of Colleges of Education in Nigeria. The purpose of the study was to identify the relevant strategies adopted by management in improving the administration of colleges of education. The researcher postulated five research questions and five null hypotheses were formulated. The null hypotheses were tested with one-way Analysis of Variance (ANOVA) at 0.05 level of significance. Descriptive survey research design was adopted. The instrument used was questionnaire and oral interview. The research questions were answered using the mean and grand mean ratings. The Provosts, Deans of Schools, registrars and Heads of Departments numbering 188 constituted the population of the study. The study postulated the following findings; Provision of physical facilities in public Colleges of Education is left in the hands of the government alone as there is no tangible evidence of co-operation by wealthy individuals and cooperate organizations in this regard; Provision of infrastructure to privately owned colleges are left in the hand of their proprietors alone; Most Colleges Education Management do not take the issue of provision and maintenance of physical facilities seriously.

The above study is related to the present study because both of them studied the extent of provision, maintenance and management of physical facilities in colleges of education.

Wizu (2001) carried out investigation on availability and adequacy of physical facilities in Government owned primary schools in Abi Local Government Area of Cross River State. The purpose of the study was to find out the availability and adequacy of physical facilities in Abi local government primary schools. Four research questions were developed and four null hypotheses were formulated and tested at the probability of 0.05 level of significance. Simple percentage was the statistical tool used to answer the research questions. The population of the study was 21 Primary Schools in the area. No sampling was made. Questionnaire was the instrument used for data collection. Data collected were analyzed using percentages and mean. The following findings were made: There were physical facilities in all the primary schools studied; Some types of physical facilities necessary in achieving educational goals were not available; Most of the available physical facilities were not maintained nor managed adequately; Inadequacy of physical facilities negatively affect teaching and learning in the schools.

The findings portray the message that physical facilities are not only expected to be available but also there is need for adequate maintenance management to carry out their functions. Inadequate physical facilities do not promote teaching and learning but retards progress in school business. Wizu's study above focused on primary schools in Abi local government area while the present study focused on colleges of education in South-East zone. Wizu's study is related to the present study in that both of them studied the adequacy and management of school facilities.

Igbokwe (1999) carried out a study on management of physical resources in Federal College of Education, Akoka. The purpose of the study was to identify how physical resources are managed in Federal College of Education, Akoka. Four research questions and four hypotheses were formulated. The hypotheses were tested at 0.05 level of significance. The study was a descriptive survey design. Data were collected using questionnaire. The population of the study includes 122 academic staff, 198 non-academic staff made up of senior staff and Administrative personnel. The total population of the study was 320. No sampling was made. The researcher analyzed the data collected using mean and the following findings were made: Physical resources were not effectively managed and maintained both by college and users; Available physical resources were being over utilized. The findings show that physical facilities can be available but not properly maintained. Igbokwe's study is related to the present study because both of them studied physical resources management in federal colleges of education.

William (2004) carried out a study on extent of utilization of school facilities in secondary schools in Gboko Educational Zone of Benue State. The purpose of the study was to identify the available school facilities and the extent of its utilization in secondary schools in Gboko. The researcher used six research questions and formulated five null hypotheses to guide the study. The hypotheses were tested at 0.05 level of significance. Descriptive research design was adopted. The Researcher made use of questionnaire as instrument for data collection. The population of the study was 33 Secondary schools in the zone. Data collected were analyzed using mean and standard deviation. The researcher made the following findings: Schools facilities were available in the schools studied; Available facilities were found inadequate, poorly maintained and managed; Inadequacy of facilities negatively affects their utilization. The inadequacy of the facilities invariably negatively affected their utilization. Facilities have to be adequate and well maintained in order to be effectively utilized for the purpose of achieving educational goals at all levels of the nation's schools system.

William's study is focused on secondary schools in Gboko educational zone while the present study is focused on colleges of education in South-East zone of Nigeria. Both researchers studied the extent of utilization of school facilities.

Ogonor, and Sanni (2001) carried out a study on maintenance of secondary school facilities in Midwestern Nigeria. The purpose of the study was to determine the extent the government and private school proprietors provide and maintain facilities in secondary schools in Mid-West. Four research questions were posed. Simple percentage was the statistical tool used to answer the research questions. The population of the study comprises of all the secondary schools in Edo and Delta States as at the 1999/2000 school year. No sample was made. Two sets of instruments were designed and utilized for the collection of data. They include state of school facilities checklist and questionnaire. The findings of the study include: available facilities were grossly inadequate and maintenance activities on available facilities were inadequate; maintenance activities were better carried out in private schools than public schools;

Apart from the revelation of the study that available facilities were inadequate and poorly maintained, it however found that maintenance of facilities was better in the private schools than public schools. This present study is also preoccupied with investigating the extent of maintenance of physical facilities in both public and private colleges of Education in the South East Nigeria.

#### 4. DATA PRESENTATION AND ANALYSIS

##### Research Question One: Conditions of Building Elements/Components and Services

To determine the conditions of building elements/components and services in the study area, the respondents were therefore asked to rank the conditions on a likert scale of (5 = very good, 4=Good, 3=Fair, 2=Bad, 1= no idea). The responses to the questions were presented and analysed in table 4.10.

**Table 1: Rating of Conditions of Building Elements/ components and services**

S/N	Building Element/Components and Services	(5)	(4)	(3)	(2)	(1)	Mean Score	Rank
A	Floor slabs/finishes	25	55	56	67	-	3.17	3
B	Walls (internal and external)	25	46	56	76	-	3.06	4
C	Columns/beams	13	77	113	-	-	3.44	1
D	Roofing/ceiling	15	36	136	16	-	3.22	2
E	Painting/decoration	-	22	78	86	-	2.75	7
F	Doors/windows	7	36	76	84	-	2.75	7
G	Water supply	10	36	101	56	-	2.94	5
H	Electrical fittings	-	17	78	108	-	2.50	10
I	Plumbing/sanitary appliances	10	26	51	116	-	2.55	9
J	Toilets/urinals	-	27	68	108	-	2.55	9

Source: Researchers field survey 2020

##### Respondents Rating on Conditions of Building Elements/Component and Services

Table 1 indicates the respondents rating of the conditions of building elements/components and services. From the answers displayed in table 4.19, it can be seen that columns/beams ranked highest as in fairly condition with mean score of 3.44, followed by roofing/ceiling with mean score of 3.22. Floor slabs/finishes are in fairly condition with mean score of 3.17. While walls (internal and external) is in fair condition and ranked 4<sup>th</sup> in the list with mean scores of 3.06. Water supply ranked 5<sup>th</sup> with mean score of 2.94 which indicates that water supply is not regular.

Plumbing/sanitary appliances and toilets/urinals ranked 9<sup>th</sup> as they were in bad condition with mean scores of 2.55. Electrical fittings ranked 10<sup>th</sup> in the list as it was in bad condition with mean score of 2.50.

This is a reflection that some of the building elements/components and services have started dilapidating very fast. Based on the direct observations and walkthrough evaluations conducted by the researcher revealed these, it is unsafe to operate in a dirty and unkept environment especially in academic environment. This will undermine this goals and effectiveness of education. This implies that building elements/components and services in the studied institution need to be improved in terms of their maintenance and management.

##### Research Question Two: Responses on the Defects of Building Elements/components

The respondents were asked to rank the extent to which they agree on the defects of building elements/components on a likert scale of (5 = strongly agree, 4=Agreed, 3=Strongly Disagree, 2=Disagree , 1 = undecided). In the ranking of the responses of the respondents, the responses with mean value of 3.0 and above was regarded as agree while mean value that fall below 3.0 was regarded as disagree. Their responses to the questions were therefore presented and analyzed in table 2



**Table 2: Response on the Defects of Building Elements/Components**

**(A) Floor slab/finishes**

S/N	Defects	(5)	(4)	(3)	(2)	(1)	Mean Score	Rank	Remark
I	Cracks	55	55	35	24	34	3.38	3	Agree
Ii	poor adhesion of tiles	19	29	106	25	24	2.97	4	Disagree
Iii	Broken Floor tiles	106	35	26	36	-	4.11	2	Agree
Iv	Dampness	35	45	35	24	64	2.77	5	Disagree
V	Holes on the floor screeds	116	56	15	16	-	4.44	1	Agree
<b>(B) Walls (internal and external)</b>		<b>(5)</b>	<b>(4)</b>	<b>(3)</b>	<b>(2)</b>	<b>(1)</b>			
I	Settlement	55	15	9	19	105	2.14	4	Disagree
Ii	Dampness	55	24	14	35	75	2.72	3	Disagree
Iii	Mould stains	95	35	4	9	55	3.58	2	Agree
Iv	Flaking plaster	55	15	9	19	105	2.41	4	Disagree
V	Cracks	106	56	15	26	-	4.27	1	Agree

**Table 2 Cont.**

<b>(c) Columns/Beams</b>		<b>(5)</b>	<b>(4)</b>	<b>(3)</b>	<b>(2)</b>	<b>(1)</b>				
I	Cracks	25	19	105	9	10	2.63	1	Disagree	
Ii	Dampness	14	24	35	25	105	2.00	3	Disagree	
Iii	Sagging of beams	20	30	25	34	104	2.19	2	Disagree	
Iv	Buckling of Columns	-	10	11	26	156	1.25	4	Disagree	
<b>(D) Roofing /Ceiling</b>		<b>(5)</b>	<b>(4)</b>	<b>(3)</b>	<b>(2)</b>	<b>(1)</b>				
I	Removal of roof covering sheets	9	9	125	35	25	2.69	3	Disagree	
Ii	Leakage	-	-	162	41	-	2.83	2	Disagree	
i	Decay of Carcasing timber	-	16	26	106	55	1.94	5	Disagree	
I	Sagging of ceiling	15	15	35	124	14	2.38	4	Disagree	
V	Growth of weeds on the roof	55	65	35	24	24	3.55	1	Agree	
<b>(E) Painting</b>		<b>(5)</b>	<b>(4)</b>	<b>(3)</b>	<b>(2)</b>	<b>(1)</b>				
I	Blistering/Peeling of paint	105	35	25	14	24	4.00	1	Agree	
Ii	Crazing of paint	9	9	25	55	105	1.69	3	Disagree	
ii	Chalking of paint	9	9	25	56	104	1.69	3	Disagree	
I	Mould stain	105	35	25	14	24	4.00	1	Agree	
<b>(F) Doors and Windows</b>			<b>(5)</b>	<b>(4)</b>	<b>(3)</b>	<b>(2)</b>	<b>(1)</b>			
I	Decayed wooden frames		99	59	13	20	12	4.16	4	Agree
Ii	Stiffness of louver		80	30	20	30	20	3.66	5	Agree
Iii	Broken aluminium glasses and louver blades		105	54	14	30	-	4.27	1	Agree
Iv	Doors and windows not shutting properly		95	55	35	9	9	4.19	3	Agree
V	Defective locks		115	35	19	25	9	4.22	2	Agree

Source: Researchers field survey 2020

**4.2 View of Respondents on the Defects of Building Elements/Components**

Table 2 shows that respondents strongly agreed that defects found on the floor slab/finishes are holes on the floor screeds which ranked highest with mean scores of 4.44, followed by broken floor tiles and cracks with mean scores of 4.11 and 3.38 respectively. However, respondents disagreed with poor adhesion of tiles and dampness on the floor slab/finishes with mean scores of 2.97 and 2.77 respectively. Respondents agreed strongly that there are cracks on the walls both internal and external with the highest mean score of 4.27, followed by mould stains with mean score of 3.58, but disagreed on dampness with mean score of 2.72, settlement of walls and flaking plaster with mean scores of 2.41. On columns/beams, all the respondents consensually disagreed that no defects with mean scores of 2.63 2.19, 2.00 and 1.24 respectively. On the issues of roofing/ceiling respondents agreed on all the opinions, that there are no defect found on the roof/ceiling but disagreed that the only defect found on the roof/ceiling is growth of weeds with mean score of 3.55.

Responses from respondents also show that they strongly agreed that, the only defects found on paintings are blistering/peeling of paints and mould stains with mean scores of 4.00, while they disagreed on other defects. In terms of doors and windows, broken aluminum glasses and louver blades ranked highest with mean score 4.27, followed by defective locks with mean score of 4.22, doors and windows not shutting properly 4.19, decay wooden frames 4.16 and stiffness of louver blade carries with mean score of 3.66.

**Table 3: Responses on the Provision of Services**

**(1) Electricity Supply**

Items	Variables	No of Responses	Percentage %
<b>How regular is the electricity supply</b>	(a) Very regular	-	-
	(b) Regular	37	16.67
	(c) Fairly regular	108	55.55
	(d) Not regular	58	27.78
	(e) Not provided at all	-	-
<b>Total</b>		203	100.00 %
<b>Frequency of supply</b>	(a) Once a day	57	27.78
	(b) Twice a day	108	55.55
	(c) After many days	38	16.67
	(d) Uncountable times a day	-	-
<b>Total</b>		203	100.00%
<b>problems experienced in the use of electrical fittings</b>	(a) Burnt sockets	60	33.34
	(b) Burnt ceiling fan coil	49	22.22
	(c) Bad ceiling fan regulator	94	44.44
<b>Total</b>		203	100.00%
<b>(2) Toilets/Urinals</b>			
<b>Provision of toilets/urinals functional</b>	(a) Classrooms/lecture theaters	25	11.11
	(b) Hostel blocks	106	55.55
	(c) Libraries	36	16.67
	(d) Laboratories/workshops	36	16.67
	(e) All the buildings	-	-
	(f) No provision at all	-	-
<b>Total</b>		203	100.00%
<b>How functional are toilets and urinals?</b>	(a) Not functioning	41	16.67
	(b) Functioning fairly	162	83.33
	(c) Functioning very well	-	-
<b>Total</b>		203	100.00%

**Table 3 Cont.**

<b>(3) Water Supply</b>			
Items	Variables	No of Responses	Percentage
<b>How regular is the water supply?</b>	(a) Very regular	-	-
	(b) Regular	-	-
	(c) Fairly regular	142	72.22
	(d) Not regular	61	27.78
	(e) Not provided at all	-	-
<b>Total</b>		203	100.00%
<b>Frequency of supply</b>	(a) Once a day	162	83.33
	(b) Once in two days	41	16.67
	(c) Once in three days	-	-
	(d) Once a week	-	-
	(e) Once a month	-	-

<b>Total</b>	(f) Any how	-	-
		203	100.00%
<b>Problems experience in the use of plumbing/sanitary fittings</b>	(a) Broken W.C. Suit	-	-
	(b) Broken urinals	-	-
	(c) Broken wash hand basin	-	-
	(d) Leaking valves	28	11.11
	(e) Broken pipes	-	-
	(f) Blocked pipes	118	61.11
	(g) Excessive bad odour	57	27.78
	(h) Leaking taps	-	-
<b>Total</b>		203	100.00%

#### (4) Refuse Collection

Items	Variables	No of Responses	Percentage
<b>Regular Collection of Refuse</b>	(a) Very regular	-	-
	(b) Regular	38	16.67
	(c) Fairly regular	47	22.22
	(d) Not regular	118	61.11
	(e) Not at all	-	-
<b>Total</b>		203	100.00%
<b>(5) Sewage Treatment Plant</b>			
<b>How functional is the sewage treatment plant</b>	(a) Not functioning	17	5.56
	(b) Functioning fairly	159	83.33
	(c) Functioning very well	27	11.11
<b>Total</b>		203	100.00%
<b>(6) Clearing of grasses</b>			
<b>How regular the maintenance team clear the grasses</b>	(a) Not regular	141	72.22
	(b) Fairly regular	62	27.78
	(c) Very regular	-	-
<b>Total</b>		203	100.00%

Source: Researchers field survey 2020

#### Responses on the Provision of Services

i. Table 3 ascertained the respondents' views on the provision of services. Table 3 revealed that majority of the respondents representing 55.55% affirmed that electricity supply is fairly regular, while 27.78% maintained that it is not regular and the remaining 16.67% of the respondents ticked that electricity supply is regular. On the frequency of supply, majority of the respondents representing 55.55% agreed that electricity is supplied twice a day, and the remaining 16.67% disagreed that it is supplied after many days. According to 80 respondents which represented 44.44%. Bad ceiling fan regulators are the most frequent problems of electrical fittings, followed by 33.34% who indicated burnt sockets, and 22.22% of them maintained burnt ceiling fan coil. However, observation and walk through conducted by the researcher confirmed these. There is need therefore, to increase the frequency of electricity supply and changed all the damaged electrical fitting, considering the risks involved. Electrical installations deteriorate as a result of ageing and other mechanical changes, therefore should be inspected periodically.

ii. **Provision of functional toilets/urinals:** the result revealed that 55.55% respondents said that hostel blocks are provided with functional toilets/urinals, 16.67% of them are of the opinion that libraries and laboratories/workshops are provided. But 11.11% ticked classrooms/lecture theaters. Consequently, majority of (83.33%) respondents maintained that toilets/urinals are fairly functioning and 16.67% disagreed and said that they are not functioning. At this juncture the researcher recommends that the authority should ensure that these conveniences should function properly in all the buildings.



**iii. Water Supply:** 142 representing 72.22% agreed that water supply is fairly regular and the remaining 61 respondents which represented 27.78% said that the supply of water is not regular. On the issue of frequency of supply, majority of (83.33%) of the respondents said that water is supplied to them once a day, while 16.67% of them maintained that water is supplied once in two days. On the problems experienced in the use of plumbing/sanitary fittings, 118 representing 61.11% complained and said that their problem is excessive bad odour, 57 representing 27.78% said that their own problem is leaking taps while the remaining 28 (11.11%) respondents ticked broken pipes as their own problem. At this point the researcher is recommending regular water supply, because irregular supply of water will have adverse implication of the overall maintenance of facilities and services. Also all the fittings that have broken down should be repaired for effective utilization.

**iv. Refuse Collection:** Majority (61.11%) of the respondent's state that refuse collection is not regular. But 22.22% disagreed and said that the collection of refuse is fairly regular, while 16.67% of the respondents said regular. However, the delay in evacuation of refuse wastes will in turn have adverse effect on the health of the students and staff, pollute the ground water quality, air quality and produces unpleasant odour and can create epidemic.

**v. Sewage treatment Plant:** 159 representing 83.33% opinion that sewage treatment plant is functioning fairly well and 27 (11.11%) said that it is functioning well, while 17 representing 5.56% disagreed that it is not functioning. Sewage treatment plant needs to function effectively and constant inspection to make sure no holes.

**vi. Clearing of Grasses:** Table 3 revealed that majority of 141 which represented 72.22% said that clearing of grasses in their building is not regular and 62 (27.78%) of them disagreed and maintained their stand that clearing of grasses is fairly regular. Consequently, this is unhygienic and unsafe not to clear grasses in the area.

**Research Question Three: Responses on the Ranking of Factors Responsible for Defects of Building Elements/Components**

The respondents were required to rank the factors responsible for defects of building elements/components on a likert scale of (5 = strongly agree – 1 = not scene).

In the ranking of the responses of the respondents, of the respondents, the responses with mean value of 3.0 and above was regarded as agree, while mean value that fall below 3.0 was regarded as disagree. The respondents' responses to the question were presented and analysed in table 4

**Table 4: Responses on the Ranking of Factors Responsible for Defects of Building Elements/Components**

S/N	Factors	(5)	(4)	(3)	(2)	(1)	Mean Score	Rank	Remark
1	Ageing	55	55	34	25	34	3.38	4	Agree
2	lack of maintenance culture	106	56	16	25	-	4.27	1	Agree
3	Wear and tear	94	34	10	10	55	3.58	2	Agree
4	Dampness	55	25	15	34	74	2.72	5	Disagree
5	Wind action	24	14	35	25	105	2.05	6	Disagree
6	Poor design	106	56	16	25	-	4.27	1	Agree
7	Poor Construction	105	56	16	26	-	4.27	1	Agree
8	Fungal/termite attack	55	65	35	24	24	3.55	3	Agree
9	Function and use of building	106	57	16	24	-	4.27	1	Agree
10	Vegetation effect	9	8	23	54	109	1.69	7	Disagree

Source: Researchers field survey 2020

**Responses on Factors Responsible for Defects of Building Elements/Components**

Table 4 shows respondents' responses on the factors responsible for the defects of building elements/components. The results shows that respondents strongly agreed that lack of maintenance; culture, poor design, poor construction, function and use of building ranked highest with mean scores of 4.27 as factors responsible for building elements/components defects. Wear and tear ranked second with mean score of 3.58 followed by fungal/termite attack with mean score of, 3.55. Respondents strongly agreed that ageing is another factor with mean score of 3.38. However, some of the respondents disagreed that dampness, wind action and vegetation effect with mean scores of 2.72, 2.05 and 1.69 respectively, are 'factors because, there were not sure.

**Table 5: Ranking of Statements on the Effect of poor or lack of Building Maintenance**

S/N	Statements	(5)	(4)	(3)	(2)	(1)	Mean Score	Rank
A	Affects teaching and learning	163	40	-	-	-	4.83	1
B	Poor academic performance	152	51	-	-	-	4.77	2
C	Causes stress	121	62	10	10	-	4.44	3
D	Poor lighting system	100	31	9	9	54	3.58	7
E	poor ventilation system	113	39	26	39	-	4.11	5
F	poor aesthetics and psychological appeal	119	50	10	10	-	4.44	3
G	Discussion privacy and distraction from noise	63	60	30	20	30	3.38	8
H	Affects student's enrolment	90	35	23	35	20	3.66	6
I	Poor health and safety	103	55	15	30	-	4.27	4
J	Very poor and deplorable condition of buildings	125	58	10	10	-	4.44	3
K	Poor indoor air quality (humidity)	80	30	20	30	20	3.66	6

**Source: Researchers field survey 2020**

### Responses on the Effects of Lack of Building Maintenance

Table 5 shows that lack of building maintenance mostly affects teaching and learning with mean score of 4.83. This ranks first among the effects of lack of building maintenance in educational institution. This is followed by poor academic performance with a mean score of 4.77. Discussion privacy and distraction from noise rank least with a mean score of 3.38. This implies that discussion privacy and distraction from noise do not constitute major effects of lack of building maintenance.

## 5. CONCLUSIONS

It is observed from the study that lack of building maintenance and management decision play an important role in the physical condition of buildings which in turn affected staff productivity and students' academic achievements. It can also be concluded from the study that building maintenance is an area of study that has been a neglected sector of the construction industry universally and for this reason, the performance of tertiary educational buildings in terms of their maintenance and management are far below best practices, studies on maintenance of buildings have not been conducted in sufficient details for educational buildings particularly buildings in Niger state tertiary institutions of learning.

It is expected that the results of this research will assist in re-engineering the maintenance management of buildings and decision-making process of the functions and procurement of both existing and future buildings in the institution. The research will contribute in no small way in reducing the building maintenance problems in the institution.

The institution and construction professionals/maintenance managers have been urged to adopt the building maintenance plan, manual, building maintenance management model and organizational structure as a tool to address the functional in adequacies of buildings in the university system in Nigeria. From the results of investigations and analysis carried out, it could be concluded that the aim and objectives of this research have been achieved.

## 6. RECOMMENDATION

The study recommended the following;

A proactive approach to maintenance should be adopted, the reactive approach is not suitable especially as human lives are involved

Maintenance department should provide models and other approaches or framework of effective implementation of building maintenance process

There is need to post maintenance staff to students' hostel blocks, classroom blocks, Faculty buildings; library complex, theater complex and offices who will closely monitoring the conditions of buildings.

An enlightening program should be introduced by ways of hand bills to educate staff and students on collective responsibilities of maintenance of school buildings.

There should be a National Policy specifying standard of maintenance of existing stock of buildings, especially in tertiary institutions of learning.

Government/Professional bodies and tertiary institutions should organize seminars and workshops in order to sensitize and create awareness of effective maintenance culture in the country.

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