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Assessment of Building Maintenance Management Procedures of Higher Institutions - A Case Study of University of Uyo

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Abstract

This study assessed the maintenance management processes employed by higher educational institutions for their buildings using University of Uyo as case Study. To achieve this, the study examined the methods used in execution of maintenance works, assessed the methods of estimating annual maintenance budget and evaluated the methods of receiving maintenance complaints/request in the university. This was with a view to suggesting measures for effective maintenance management system in the institution. The Management staff in the works department formed the sample for the study. Total enumeration survey was employed due to the small sample size. The data was analyzed using Relative frequency Index. Findings revealed that the most frequently used method of executing maintenance works was in-house labour with RFI of 0.643. The most effective methods of budget estimating were inspection method with REI = 0.643, followed by previous expenditure with REI = 0.536. Also, the major methods of receiving maintenance complaints were seen to be by writing of memo with (REI = 0.714), followed by personal visit with (REI = 0.679). The study recommends that management and heads of units should carry out frequent routine checks by going around the institution buildings to ensure they see the level of decay by themselves and possibly suggest

necessary actions. Also, the use of more digitized methods like emails for receiving requests/ complaints should be encouraged.

Keywords: Buildings; Higher institutions; Maintenance management procedures

1.0 Introduction

Buildings are any nation's most valuable asset. They provide financial return, shelter and facilities for work and leisure. However, every building requires maintenance to remain functional and up-to-date. As noted by Olorunlogbon and Adamu (2021), building maintenance factors are often either technical or administrative. The technical factors include poor workmanship, materials or spare parts; whereas, the administrative factors entail poor maintenance management, poor budgeting and control, and failure or inability to carry out maintenance when due (Olorunlogbon and Adamu, 2021). Emma and Syahrul (2009) assert that to achieve excellent performance and maximum value on property investments, proper maintenance management is required on a continuous basis. In the recent times, even though adequate and effective maintenance policies are not yet the norm, particularly in developing countries like Nigeria, the need for optimal utilization of the scarce resources has become more indispensable, given the growing economic downturns, inflations, unemployment, etc. (Barrie and Peter, 2007).

Buildings of Tertiary Institutions are globally an integral part of any nation's asset. Overtime, university buildings are bound to become obsolete, but should be maintained because, once the rate of building deterioration outstrips the rate of

maintenance, then the components and fabrics of the buildings will fail and the buildings will not perform optimally any more (Roseline and Ebiwari, 2022; Ogunbayo *et al.* 2022). The rate of such deterioration majorly relies on the quality of materials used, methods of construction, exposure to environmental conditions, rate of response to maintenance requests and level of usage of the buildings (Ogunbayo and Aigbavboa, 2021). Suffice it that all professionals, managers, captains of industry, scientists and entrepreneurs were all formed in educational buildings. (Mat *et al.* 2009; Ohaedeghasi *et al.* 2021; Osazuwa, *et al.*, 2021). Thus, to ensure quality education in an enabling environment, adequate maintenance processes must be made mandatory (Tijanić *et al.* 2022). However, several authors are of the consensus opinion maintenance practices in tertiary institutions are far below best practice (Buys *et al.* 2009; Zulkarnain *et al.* 2011). This study therefore examines the building maintenance procedures employed by tertiary institutions for the maintenance of their buildings.

2.0 Literature Review

2.1 Maintenance Management Practices

Maintenance management practices are defined as “*coordinated strategies adopted by an organization to ensure that their buildings continue to perform optimally without experiencing any form of downtime*”

or degeneration due to defects” (Ohaedeghasi et al., 2021. P.54). Building maintenance management practices include execution of maintenance works, budget estimation, receiving request for maintenance works (Technical Information Document, 2000). Every academic institution must have school maintenance program which is a set of organizational processes undertaken to extend the lifespan of the educational buildings with its services (Tijanić *et al*, 2022).

2.2 Methods used in the Execution of Maintenance Works

According to Barrie and Peter (2007), maintenance departments of organizations are usually charged with the responsibility of organizing, scheduling and implementation of maintenance activities. This may be carried out wholly in-house or may be outsourced to involve independent bodies, such as consultants and contractors. Direct labour can also be employed. The different methods are explained in subsequent sections.

2.2.1 In-House Labour

An organization may choose to employ in-house labour to carry out its maintenance activities. Berret and Baldry (2003) describe in-house labour as making use of resource directly employed (and dedicated for such work) as staff in the organization to carry out the activity required at hand. This is usually done under supervision, monitoring and other regulations guiding employer and employee relationship. One of the benefits of making use of in-house labour is that it provides opportunity to improve the skill and knowledge of staff in the organization.

2.2.2 Direct Labour

Under direct labour, the organization may hire the services of a skilled labour for a fee. Work is carried out and payment is made daily based on work done and amount agreed upon.

2.2.3 Outsourcing/Contract

Outsourcing entails engaging a discrete company or external supplier based on contract terms, to render services of specialties (Barrie and Peter, 2007). The beauty of outsourcing is that establishments or professionals with excellent records are engaged in their fields of mastery. It also enables risk sharing and reduction of potential liabilities in building maintenance. It eliminates cost of training cost in-house staff for specific maintenance processes.

2.3 Maintenance Budget

Maintenance budget is a cost forecast based on the costs of labor, equipment and materials (TID, 2000). Different organizations employ different methods to estimate their maintenance budget which may include previous expenditure, inspection, the institutions budget, expert judgment, Comparative or analogous estimation, Top-down, Bottom-up, Parametric model estimating amongst others. Furthermore, Olorunlogbon and Adamu (2021), opined that to determine the maintenance budget of institutions, key cost aspects of the organization should be considered. These include:

- i. Condition assessment costs – Cost of property assessment.
- ii. Statutory maintenance costs - this is the cost of carrying out any maintenance in order to meet statutory provisions associated with properties considered for maintenance.

- iii. Preventative maintenance costs - overall maintenance practice to preserve properties in optimally – performing states.
- iv. Condition-based maintenance costs – identification and correction of deteriorated conditions.
- v. Unplanned maintenance costs – correction of breakdowns
- vi. Agency maintenance management costs – maintenance costs associated with the services of agencies.

2.4 Methods of Receiving Maintenance Request

Affare (2012) described the methods of communicating with maintenance stakeholders and methods of receiving maintenance complaints to include face to face meetings, discussions that are informal in nature, presentations, interviews. Whereas, oral methods of maintenance request include the use of phones and voicemails, the written options are electronic or manual letters, bulletins, memos, notice boards (Patteson, 2000). Bergin (2001) described the factors that determine the choice of communication channels for maintenance request to include the urgency of the information, location and size of the audience, whether the message is confidential or sensitive or public, among other reasons.

3.0 Methodology

This study focused on the University of Uyo works department being the department responsible for maintenance works at the University. Management staff of the works department formed the sample for the study. This is because the management cadre is in charge of the maintenance decision process. As at the time the study was conducted, the total

number of management staff heading different units in the work department was eight (8). Thus, a total enumeration survey was carried out due to small sample size. Data was analyzed using likert scale type responses in the following variants; Relative frequency Index (RFI) and Relative Effectiveness Index (REI).

4.0 Results and Discussion

4.1 Methods used in Execution of Maintenance Works in the University

Table 1 below shows the responses of the respondents when asked to rank the methods of executing maintenance works based on frequency of use.

Table 1: Methods of Execution of Maintenance Works based on Frequency of use

S/n	Methods of Execution of Maintenance Works	RFI	Rank
1.	Direct Labour	0.393	2
2	In-house Labour	0.643	1
3	Contract	0.286	3

Table 1 presents the results of the analysis of the method of execution of maintenance work based on frequency of use in the study area. From the table, in-house labour was ranked first with RFI of 0.643. Direct labour was second with RFI value of 0.393, followed by contract with RFI value of 0.286. The result of the survey implies that the most frequently adopted method of maintenance work in the study area is in-house labour, while the least adopted method of carrying out maintenance work in the study area is contract method. This could be because it is assumed that it will be more cost effective and time saving to utilise in house labour since the people

needed to carry out the maintenance work are already staff of the university in this instance.

4.2 Methods of Estimating Annual Maintenance Budget in the University

Table 2 presents the methods of budget estimation used in the university ranking them based on their effectiveness.

Table 2: Budget Estimating Methods based on their Effectiveness

Budget Estimate Methods	REI	Rank
Expert judgment	0.028	6
Comparative or analogous estimation	0.291	4
Parametric model estimation	0.126	5
University budget	0.500	3
Bottom-up estimating	0.015	7
Top-down estimating	0.003	8
Inspection method	0.643	1
Previous Expenditure	0.536	2

Table 2 shows that budget estimation methods based on inspection was ranked first with Relative Effectiveness Index value of 0.6430, previous expenditure was ranked second with REI value of 0.5360, university budget was ranked third with REI value of 0.500, based on comparative or analogous estimation was ranked fourth with REI value of 0.2905. This was followed closely by parametric model with REI value of 0.1258, the expert judgment with REI value of 0.0282, after that was bottom-up estimating with REI value of 0.0154 and finally top-down estimating with REI value of 0.0024.

4.3 Method of receiving maintenance complaints/requests

Table 3: Methods of Receiving Maintenance Complaints based on their Effectiveness

Table 3 above presents the methods of receiving maintenance complaints in the institution based on their effectiveness. The respondents ranked memo first with REI of 0.714. Personal visit was ranked second with REI value of 0.679. Telephone call was ranked third with REI value of 0.393. Requisition card was ranked fourth with REI value of 0.214. E-mail was ranked fifth with REI of 0.035, while web request was ranked sixth with REI value of 0.000. The result from Table 4 above implies that the most frequently adopted and most effective method of receiving maintenance complaints in the study area is writing of memo based on the ranking by the respondents.

Methods of Receiving Maintenance Complaint	REI	Rank
Memo	0.714	1
Telephone	0.393	3
Job Requisition cards	0.214	4
Personal visit	0.679	2
E-mail	0.035	5
Web request	0.000	6

5.0 Conclusion and Recommendations

This study examined the maintenance management procedures employed in the University of Uyo. The method of execution of maintenance works in the study area was predominantly in-house labour with RFI value of 0.643. With regard to the budget estimation methods used by the university based on effectiveness, Inspection was ranked the

most effective with REI of 0.643. Analysis of the methods of receiving maintenance complaints showed that memo was the most effective method with REI of 0.714. The study recommends that management of the institution should be carrying out routine checks on buildings to ensure that they see the level of decay by themselves and take necessary actions promptly. As Cruzan (2020) put it, to ensure that minor maintenance problems are promptly solved before they escalate into major problems. Furthermore, the works department should begin to incorporate and make use of more digitalized method like emails, web mails, and other media platforms to receive complaints and requests as the world has become digitized. This will also save time and cost thereby leading to greater efficiency and effectiveness.

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