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EFFECT OF POOR MAINTENANCE CULTURE ON GOVERNMENT - OWNED FACILITIES AND WAY OUT

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ABSTRACT

This study assessed the poor Maintenance Management culture on the Sustainability of government-owned facilities Buildings in Ado Ekiti, Nigeria. The extent of maintenance management cultures being carried out in the study area revealed that metalwork maintenance ranks highest closely followed by plumbing work. Also, factors influencing adequate maintenance management practices are budgetary allocation, materials specification, design and proper workmanship, natural phenomena, and personnel incompetence. This was examined through the use of multiple linear regression, the model summary which shows an R^2 value of 0.596 and an Adjusted R^2 value of 0.364. The R square value indicates that maintenance management practices explain 59.6% of the variance in government building sustainability and thus the study revealed only corrective maintenance and breakdown maintenance are the two major maintenance management practices in the study area. The study concluded that maintenance management does contribute greatly to the sustainability of government buildings and thus it must be taken seriously to avoid unnecessary damage to our government facilities.

KEYWORDS: Maintenance; Culture; Facilities; Government; Sustainability; Management

INTRODUCTION

Structure maintenance management methods in Nigeria have long been hampered by a lack of funding and carelessness. The issue did not only affect the educational sector alone other sectors were affected. A huge amount of money is routinely spent on infrastructure construction, but upkeep is occasionally disregarded. Even though millions of Naira were spent to build each building in Nigeria, they are all in poor and dreadful structural and decorative state, and as soon as they are completed, they are left to succumb to an early but constant and quick degeneration, decay, and dilapidation (Lateef et al., 2010). The financial consequences of neglecting maintenance are often not only seen in terms of reduced asset life and premature replacement but also increased operating costs and waste of related and natural financial resources (Banful, 2004). This is because reactive maintenance does not tackle the root level of a problem and always results in repetitive failure. Many organizations tend to adopt proactive maintenance philosophies since these approaches are committed to the long-term improvement of maintenance management. A factor that can bring efficient maintenance management is operational involvement since one of the main causes of breakdowns comes from abusing operations and a lack of primary care from the operators.

When a company has made a considerable investment in physical assets, maintenance work is a vital job that is crucial to accomplishing organizational objectives. The measurement of the value produced by the maintenance process is the key justification for putting in place a

maintenance management system. The facilities' maintenance status can be used to determine if maintenance management procedures are successful or unsuccessful. Therefore, the management system chosen from the start must comply with the predefined requirements. While the standards for good practice in maintaining the building stock have been established over a significant period, the achievements of good practice are by no means universal, and the maintenance management sector in Nigeria's public sector has long been plagued by a lack of funding. The entire country is impacted by the built environment's maintenance. The environment in which we live and learn is a reflection of how well-off the country is. One of the primary areas where the construction industry needs to make considerable progress is the maintainability of buildings. For academic purposes, it makes sense to take preventive measures to keep school buildings in good shape (Oladapo, 2006). However, there appears to be a lack of preventive maintenance culture in general based on the various reports on the undesirable conditions of school buildings (Fielden, 1997; Zubairu, 1999).

This study assessed the effect of maintenance practices on the sustainability of government-owned buildings in Ado Ekiti with the aim of establishing whether they have a bearing on the present condition of the built facilities.

LITERATURE REVIEW

Maintenance concept

According to Seeley (1984), maintenance is the sum of all technical, administrative, and supervisory operations designed to keep an object in or bring it back to a state where it can perform a necessary function. Restoring an item to its initial state so that it can function is another definition of maintenance. This can be done through repair, part replacement, or complete replacement of the object. Another definition of maintenance is the work done to maintain or restore every facility, or every component of a site, structure, and contents, to an acceptable condition. Maintenance management is an orderly and systematic approach to planning, organizing, monitoring, and evaluating maintenance activities and their costs. Maintenance management has also been defined as the organization of maintenance with an agreed strategy (Chen et al., 2010). A good maintenance management system coupled with knowledgeable and capable maintenance staff can prevent health and safety problems and environmental damage; yield longer asset life with fewer breakdowns and result in lower operating costs and a higher quality of life. Maintenance management provides a framework for developing maintenance plans, tracking work accomplishments, and preparing reports that compare planned and actual performance. Maintenance is classified generally into; planned and unplanned maintenance, the former being further divided into preventive and corrective maintenance.

Maintenance management process

Maintenance provides critical support for heavy and capital-intensive industries by keeping facilities in safe operating conditions. Today it is accepted that maintenance is a key function in sustaining long-term profitability for an organization (Al-Hammad et al., 1996). Maintenance works as an important support function in businesses or organizations with significant investments in physical assets and plays an important role in achieving organizational goals (Banful, 2004). Prior to the early 1900's maintenance was considered a necessary evil. There was no alternative for avoiding failure and the general attitude was "It

costs what it costs". After the Second World War and with technological advances, maintenance was considered a support function. Today maintenance is considered an integral part of business processes and it's perceived as creating additional value (Onifade et al., 2003). Poor maintenance has an adverse effect on the nation's economy; a badly maintained factor will not encourage productivity; commerce will not flourish in a poor environment; badly maintained public buildings will have an adverse effect on patients trained staff and the nation's health. The benefits of maintenance can be categorized generally into social and economic benefits. On the economic front, it is of great significance not only because of the scale of expenditure involved but also its important to ensure that the nation's stock of buildings as a factor of production is used as effectively as possible. The preservation of the value and utility of the stock of buildings is therefore essential to the economic well-being of a country.

Causes of poor maintenance culture

Managerial problems

Managerial problems are the major causes of poor maintenance culture that are always been the reason for many mistakes in construction projects.

Project managerial problems

Incomplete construction documents, plans, and specifications will create interpretation problems which will affect the quality of the project. These problems will affect the quality of a building after the completion of the building and eventually lead to difficulties in maintaining the building (Al-Khatam, 2003). Besides, infrequent communication between property or facilities managers and designers causes design-related maintenance problems (Oladapo, 2016).

Maintenance management problems

The fundamental goal of maintenance management, according to State Department of Education (2006), is to reduce the need for repair of building flaws by improving planning and implementation, adopting relevant materials and tools at the right time, and lowering the total life cycle cost. Poor maintenance management techniques are cost-effective and they frequently result in a variety of issues, including damaged buildings and inadequate building functionality (Azlan et al., 2010).

Resources management problems

Resource management problems are related to people, equipment, and materials. High maintenance cost is attributed to the poor quality of spare parts and materials used in the building components, elements, services, or facilities (Azlan et al, 2010); and the unavailability of the required spare parts, tools or materials to perform maintenance tasks. Al-Hammad et al., (1996) noted that poor workmanship is the predominant cause of defects emerging on the projects or maintenance works. Employing labour with the requisite skills will assist in improving the quality of work, minimizing cost, and reducing the work period. Therefore, just having the right tools does not mean the job will be properly performed (Al-Khatam, 2003).

Economic and financial problems

Usually, maintenance is viewed as a "necessary evil", an unavoidable cost burden for projects (Lateef et al., 2010). Thus, maintenance activities are not carried out based on actual need. This will lead to over-budget issues during the operations and maintenance stage due to deferral of some maintenance activities. Failure to execute maintenance at the right time is often due to insufficient budget allocation (Lateef et al., 2011). As a result, further implications occur such as excessive damage, wear, tear, and defects

(Onifade, 2003). Additional cost or expense that is not allocated in the budget is then required for such maintenance and repair works (Azlan et al., 2010).

MATERIALS AND METHOD

The consequences of maintenance practice culture, causes, implications, and solutions were studied using a variety of publications, local and international conference papers, and other pertinent web resources. Data were collected using survey research design in the study area. Survey research design involves the use of a questionnaire to collect relevant information from the respondents. The researcher made use of data obtained from the employees in the works department of the selected government-owned institutions which are Ekiti State Government College, Ado Grammar School Ado-Ekiti, and School of Nursing Ado-Ekiti who responded to a set of questions on maintenance management practices and sustainability of government-owned buildings. The large built asset portfolio and aging building pose unique maintenance challenges for maintenance personnel. The total population considered was 249 personnel working in the works department which consists of Maintenance, Packs and Garden, Carpentry, Electrician, and Plumbing workers within the selected institutions because maintenance cut across all the listed sections under the works department. These people deal directly with any form of maintenance activities being carried out within the institutions of study.

Therefore, Government College - 113, Ado Grammar School - 97, and The School of Nursing - 39 making a total population of 249. The buildings considered were offices, hostels, and staff quarters.

The sample size was calculated using Yamane's formula (1967). The formula is stated

$$n = \frac{N}{1+N(e^2)}$$

Where

n is the sample size

N is the Total Population

e is an acceptable error limit (0.05) and

1 is Unity (it is constant)

Placing the information in the formula at 249 population size and error limit of 5% result $\frac{n}{1+249(0.05^2)} = 249$ = 153 respondent

The researcher used Bowley's proportional allocation formula to know the number of useful responses per institution.

$$\frac{nb}{N} = n(h)$$

Where

nb is Bowley formula

h is an element within the sample frame.

n is the sample or proportion of the universe used for the study (total sample size)

N is the population of the study.

Inputting the value into the Bowley formula;

Government College $\frac{113x154}{249} = 70$

Ado Grammar school $\frac{97x154}{249} = 60$

School of Nursing $\mathbf{\frac{39x154}{249} = 24}$

RESULTS AND DISCUSSION

A total of 154 copies of the questionnaire were distributed among the respondents comprising of personnel from the works department in Ekiti State Government College Ado-Ekiti, Ado Grammar School Ado-Ekiti, and School of Nursing, Ado Ekiti. Table 1 shows that out of 154 copies of the questionnaire distributed, 141 copies of the questionnaire were retrieved from the respondents out of which only 138 copies of the retrieved questionnaire were duly and completely

answered by the respondents representing 86.3% of the total distributed questionnaires, the result of a survey could be adjudged significant if the response rate is not lower than 30-40%. Hence, the response rate of 86.3% for this study is considered to be highly reliable enough to achieve the objectives of the research. Values from Tables 2 and 3 respectively indicate that 78.9% of the respondents were males while 21% were female. Respondents within the age brackets, above 50 years (48.5%) and 41-50 (10.9%) constitute the majority of the respondents. This interprets that the study is assured of reliable responses due to the advanced age and experience these age groups must have acquired in the study area. The age categories 31-40, less than 30 years have a relatively low representation with 24.6% and 15.9% respectively. Furthermore, the table also reveals the level of education currently attained by the respondents. Statistics show that quite a large number of the respondents have acquired Postgraduate education M.Sc./M. Tech. have 19.6% while first degree such as (B.Sc./B.Eng./B.Tech.) with 46.4% and Polytechnic diplomas holders (HND & OND) have 34.1%. This means that the respondents are highly literate and very knowledgeable in the selection of their opinion from the questionnaire, hence confirming the authenticity of the study responses. Furthermore, it was also gathered that 61.5% of the study respondents are academic staff while 38.4% are non-academic staff. Statistic also reveals that the respondents have an overwhelming number of years of job experience. 33.3% falls within the above 20 years' category, 20.2% for 16-20 years, 17.3% for 11-15years, 18.1% for 6-10 years and 10.8% for 0-5years. A close observation around the study area attested to the fact maintenance and repairs of buildings in the study area are not done regularly. Open roofs, water-dripping ceilings, damaged facing boards, and upholsteries were seen in most lecture theatres, staff quarters, offices, and administrative buildings but are often done when approval from management is given because it entails a lot of work and capital.

CONCLUSIONS AND RECOMMENDATIONS

This study has been able to establish that corrective maintenance and breakdown maintenance are the predominant maintenance practices in vogue in the study area. This attests to the humiliating state of infrastructural facilities in the study area. It has also been revealed that the major cause of these anomalies is to low allocation of funds to undertake routine maintenance which consequently led to the unavailability of materials for preventive maintenance purposes. The following were recommended as follows:

A monitoring team should regularly inspect facilities around the study area to ascertain the current state of structures for prompt attention by the maintenance workers.

i. Enough funds should likewise be made available to the maintenance unit to fortify both human and material resources required for effective and efficient operations.
ii. International building standards and codes that give room for sustainable construction should also be adopted for future construction projects in the study area.
iii. Massive sensitization of these facilities' users should be organized to drive home the need to ensure proper use.

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Table 1: Response Rate of Questionnaire Distributed and Retrieved

Copies of Questionnaire	**Frequency**	**Percentage**
Quantity Distributed	154	100.0
Quantity Retrieved	141	91.6
Quantity rejected	3	2.3
Quantity Analysed (completely and duly filled)	**138**	**89.6**

Source: *Survey Report, 2019*

Table 2: Demographic Characteristics of Respondents

Characteristics	**Frequency**	**Percentage**
Gender		
Male	109	78.9
Female	29	21.0
Total	**138**	**100.0**
Age Group (Years)		
Less than 30	22	15.9
31-40	34	24.6
41-50	15	10.9
50 and above	67	48.5
Total	**138**	**100.0**
Respondents'''' Educational Qualification		
OND/HND	47	34.1
B.Sc./B.Tech/B.Eng.	64	46.4
M.Sc./M.Tech	27	19.6
Total	**138**	**100.0**
Number of years of Job Experience		
0 – 5yrs	15	10.8
6-10yrs	25	18.1
11-15yrs	24	17.3
16-20yrs	28	20.2
Above 20yrs	46	33.3
Total	**138**	**100.0**

Table 3: Percentage of the respondents from each school

Characteristics	**Frequency**	**Percentage**
Government College Ado	64	46.4
Ado Grammar School	52	37.7
School of Nursing	22	15.9
Total	138	100

Source: *Field Survey, 2019*