Original Research Article

PROSPECTS FOR IMPROVING BUILDING MAINTENANCE MANAGEMENT IN NIGERIAN PUBLIC UNIVERSITIES

ABSTRACT

Buildings are highly resourceful in the effective operation of tertiary institutions. It is imperative that these assets should be given good maintenance attention for effective performance. Public institutions have always been faced with ineffective maintenance of buildings due to bureaucratic constraints and poor maintenance culture. This study is aimed at establishing prospects for improving maintenance management and performance of buildings in public universities in Nigeria, using Nnamdi Azikiwe University as a case study. The study adopted a survey research approach using a structured questionnaire. A total of 148 responses were gotten from the Works and Services Department and Heads of academic departments out of 203 distributed questionnaires, being a 72.9% response rate. The questionnaire was analyzed using descriptive statistics technique and the hypothesis tested using Pearson's parametric Chi-square. From the research findings, it is evident that there are statistically significant prospects for improving on the poor state of building maintenance management in the study area. The study therefore recommends that adoption and deployment of computerized maintenance management system that would handle all aspects of users' reporting and feedback, scheduling and coordination of activities; intensive training and retraining program for the maintenance personnel, orientation programs for building users on healthy maintenance culture and regular building condition survey should be incorporated as prospects for improving building maintenance management in the study area.

Keywords: Building Maintenance, Building Performance, CMMS, Maintenance Culture, Public University Buildings

1. INTRODUCTION

Buildings according to Olanrewaju and Abdul-Aziz (2015) are the most significant resource of tertiary institutions apart from the faculty members. They offer much value to the general administration of the institutions, students, members of staff, parents and other users and stakeholders (Olanrewaju, Khamidi, and Arazi 2011). Buildings are just like every other living objects that may die if not well taken care of. Death in the case of buildings may be in the form of deterioration and decays. Buildings should be taken care of by way of proper maintenance and management. The process of deterioration in both the physical and functional conditions of a building is complex, and is indicated by wears, tears and aging due to usage, degradation of equipment and construction material due to the environment, and the interaction of these mechanisms. However, in order to create conducive environment that supports and stimulates innovative research, teaching and learning, tertiary institution buildings require maintenance (Lateef, 2010). In the same line of thought, Ogunoh, Mbanusi and Okoye (2018) asserted that the maintenance levels of these buildings are very crucial to educational effectiveness.

In spite of the crucial role of these buildings in the education and construction sector of the economy, most educational buildings in Nigeria are in deplorable conditions as a result of lack of maintenance (Ogunoh *et al*., 2018). Ofide, Jimoh and Achuenu (2015), Ohaedeghasi, Ezeokoli and Agu (2021), Okafor, Ugwu and Nwoji (2018); Okolie (2011) and Onyili, Okolie and Ezeokoli (2020) revealed the ineffectiveness of building maintenance management in different public tertiary institutions in Nigeria. The practice adopted was generally traditional whereby official memo writing is the major channel of communication between the building maintenance department and building users. There is a wide range of building defects observable on the building in the campuses studied. The prevalence of these defects depicts ineffectiveness in maintenance management (Ohaedeghasi, Ezeokoli and Agu, 2021). This study is aimed at establishing prospects for improving building maintenance management in Nigerian public universities, using Nnamdi Azikiwe University, Awka, Nigeria as a case study.

2. LITERATURE REVIEW

The challenges to effective maintenance of tertiary institution buildings are not without measures for ameliorating them. Ofide *et al.* (2015) established some prospects to effective maintenance management of tertiary institution buildings in Niger state, Nigeria. According to them, the issue of maintenance backlogs and operating from defective buildings and their consequent implications could be minimized through: prompt availability/improved funding system; employment of qualified maintenance personnel; improved communication between maintenance department and users; maintenance awareness to management and users; reduce overcrowding of buildings; incentives to motivate maintenance staffs for effective maintenance delivery; research and training of maintenance staff; and in the case of student hostels, payment of fee to hold accountable any user that violates maintenance policy/rules.

On the other hand, Okafor *et al.* (2018) opined that there is need for purpose-driven preventive maintenance culture and underpinning plans/policies as part of a holistic integrated infrastructure delivery process. They also suggested that maintenance of infrastructure systems could also be outsourced.

3. METHODOLOGY

This study adopted a survey research method in which group of people or items are studied by collecting and analyzing data from only few people or items considered being representative of the entire group. The study was quantitative and was aimed at establishing the prospects for effective maintenance management of buildings in Nigerian public universities using Nnamdi Azikiwe University, Awka as a case study. Structured questionnaire used for data collection were sent to a random sample of 203 personnel of the Works and Services Department of the case Institution on professional cadre and to the heads of academic departments with 148 successfully filled and returned, being a response rate of 72.9%.

The questionnaires were analyzed using descriptive statistics technique such as percentages and tables.

The issues in the questionnaire used in this research were structured on a 5–point Likert scale: Strongly agree (SA=1), Agree (A=2), Undecided (UN=3), Disagree (D=4) and strongly disagree (SD=5). The analysis here was done using mean, with an acceptance benchmark of 3 and above. This implies that any issue that has the mean of the responses to be 3.0 will be regarded as "agreed", while those whose mean of their responses are less than 3.0 will be regarded as "disagreed". Mean and standard deviation of each item were determined, and ranking were then assigned to them. The prospects studied were generated from the review of related literature.

4. RESULTS AND DISCUSSION

Table 1 shows the distribution of responses from respondents (HODs and Works Department) on prospects for improving the condition of buildings. The technique used in analysis here is mean, with a threshold of acceptance of 3. **Table 1** indicates that all the questionnaire items presents prospect for improving the condition of buildings. The study established significant prospects/measures for effective building maintenance management in the study area, with carrying out regular user satisfaction survey being the most occurring (4.92) followed by improved funding for building maintenance (4.74), improved communication channel (4.70), carrying out regular building condition survey (4.68), maintenance awareness and education for building users (4.64), creation and adoption of CAFM/CMMS (4.45) The least prospect is reducing the intensity of use of existing buildings by procuring new ones. These results are in agreement with the findings of Ofide *et al.*(2015) which established that the issue of maintenance backlogs and operating from defective buildings and their consequent implications could be minimized through: prompt availability/improved funding system; employment of qualified maintenance personnel; improved communication between maintenance department and users; maintenance awareness to management and users; reduce overcrowding of buildings; incentives to motivate maintenance staffs for effective maintenance delivery; research and training of maintenance staff; and in the case of student hostels, payment of fee to hold accountable any user that violates maintenance policy/rules.

Table 1: Respondents Perceptions on Prospects for Improving Building Maintenance Management in Nigerian Public Universities

S/N	Prospects	SA	A	UN	D	SD	Mean	Ranks	Remarks
1	Improved funding system for building maintenance	110	38	-	-	-	4.74	2nd	Accept
2	Employment of more qualified maintenance personnel	56	92	-	-	-	4.38	10th	Accept
3	Improved communication between maintenance department and building users	103	45	-	-	-	4.70	3rd	Accept
4	Maintenance awareness and education for building users	94	54	-	-	-	4.64	5th	Accept
5	Reducing the intensity of use of existing buildings by procuring new ones	56	36	38	18	-	3.88	12th	Accept
6	Development of robust organizational chart for the maintenance department	83	65	-	-	-	4.56	6th	Accept
7	Proper planning and scheduling of maintenance works	81	67	-	-	-	4.55	7th	Accept
8	Development of robust maintenance policy, standards and guidelines	83	65	-	-	-	4.56	6th	Accept
9	Creation and adoption of computer aided facilities management system	66	83	-	-	-	4.45	8th	Accept
10	Conduct regular buildings condition survey	101	47	-	-	-	4.68	4th	Accept
11	Carry out regular users' satisfaction survey	36	112	-	-	-	4.92	1st	Accept
12	Development of online channel for user report and maintenance calls	65	83	-	-	-	4.44	9th	Accept

13	Improved financial and resources management system	54	94	-	-	-	4.36	11th	Accept

H_0= There are no significant prospects for improving the condition of buildings in the study area

Table 2: Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	**851.687[a]**	**36**	**.000**
Likelihood Ratio	**470.083**	**36**	**.000**
Linear-by-Linear Association	**14.800**	**1**	**.000**
N of Valid Cases	**1925**		

a. 26 cells (50.0%) have expected count less than 5. The minimum expected count is 1.38.

Table 2 shows the chi-square result for the prospects for improving the condition of buildings in the study area. The result indicates that there are statistically significant prospects for improving the condition of buildings in the study area. This is because the Pearson Chi-Square Coefficient obtained is 851.687 and the p-value is 0.000 (p-value < 0.05). As a result of this finding, the alternate hypothesis is accepted and it is stated that there are statistically significant prospects for improving the condition of buildings in the study area.

5. Conclusions

There are prospects to the effective maintenance management of building in Nigerian public universities. Carrying out regular building condition survey and users' satisfaction survey, improving funding for maintenance, staff continuous development, adopting web-based channel of communication (CMMS) and conduction of orientations for building users on healthy maintenance culture are the significant prospects for improving building maintenance management in the study area.

6. References

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