

AN ASSESSMENT OF THE EFFECTIVENESS OF MAINTENANCE PRACTICES IN PUBLIC SCHOOLS

Nura Abdullahi Kalgo, Hamza Muhammad Dankolo, and Kasimu Bello
Umaru Ali Shinkafi Polytechnic Sokoto
nakalgo55@gmail.com

ABSTRACT

This study an assessment of the effectiveness of maintenance practices in public schools was carried out using Shehu Shagari College of Education Sokoto State of Nigeria as a case study. A total of eighty-five (85) questionnaires were randomly distributed. And sixty-nine (69) were completed and retrieved. From the data analyzed, the Major defects identified are cracks, leaking roof, peel-off floors and causes of poor maintenance in the institution include: pressure on building facilities by some users, poor construction work and maintenance personnel of the institution. The study concluded there is a need for the institution to embrace preventive maintenance practice as a high priority rather than ad-hoc maintenance. Building managers should incorporate preventive maintenance tasks into a work-order system and keep systematic maintenance records, either by computer or manually and they should plan building inspection since doing so can provide insight into future maintenance needs and avoid unnecessary costs.

Keywords: Assessment, Effectiveness, Maintenance, Public Schools

INTRODUCTION

Building maintenance is an important aspect of construction project management. It is so important that reduction in resources applied to building maintenance will have a visible effect on the economy. Maintenance management in the public sector in Nigeria has suffered from a lack of funds for a considerable time. While the requirements for good practice in maintenance management of building stock have been established over a considerable period, the achievement of good practice is by no means universal (Turrell, 1997). Maintenance of the built environment impacts on the whole nation. The condition of the surroundings in which we live and learn is a reflection of the country's wellbeing. (Seeley, 1993). Maintainability of the building has been identified as one of the key areas in which the construction industry must achieve significant improvement (Derek & Paul, 1987). According to Iyagba & Adenuga (2003), it is impossible to produce buildings which are maintenance free, but maintenance work can be minimized by good design and proper workmanship carried out by skilled experts or competent craftsmen using suitable codes of installation, requisite building materials, and methods.(Afranie & Osei Tutu, 1999). The role of Public Institutions in National development cannot be over-emphasized.

However, in spite of the massive investment in public buildings, Public institutions allow their structures to care for themselves without any sustainable maintenance plan to preserve the quality of the buildings. The continued efficient and effective performance of public institutions depends on the nature of their buildings in addition to other factors such as enhanced conditions of service, provision of the requisite tools, etc. Public Institution buildings consist of both dwelling



(residential accommodation) and office accommodation. Both are prone to defects due to their permanent and lengthy usage. All elements of buildings deteriorate at a greater or lesser rate dependent on materials and methods of construction, environmental conditions and the use of the buildings (Mills, 1980). Building maintenance is a process by which a building is kept usable at a predetermined standard for utilization and benefit of its occupant.

British Standard, BS 3811: (1984), defines 'maintenance' as "The combination of all technical and associated administrative actions intended to retain an item in, or restore it to, a state in which it can perform its required function." Maintenance brings about improved utilization of buildings ensuring the highest safety standards. Stephen (2002) also defined maintenance as a process of maintaining, repairing or replacing an item or component of a building in its original state without any alteration of the original design. According to Seeley (1987), neglect of maintenance has accumulative results with the rapidly increasing deterioration of the fabric and finishes of a building accompanied by harmful effects on the contents and occupants.

Existing public buildings in Nigeria lack adequate maintenance attention. Most public buildings are in very poor and terrible conditions of structural and decorative. While considerable of research has been carried out on factors responsible for the poor maintenance of housing but only scant attention has been given to the critical parameters affecting the implementation of maintenance programmers for public buildings. Therefore, there is a need to establish and evaluate the effectiveness of maintenance practice in a public building.

Maintenance Department

Brennan (2000), noted that maintenance department in an organization is managed by a maintenance manager. The maintenance manager is responsible for the planning and control of maintenance operations. In a small firm, the functions may be undertaken by a member of staff in addition to his other duties, while in a larger company there would be a separate group of people solely responsible for maintenance.

Functions of Maintenance Department

Prince (2010) found from his Journal that the maintenance department among other things performs the following essential functions;

- Estimates of maintenance expenditure both long and short term, including, where appropriate, the cost of initially bringing up to the required standard and the possibility of phasing any such backlog over a period of years.
- Provision of cost and other data to assist upper management in deciding whether to repair or renew.
- Technical requirements for minor works involving alterations or small additions to the building; although not strictly maintenance, it is usual for the maintenance organization to assume full responsibility for this type of work.
- Advice on the maintenance implications of designs for proposed new buildings.



- Identifying the extent of work necessary to achieve the required standards within the constraints laid down; the processes of planned inspections, appraisal of user requests and assignment of priorities.
- Programming the workload so that the carrying out of the work is timed in accordance with the needs of the user and the available labor force
- Supervision of work during execution and by subsequent control inspections to detect latent defects
- A budgetary control system including estimating resource requirements in cost and performance terms for next comparison with actual cost and performance achieved.

RESEARCH QUESTIONS

- 1 What are the current state or condition of the building, services, and facilities in the institution?
- 2 What are factors that have accounted for poor maintenance in the institution?
- 3 What maintenance practices are in place and factors affecting maintenance management in the institution?

RESEARCH METHODOLOGY

This component considers the research design, the target population, the sample and sample techniques, instrumentation, method of data collection and method of data analysis. The analysis of the data under this component lays the foundation for the findings of this paper. The study adopted qualitative frame work. However, a case study design approach was adopted for this research to assess the effectiveness of maintenance practice in public schools with particular reference to Shehu Shagari Collage of Education Sokoto was investigated using a survey instrumentation. The target respondents in this research included the hostel managers, staff Quarters occupant and maintenance team in the institution were selected because they are the actual players who are directly involved in maintenance activities. The data collection methods adopted includes administration of Questionnaires, interview and physical observation of the building under study. The primary data were compiled, coded and entered into the computer for further processing. Quantitative analysis techniques were used to report the finding from the questionnaires, thus; the statistical package for the social science (SPSS) was utilized in this regards they were into tables, frequency and charts to communicate the findings.



RESULTS AND DISCUSSION

Table 1 state/condition of building, facilities, and services in the institution

Areas	Good		fairly Good		Bad		Total	%
	No	%	No	%	No	%		
Hostel	10	34.5	12	41.4	7	24.1	29	100
Offices/lecture rooms	12	54.5	9	40.9	1	4.6	22	100
Staff Quarters	8	44.4	7		38	316.7	18	100
TOTAL							69	

Source: Field Survey 2017

Table 1.2 Electricity

Areas	Good		fairly Good		Bad		Total	%
	No	%	No	%	No	%		
Hostel	12	48	5	20	8	32	25	100
Offices/lecture rooms	10	47.7	8	38	3	14.3	21	100
Staff Quarters	11	47.8	10		43.5	28.7	23	100
TOTAL							69	

Source: Field Survey 2017

The above two tables (4.1 and 4.1.1) shows the condition of electricity, water and toilet in hostel 34.5% of water and toilet and electricity 48% in good condition, water and toilet 41.4% and electricity 20% fairly good and 24.1% water and toilet and electricity 32% of poor condition while offices/lecture rooms water and toilet 54.5% and power 47.7% in good condition, electricity 38% and water and toilet 40.9% for relatively safe and electricity 14.3% and water and toilet 4.6% of poor condition and staff quarters 44.4% for water and toilet and electricity 47.8% are in good condition, 38% water and bathroom and electricity 43% for reasonably condition, 16.7% water and toilet and 8.7% in dangerous condition respectively

Table 1.3 Roofing

Areas	Leaking		Rusty		No defect		Total	%
	No	%	No	%	No	%		
Hostel	7	26	2	7.4	18	66.6	27	100
Offices/lecture rooms	9	47.3	2	10.5	8	42.2	19	100
Staff Quarters	6	26.1	4	17.3	13	56.6	23	100
TOTAL							69	

Source: Field Survey 2017

The table above shows the condition of roofing in hostel, 26% is leaking, 7.4% was rusted and 66.6% no defect in offices/lecture rooms, 47.3% is leaking, 10.5% was rusted and 42.2% no defect and roof in staff quarters, leaking 26.1%, 17.3 rusted and 56.6% no defect.



Table 1.4 Flooring and paint

Areas	Cracks		Peel-off No defect		Total		%	
	No	%	No	%	No	%		
Hostel	14	58.3	7	29.2	3	12.5	24	100
Offices/lecture rooms	6	46.1	4	30.7	3	23.2	13	100
Staff Quarters	18	56.3	12	37.5	2	6.2	32	100
TOTAL						69		

Source: Field Survey 2017

The table above shows the condition of floors and paints in hostel, 58.3% cracks, 29.2% peel-off and 12.5% no defect while offices/lecture rooms, 46.1% cracks, 30.7% peel-off and 23.2% no defect and staff quarters, cracks 56.3%, 37.5% peel-off and 6.2% no defect.

Table 2 Causes Of Poor Maintenance In The School

Respondents	Yes	No	Frequency	%	
Poor contract management		7	3	1014.4	
Age of the building		8	4	12	17.4
Lack of maintenance culture		5	2	7	10.1
Inadequate funds and high maintenance cost		8	1	913.1	
Pressure on building facilities by number of users		15	2	1724.7	
Poor construction work and maintenance work done By the maintenance personnel of the institution		9	5	14	20.3
Total				69	100%

Source: Field Survey 2017

The above table shows that the key causes identified as responsible for poor maintenance in the school are pressure on building facilities by number of users with 24.7%, poor construction work, and maintenance work done by the maintenance personnel of the institution with 20.3% age of the building with 17.4% and poor contract management at 14.4%



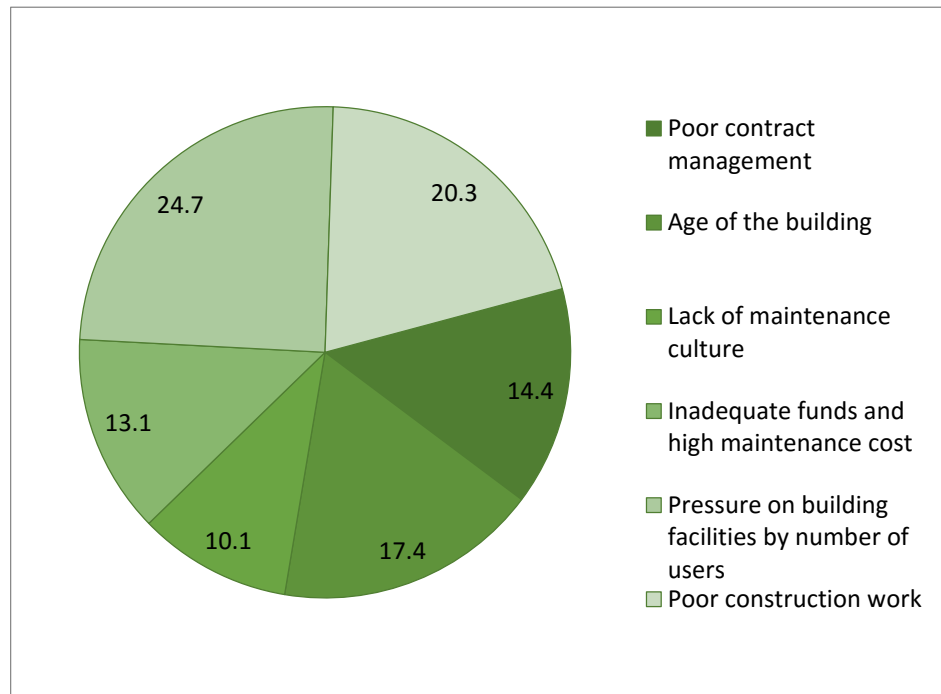


Figure 1: Causes of Poor Maintenance in the School

Table3 Operational Factors Affecting Maintenance Management In The Institution

Factors	Frequency	Percentage
Labor and management relation	13	18.8
Lack of fund	10	14.5
Lack of good management	25	36.2
Improper maintenance habit	21	30.5
Total	69	100

Source: Field Survey 2017

From the table above, the major operational factors affecting maintenance management in the institution includes; lack of good management with 36.2%, improper maintenance habit with 30.5% and 18.8% for labor and management relation respectively.

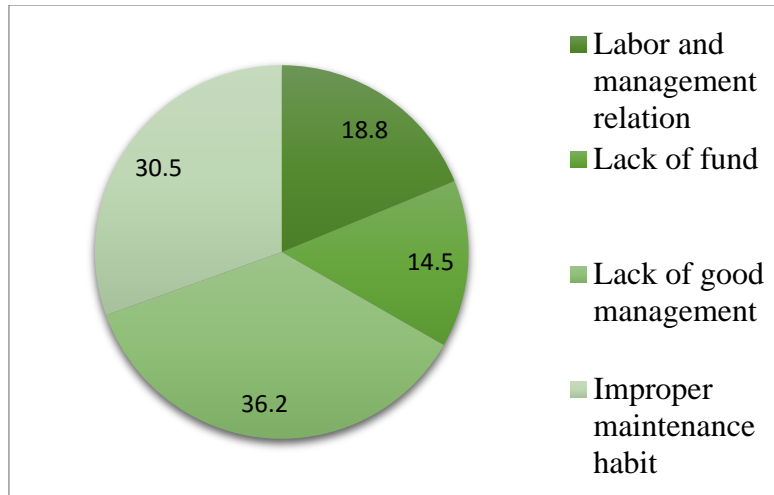


Figure 2: Operational Factors Affecting Maintenance Management in the Institution

SUMMARY OF MAJOR FINDINGS

1. The most widespread maintenance problems in the institution are cracks on floors and walls, faded paint, and leaking roofs.
2. The main causes of poor maintenance in the school are poor contract management, the age of the building, pressure on building facilities by a number of users and poor construction work and maintenance work done by the maintenance personnel of the institution.
3. The operational factors affecting maintenance management in the institution includes; labor and management relation, lack of funds, lack good management and improper maintenance habit.

CONCLUSION

The findings from the study established that the most widespread maintenance problems are cracks on floors and walls, faded paint, and leaking roofs.

Building maintenance problems are more pronounced in the hostel and staff quarters than class rooms/offices as a result of two main factors: pressure on the building, facilities by some users and lack of good management.

Finally, the maintenance management problems are influenced by labor and management relationship, lack of good management, lack of funds and improper maintenance habit among others.

RECOMMENDATIONS

- i. There is a need for the institution to embrace preventive maintenance practice as a high priority rather than ad-hoc maintenance. Building managers should incorporate preventive maintenance tasks into a work-order system and keep systematic maintenance records, either by computer or manually.

- ii. The institution should ensure that their maintenance department is adequately staffed with the requisite manpower and that employees have appropriate training to competently and safely undertake and complete the maintenance tasks expected from them.
- iii. The maintenance department should oversee periodic inspections of buildings' conditions and create an inventory of buildings' components and equipment. They should plan building inspection since doing so can provide insight into future maintenance needs and avoid unnecessary costs.

REFERENCES

- Afrainie, S., & Tutu, E. (1999). *Analyzing of problems, practices, and policy*. New York: Oxford university press
- Brennan, B. (2000). *Repairs and Maintenance of Dwellings*. London: Routledge, B.S. 3811(1984). *British Standard Glossary of maintenance Terms in Technology maintenance*. London: Horper and Row Press
- Derek, M., & Paul, S. (1987). *Building Maintenance*, London: Intermediate Technology press;
- Mills, E. (1980). *Building Maintenance and Preservation*. London: Pitman
- Prince, J (2010) *Maintenance of Building of Public Institution in Ghana; Barriers and Intervention*. *Journal of financial management of property and construction*, 18, 142
- Seeley, (1993). *Building Maintenance*. London: Routledge
- Stephen J.H (2002). *Building services maintenance*. Abuja: The forgotten discipline Aha Management Publication
- Turrell, P (1997). *A Strategy for Effective Management of Maintenance in Non-profit-making Organization*: The Royal Institution of Chartered Surveyors, pp. 1-3.

