

ASSESSMENT OF BUILDING MAINTENANCE PRACTICE IN UNIVERSITY OF JOS, NIGERIA

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ABSTRACT

The research was aimed at assessing the building maintenance practice in university of Jos, with a view of improving the maintenance practice in the university, for efficiency and effective performance of the university buildings. The study adopt a quantitative research approach. The research used a close-ended questionnaire instrument to collect pertinent information and or/data. A total of one hundred and eleven (111) questionnaire was administered to the responded, out of which, ninety two (92) was retrieved and adopted for the study. The research used simple random sampling to arrive at the sampling size. The research data was analyzed descriptively using SPSS. The findings show that the maintenance practices in university of Jos are; preventive maintenance, plan maintenance, corrective maintenance, emergency maintenance, avoidance maintenance, as well as scheduled maintenance are all practice in university of Jos.

Condition base maintenance, unplanned maintenance as well as, and predictable maintenance and running maintenance are not practiced at the University of Jos. Base on the findings from the above research, the study hereby recommended that;

Unplanned maintenance should be incorporated in the maintenance practice of the university to enable part of the buildings and or its components get repairs or fix when it breaks down.

Running maintenance should be as well slated among the maintenance practices in universities, as it helps maintenance staff to carry out maintenance when the need arises to restore deteriorating surfaces and or wall in the university buildings in enhances its efficiency and performance.

Condition-based maintenance should also be incorporated among maintenance practices in the university in other to enable the maintenance personnel of the university conduct monitoring of equipment performance in the building and or assets management with visual inspections, scheduled tests as well as sensor devices to determine the most efficient time to perform maintenance.

Predictable maintenance practice (PdM) also should be included on the types of maintenance practices in the university. Since it's a techniques that uses data analysis tools and techniques to detect anomalies, it would assist the maintenance professionals in maintenance operation and possible detect defects.

Keywords: Building Maintenance, Maintenance Practice, Building Assessment

1.0 INTRODUCTION

A building is an asset whose value changes in line with the quantity and quality of maintenance invested in and they are procured to create a conducive and adequate environment that can support, encourage and stimulate teaching and learning, innovation and research activities. Setback in the supply of these essential services is loss in value of the building to the institution (Olarenwaju, 2019).

1.1 Building Maintenance

Maintenance of buildings receives little attention from the users, designers and contractors (Siyanbola et al., 2018). Gross neglect of maintenance coupled with other factors such as structural failure which may be due to poor design, poor construction, settlement, act of God, poor materials, defect of component part including joints and connections has led to the state of structures of most federal universities today (Oluwole et al., 2018). Building maintenance has until recently been a neglected field of technology. It possesses little glamour and is unlikely to attract very much attention (Baba & Buba, 2017).

Adenuga (2010) opines that in Nigeria, public buildings are in very poor and deplorable conditions of structural and decorative disrepairs.

Building maintenance unit exists to ensure that the building support organisational quality by creating a ‘fit’ with the organisational requirement. Shafie et al., (2012), the core objectives of any University are to provide in-depth knowledge, seek academic development, educate students, and coordinate national development demands. To be able to deliver these key roles effectively, institutions need to have substantial infrastructure (buildings). However, having buildings is not enough, maximizing the use of the buildings through efficient maintenance approach is much more vital. This is because people, process, and technology are intricately linked to each other. They must therefore be managed efficiently towards achieving organisational goal.

Cable and Davis (2014) submitted that poor building maintenance practice could result in inadequate functioning buildings; excess facilities not contributing to the organisation’s mission; and cost inefficiency, inadequacy and unavailability of buildings for future needs. These are pointers to the fact that building maintenance has a great impact on efficiency or otherwise of staff and students. The importance of identifying the views of different groups of users has also been stressed. Fianchini (2017) reported the findings of one of the groups commissioned by the management of The Polytechnic of Milan, Italy, to investigate evaluation methodologies of building performance and decay. The study affirmed the importance of Journal of Facility Management and Research, 2(2):62–73 63 identifying the needs of different user groups and the utility of accomplishing parametric controls and dimensional verification together with user surveys and observation of behavior in order to verify the fitness for purpose of the buildings.

Similarly, McLaughlin and Faulkner (2012) examined the expectations of students from Royal Melbourne Institute of Technology (RMIT) University in Australia about the campus facilities

and concluded that students are more interested in flexible learning spaces adaptable to both individual and collaborative works with emphasis on social learning and advanced technology. This suggests that in order to ensure that buildings and facilities are used for the purpose they are best suited or designed for, the users' needs should be the guiding tool. Conditions of facilities in schools and their effects on users have also been reported in the literature. Users' satisfaction level has been seen as a viable tool for assessing the performance of buildings and building maintenance services.

Furthermore, Karna and Julin (2015) examined what constitute satisfaction for both staff and students. The authors utilized statistical assessment method to assess the responses of both staff and students from two campuses of a University in Finland. The study revealed that the features of satisfaction differ between students and staff and even between campuses. However, while Karna and Julin (2015) investigated what staff and students are looking for in buildings and buildings maintenance services, this present study focuses on the level of satisfaction of these categories of users.

In Nigeria, Asiabaka (2012) examined the need for effective building maintenance in schools and concluded that a direct relationship exists between the quality of school buildings and the products of the school (graduates). However, the study was basically a literature survey and, therefore, did not provide any empirical evidence. It is obvious from the foregoing that there has been a significant amount of literature relating to buildings maintenance practice in university of jos, but a few of such have been carried out in developing economies such as Nigeria. More importantly, public universities in Nigeria are recently facing decreasing financial allocation from government. The major financier, due to dwindling economic situation. Consequently, this is affecting the maintenance of buildings in universities across the nations.

1.2 Maintenance Practice in University

Implementation of maintenance practice for buildings to some extent can help an organization to minimize the operating costs in tertiary institutions. Good maintenance practice is also important to control issues regarding customers' satisfaction on the services provided in universities. This is often the case, especially when it involves the maintenance process, and has to deal with number of users. Therefore, it is important that the buildings provided are maintained properly to meet the prescribed standards (Kadir, 2007). Karia et al. (2014), although several institutions have no maintenance planning, maintenance practice is the basic process in enhancing the existing assets to support service operations in all institutions of higher learning.

It provides a strong support to the operations of one business and contributes to the achievement of its objectives and strategy by ensuring that the buildings, equipment, services, systems and workforce are effective and efficient (Hamilton & Norizan, 2001). Zuhairi (2004) supported this claimed by stating that facility maintenance practice—also known as property management practice—provide services to support the operations of an organization. According to Asiabaka (2008), an institution could use facility management as one of its strategic approach to produce unparalleled environment for effective teaching and learning activities. Asiabaka (2008), Hasbolla et al. (2018) and Rahman et al. (2019) also emphasised that building maintenance practice is important to ensure a conducive learning environment in an institution.

All the strategies of facilities maintenance are developed from the three basic maintenance strategies (Chan et al., 2011): preventive, corrective and condition-based maintenance strategies. There are various types of maintenance, these include the following:

Planned Maintenance: This is organised and carried out with forethought, control and use of records to a pre-determined plan.

Preventive maintenance: It embraces the performance of inspection and servicing tasks pre-planned for accomplishment at specific points in time to retain the functional capabilities of a facilities (Smith & Hinchcliffe, 2014). This is carried out at pre-determined intervals or to other prescribed criteria and intended to reduce the likelihood of an item not meeting an acceptable condition or failing.

Corrective maintenance: the use of a corrective maintenance strategy might be required for some facilities or building parts or components (Lam, 2011). The maintenance carried out after a failure has occurred and intended to restore an item to a state in which it can perform its required function.

Condition-based maintenance: Condition-based maintenance is based on condition surveys and assessments (Lam, 2011). The preventive maintenance initiated as a result of knowledge of the condition of an item from routine or continuous monitoring.

Scheduled maintenance: The preventive maintenance carried out to a predetermined interval of time, number of operations, mileage, etc.

Running Maintenance: This can be carried out whilst the building is still in operation. Repair: This is carried out to revive the property to its original state so that it works as it was first built.

Emergency: This is the type of maintenance where the property is left until there is a breakdown, reported by client/user or by maintenance staff.

Unplanned maintenance: This is work undertaken in response to unforeseen failure or damage due to external factors. That is work executed without planning.

Predictable Maintenance: This is regular periodic work necessary to retain performance characteristics of a facility as well as that necessary to replace or repair it after it has completed its useful lifespan.

Avoidable Maintenance: This is work required to rectify failures caused by incorrect design, incorrect installations, and the use of faulty or inferior materials or bad workmanship.

1.3 Building Assessment

The building assessment is a systematic process of evaluating to project repair, renewal or replacement needs to support the organisation mission and activities (Rugless, 2012, & Ahluwalia, 2018). For every tertiary education building in Nigeria, is an objective it serves to achieve. It is also meant to endure times so that quality is not in any way compromised during the building. The project is timed for particular time that maintenance, repairs would

commence. Inspection is the process to assess the quality of building or service in order to achieve certain standards (Wordsworth, 2017). Building assessment technically assesses the physical condition of the buildings (Abbott, 2017). The assessment involves the process of assessing the entire building and components, such as mechanical systems and electrical, frame buildings, internal structure and finishes as well as building sites (Ramly, 2017).

Building Assessment (BA) evaluates the condition of a building's envelope performance, structural foundation and super structure and mechanical system including heating and cooling. An assessment of the building is the process of examining the entire building and infrastructure components including equipment for mechanical and electrical systems building frames internal structure and finishes as well building sites. Building assessment is a kind of "health check" for the building. It is used to determine the general condition of the building to ensure the building is safe to occupy, finding of defects, hazards and failure of the building and assets valuation.

In this regards, building maintenance practice is very crucial in university of Jos in other to keep the buildings at its utmost performing state for sustainability, effectiveness and efficiency.

2.0 RESEARCH METHODOLOGY

The study adopted simple random sampling. The sample frame consist of all 199 maintenance staff of the University of Jos and the sample size 92 determined using Krejcie and Morgan sampls size determination table, 1970. The method of data analysis was descriptive (mean ranking) using the Statistical Packages for Social Science (SPSS) to enable the research to be understood. A 5-poit Likert scale based on closed questionnaire was developed to obtain the answers.

3.0 RESULTS

3.1 Demographic Characteristics of Respondents

From table 1, 2.6% are male, 17.4% are female, and this shows that most of the respondents are male. 30.4% are single and 69.6% are married, which indicates that majority of respondents are married. Age of respondents between 21-30year with percentage of 15.2%, 31-40years 31.5%, 41- 50years 35.9%, 51-60years 13% and 61years and above is 4.3. Educational level/qualification of respondents with NCE/ND is 34.8%, BSC/BTECH/HND is 45.7%, Masters is 16.3% and PhD is 3.3%, which means most of the respondents are BSc/B.Tech/HND with percentage of 45.7%.

Table 1: Demographic Information of Respondents

S/N	Items	Descriptive	Frequency	Percent %
1.	Gender	Male	76	82.6
		Female	16	17.4
		Total	92	100
2.	Marital Status	Single	28	30.4
		Married	64	69.6
		Total	92	100

3.	Age	21-30years	14	15.2
		31-40years	29	31.5
		41-50years	33	35.9
		51-60years	12	13.0
		61years above	4	4.3
		Total	92	100
4.	Educational level/Qualification	NCE/ND	32	34.8
		BSC/BTECH/HND	42	45.7
		Masters	15	16.3
		PhD	3	3.3
		Total	92	100

3.2 Building Maintenance Practice in University of Jos

From table 2, the result shows that preventive maintenance was ranked 1st ($M = 4.34$; $SD = 0.77$), followed by planned maintenance ranked 2nd ($M = 4.25$; $SD = 1.00$), corrective maintenance ranked 3rd ($M = 4.13$; $SD = 1.16$), emergency maintenance ranked 4th, condition based maintenance ranked 5th as well as avoidance maintenance ranked 6th, unplanned maintenance ranked 7th, schedule maintenance ranked 8th, as well as predictive maintenance and running maintenance ranked 9th and 10th respectively in university of Jos.

Table 2: Descriptive Statistics for Building Maintenance Practice in University of Jos

S/N	Items	N	M	SD	Rank	Remark
1	Preventive maintenance	92	4.34	0.77	1	Practiced
2	Planned maintenance	92	4.25	1.00	2	Practiced
3	Corrective maintenance	92	4.13	1.16	3	Practiced
4	Emergency maintenance	92	3.68	1.23	4	Practiced
5	Condition based maintenance	92	3.58	1.17	5	Not Practiced
6	Avoidance maintenance	92	3.54	1.17	6	Practiced
7	Unplanned maintenance	92	3.51	1.08	7	Not Practiced
8	Schedule maintenance	92	3.41	1.20	8	Practiced
9	Predictable maintenance	92	3.38	1.04	9	Not Practiced
10	Running maintenance	92	3.36	1.12	1	Not Practiced
	Grand mean	92				

1.0-1.49 = Very Poor, 2.50 – 3.49 = Fair, 3.5-4.49 = Good, 4.5-5.00 = Very Good, 1.50-2.49 = Poor

4.0 DISCUSSION OF FINDINGS

An assessment of building maintenance practice in university of Jos. It contains 14 items. The findings show that the maintenance practices in university of Jos are; preventive maintenance, plan maintenance, corrective maintenance, emergency maintenance, avoidance maintenance, as well as scheduled maintenance are all practice in university of Jos.

Condition base maintenance, unplanned maintenance as well as, predictable maintenance and running maintenance are not practice in University of Jos. Maintenance practice is the basic process by which the existing assets (buildings) to support service operations in all institutions of higher learning can be enhanced. Asiabaka (2008), Hasbolla et al. (2018) and Rahman et al. (2019) also emphasized that building maintenance practice is important to ensure a conducive learning environment in an institution.

This is in line with the work of Odediran et al. (2017) which stated that the ability of a building to provide the required environment for an activity is a measure of its functionality and effective maintenance practice adopted. Similarly, university of Jos adopted preventive, plan, corrective maintenance for sustainability of its buildings. Also, it is important that the facilities provided are maintained properly to meet the prescribed standards (Kadir, 2007). University of Jos uses preventive, corrective, as well as plan maintenance to ensure its buildings meet prescribed standard.

5.0 CONCLUSION AND RECOMMENDATION

The research on assessment of building maintenance practice in university of Jos with a view of enhancing, maintaining and sustaining buildings in university of Jos, with the utmost aim of achieving efficiency and ultimum maintenance of the university buildings.

The study established that; Preventive maintenance, planned maintenance, Corrective maintenance, as well as Emergency maintenance, Avoidance maintenance, and Schedule maintenance were all practice in university of Jos.

The study also established that, condition base maintenance, unplanned maintenance as well as predictable maintenance and running maintenance were not practice in university of Jos.

Base on the findings from the above research, the study hereby recommended that;

1. Unplanned maintenance should be incorporated in the maintenance practice of the university to enable part of the buildings and or its components get repairs or fix when it breaks down.
2. Running maintenance should be as well slated among the maintenance practices in universities, as it helps maintenance staff to carry out maintenance when the need arises to restore deteriorating surfaces and or wall in the university buildings in enhances its efficiency and performance.
3. Condition-based maintenance should also be incorporated among maintenance practices in the university in other to enable the maintenance personnel of the university conduct monitoring of equipment performance in the building and or assets

management with visual inspections, scheduled tests as well as sensor devices to determine the most efficient time to perform maintenance.

4. Predictable maintenance practice (PdM) also should be included on the types of maintenance practices in the university. Since it's a techniques that uses data analysis tools and techniques to detect anomalies, it would assist the maintenance professionals in maintenance operation and possible detect defects.

REFERENCE

- Asiabaka, I., (2008). The Need for Effective Facility Management in Schools in Nigeria. New York Science Journal, 10.-21, available at <http://www.sciencepub.org>.
- Ahluwalia, S.S. (2018). A Framework for Efficient Condition Assessment of the Building Infrastructure. Canada
- Hamilton, B. and Norizan, A. (2001). Facilities management development. In: Facilities Management Seminar.
- Hasbola, H., Saleh,A.A., Kamarulzaman, N. & Hashim, S.Z. (2015). Assessment of Facilities Management (FM) Performance in International Islamic University Malaysia (IIUM)
- Rahman, M. S. A., Ali, H. M., Sipan, I., Awang, M., & Mohammed, A. H. (2015). Space Utilization Model For Higher Education Institutions. Jurnal Teknologi, 75(10).
- Ramly, A. (2017). Panduan Kerja-kerja Pemeriksaan Kecacatan Bangunan. Malaysia: Hizi Print Sdn Bhd.
- Rugles, J.(2012).Condition Assessment Survey, Facilities Assessment Journal.21(3).11-13
- Yacob, S, Ali A.S, and Au Yong, C.P. (2017). Building Condition Assessment: Lesson Learnt from Pilot Projects. Proceeding of International Building Control Conference (IBCC 2016), Kuala Lumpur
- Kadir, A. (2007). Assessment of Facilities Management Performamce on Higher Education Institution.
- Olanrewaju, A. (2011) Case for alternative approach to building maintenance management of public universities. Journal of Building Appraisal 5 (3): 201 – 212.
- Ramly, A. (2017). Panduan Kerja-kerja Pemeriksaan Kecacatan Bangunan. Malaysia: Hizi Print Sdn Bhd.
- Rugles, J.(2012).Condition Assessment Survey, Facilities Assessment Journal.21(3).11-13
- Zuhairi Abd. Hamid. (2004). Role of information technology in facility management. BuletinIngenieur, Vol. 24. pp. 25-31.