

APPRAISAL OF MAINTENANCE MANAGEMENT STRATEGIES USED IN PUBLIC HOSPITAL BUILDINGS IN LAGOS STATE, NIGERIA.

Adenuga, O.A, Iyagba, R.O., and Ogunsanmi, E.O

¹ Department of Building, Faculty of Environmental Sciences, University of Lagos
Nigeria

Abstract

The study focused on the evaluation of maintenance management strategies used in public hospital buildings in Lagos state. It also assessed the labour composition for maintenance operations. In achieving these objectives, opinions of maintenance officers of ten (10) different hospitals in different local government areas of the state were sampled through well structured questionnaires. The data collected were analyzed using descriptive and inferential statistics. From the analysis, the study revealed that majority of those public hospitals do not have specific budget for maintenance programmes, maintenance policies, maintenance log book and maintenance manual to guide the operatives. About 98% of them do not understand the type of maintenance strategy being used for their maintenance operations. 78% of the maintenance work are only executed when there is a breakdown or in response to user's request. For labour composition, the cleaning of interior and exterior of the building, inspection of building elements, repairs and replacements of building elements are mainly carried out by in-house staff, while the repair and replacement of equipment is by outsourcing. The study also revealed that using in-house staff, reduces costs and provides a higher security while outsourcing provides more flexibility in staffing reduces equipment expenditures and provide better access to special skills. The study recommended proactive measures to provide necessary training and support for maintenance staff and users of these facilities and a means of securing sufficient funds for maintenance programmes.

Key words: Maintenance Management, Maintenance Strategy, Hospital Building, Public Hospital

BACKGROUND TO THE STUDY

It is highly desirable but hardly feasible to produce buildings that are maintenance free, although much can be done at the design stage to reduce the amount of subsequent maintenance work. 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 building. Building maintenance has often been neglected in the industry especially in the public sector. This is due to the fact that there is a preference for newer buildings compared to the maintenance of the older ones.

However, the lack of adequate maintenance of buildings makes the environment to decay and depresses the quality of life. The condition of buildings, also reflect public pride and affects the value of the buildings as well as adjoining buildings. Presently and for the future, the public needs to be re-educated that management and maintenance of existing properties is part of the overall process of building development. This means that planning, designing, construction and management is a cycle. Also, the availability of funds for capital developments has called for a need to have a better maintenance culture. Maintenance according to Smith (2003) means to keep in its existing state, preserve, continue in good operating condition; and protect. The RICS/ISVA working committee defined maintenance as "work undertaken in order to keep, restore or improve

every facility, to an acceptable standard and to sustain utility and value of the facility". It includes the built space, services, technology, maintenance, modification and adaptation, function and use, security, comfort, environmental health, costs and benefits of occupancy. Maintenance decisions are mostly ad-hoc in nature, which is a series of compromises between immediate physical needs of the building and availability of fund. This creates accumulated management expenditure due to arrears of maintenance works and complete failure of some elements in the building because of improper timing, planning and scheduling of work execution. This is very uneconomical to maintenance management and calls for the need to have an effective maintenance control with sound plans, recording of performance, comparison of performance with plan and taking corrective actions where appropriate. But to successfully control maintenance, proper management policies and practices must be instituted. Again many organizations have tried to use standard production or facilities-oriented methods to control maintenance. This has and will not be successful. Public properties are very essential in the society in that they give value and meaning to all other types of properties. However, the continuous misuse of these properties is to be considered in this research which is aimed at looking into management and maintenance of public health buildings. Excellent examples are the various general hospitals established in different parts of the country.

Statement of the problem

Building maintenance has until recently been a neglected field of technology, being regarded as unimportant. It possesses little glamour, is unlikely to attract very much attention and is frequently regarded as unproductive, although many of the managerial and technical problems are more demanding of ingenuity and skill than those of new works. Hospital management all too frequently endeavour to keep maintenance expenditure to a minimum, ignoring or misunderstanding the adverse long-term effects of such a policy. In excess of one-third of the total output of the construction industry is devoted to this activity, inadequate though it is to keep the nation's buildings in a satisfactory condition. Public buildings are viewed as government property so nobody accepts the responsibility of maintaining them once they are commissioned and put to use, the public hospitals are often neglected and left to deteriorate. These hospitals were put in place to provide succor but unfortunately they can hardly achieve this due to lack of maintenance culture, deterioration and inadequacy of fund even when there are maintenance policies in place. Most of these facilities are fast becoming obsolete and therefore there is a need to upgrade these facilities. It is recognized that there is a need for maintenance so the study aims to evaluate the maintenance strategies in place, the policies adopted, the possible limitations to the implementation of these policies and also the resources available to achieve this in terms of human resources and the adequacy of fund.

Objective of the Study

1. To examine the maintenance management system being adopted in the study area.
2. To find out whether there will be variation in the efficiency of maintenance work performed by outsourcing and in-house provision in public hospital buildings.
3. To find out the adequacy of funds provided for maintenance management in public hospital buildings.

Research Hypothesis

H1: there's no significant difference in the work performed by contractors to that of in-house provision in the maintenance of the building.

H2: the funds provided for maintenance work is not adequate to carry out the work.

Overview

Building maintenance is a complex and multifaceted activity which until recently has attracted very little attention. However, over the past decade, there has been a growing awareness of the economic and social importance of maintenance and benefits to be derived from the application of modern management or more effective use of scarce resources and higher standard of building accommodation. The essence of building maintenance cannot be over-emphasized because the state of the building is not only for our comfort but also for our economic survival.

The British Institute of Facilities Management (BIFM) (2001) cited in Iyagba (2005) defines the term facilities management as 'The integration of multi-disciplinary activities within the built environment and the management of their impact upon people and the work place'. Barrett (1996) defines facilities management as 'An integrated approach to maintaining, improving and adapting the buildings of an organization in order to create an environment that strongly supports the primary objectives of that organization'.

Building maintenance starts the day the builders leave the site. Design materials, workmanship functions, use and their inter-relationship will determine the amount of maintenance required during the life time of a building.

The building fabric also has to satisfy different user needs. The designer should identify what performance is required from the fabrics in terms of weather tightness, noise reduction, durability, and resistance to heat loss and other relevant criteria in addition to comfort and visual requirements. Much can be done at the design stage to reduce maintenance costs. Not many architects or contractors re-visit their buildings after the expiration of the defects liability period and few have a continuing responsibility for maintenance.

There is rarely an obvious end product in building maintenance and the effect of neglected public buildings for example will seldom be considered serious by the users as opposed to the obstruction caused by a lapse in operation following the neglect of equipment maintenance.

MAINTENANCE MANAGEMENT

This is the selection of goals, planning, procurement, organization, co-ordination and the control of the necessary resources for their achievement (Adebayo, 1990). Management is concerned with the dynamics of circumstances and activities and it is generally motivated by the need to economize in the use of resources and time in achieving predetermined objective. In view of the above stated facts stated about maintenance operations, it is necessary that the property manager identify the defects of a building that necessitate maintenance action through inspection of the building. This should be with a crew of professionals e.g. Builders, Architects, Quantity Surveyors, Estate Surveyors and Engineers in larger establishments. Once maintenance works is planned, it is the sole responsibility of the property manager to look at the scope of maintenance and maintenance resources necessary for such maintenance work to be carried out. The resources are:

- Materials needed for the work
- The type of labour to be employed i.e. direct labour or employing the services of a contractor.
- The type of plant to be used.
- For efficient and effective maintenance work, the following actions should be keenly observed.
- There should be maintenance policy i.e. type of maintenance programme, which should be most ideal, should be planned maintenance preventive maintenance.
- There should be a maintenance programme.
- There should be provision for a maintenance budget.
- There should be prudent financial control on the maintenance work.
- In a complete building project, there should be as built drawings and a major maintenance work checklist to enable free and fair inspection of the element thoroughly to be carried out.

Goals of maintenance management

It should be able to achieve the following if properly carried out.

1. Economy in money, material and time resources.
2. Planned and co-coordinated maintenance programme.
3. User's satisfaction.
4. Efficiency of the facilities.

STRATEGIES FOR EXECUTING MAINTENANCE

Maintenance has become a principal phase in the life cycle of built assets. The high performance of hospital buildings requires that maintenance considerations be taken into account at early stages of design. Maintenance management issues play a major role in the performance of constructed facilities. Maintenance work can be

undertaken by contractors, direct labour organizations or a combination of both systems and the decision will be based on a number of criteria. The structures of maintenance organizations are examined together with programming and operational activities. Outsourcing of one or more maintenance services may entail various difficulties, such as various employee related issues, loss of skills, lack of internal expertise to manage outsourcing contracts, potential loss of control, etc. On the other hand, outsourcing may result in cost savings, improved quality, the transfer of knowledge from outside specialists to internal personnel, etc. (Harris *et al.*, 1998; Atkins and Brooks, 2000; Valence, 2000). Neely and Neathammer's (1991) research focused on American defense facilities, subdividing them into 34 building types (hospital buildings being one of the 34 subcategories). They found that the majority of the maintenance budget in hospitals was spent on interior finishing and interior construction (32%), and on heating, ventilation and air-conditioning (HVAC) (29%). The rest of the budget (39%) was spent on electricity (13%), exterior envelope (13%), water and plumbing (10%), and other electricity systems, such as communications and low-voltage systems (3%).

Contractors or own staff

The choice between employing tradesmen directly to execute maintenance work is decided according to which offers the greatest advantage in terms of cost, quality and convenience. Direct labour is more economic than contract work by at least the profit margin. Competition has emerged for the normal method of resourcing using established in-house maintenance operation. The wider use of contractors and the development of 'partnerships' which include both the provision of contractors and the total management of the maintenance support are methods open to the maintenance manager. Building maintenance is not a single industry and is executed by contractors working for profit and by commercial enterprises and public authorities as an adjunct to other functions. Contractors have constituted the more flexible part in that they are subject to direct economic pressures and can respond fairly to the changes in the pattern of demand. Direct labour organizations are rather more rigid in structure and the previous absence of a profit motive required the substitution of other forms of motivation and objective. In all cases the services should be effective and the total cost economic. When deciding how to obtain the right people, either by direct employment or using contract staff, or both may be influenced by form of construction, use of the building, or maintenance policy. There are no general recommendations that will provide the correct proportions of direct and contract labour for all maintenance departments. In reaching a decision the maintenance manager should compare the costs and services provided by contractors with his own directly employed labour force, taking into account the availability of labour and the type of location of buildings to be maintained. Generally maintenance workloads tend to fluctuate, particularly with redecorations where external work is seasonal. Some have regarded that it would be better to confine direct labour to little more than emergency and scheduled maintenance, and to use contractors for the seasonal, major specialist work, although many efficient direct labour organizations would quarrel with this approach. Contractors generally need long-term contracts to give the employer good service on advantageous terms. And they are affected by Local Government Planning and Land Act, which was designed to provide greater flexibility, better accountability and firmer financial disciplines for local government. Under part iii of the Act, regulations were introduced so that where local authorities continued to operate direct labour organizations they must compete for work with private contractors, keep their accounts on a trading basis and earn a specified rate of return, to ensure that they would be cost-effective in operation.

The issues raised above are problems because they affect the successful implementation of maintenance culture, have the tendency of further impoverishing direct labour organizations, impediments to industrial growth, eroding confidence of the average Nigerian in practicing this culture and in the ability of the Nigerian government to strengthen the nations economy.

In general, the two alternative ways to provide maintenance services are: (1) full outsourcing where contractors are hired to provide all maintenance services; or (2) use of an in-house maintenance staff. Selective outsourcing refers to the use of contractors to perform some of the services, and at the same time, hiring an in-house maintenance staff to provide other selected maintenance services. The choice between employing tradesmen directly to execute maintenance work or engaging an independent contractor for that purpose should be decided according to which offers the greater advantage in terms of cost, quality, and convenience. The advantages and disadvantages of directly employed labor are discussed at length by King *et al.* (1984), Holland (1987), Lee (1987), and Chanter and Swallow (1996). These advantages and disadvantages should be weighed in relation to factors such as nature of work, volume of work, response time, location, quality, security, availability of space, market condition, cash flow, and total costs (Lee 1987).

PROBLEMS ASSOCIATED WITH INEFFECTIVE MAINTENANCE ACTIVITIES IN ORGANISATIONS

According to Adenuga (2000), various problems of varying magnitudes and origins are encountered in the process of maintenance. Some of these would include:

Design problem

Some fundamental maintenance problems originated from the design of the building. These types of problems are usually hard to solve as it may involve complete reconstruction of the entire building or large section of it. It may be avoided or at least, drastically reduced by involving at the design stages professional experts, including highly competent and experienced maintenance managers.

Problem of skill

Some maintenance manager and their crew of craftsmen and technicians lack the desired skills (which include experience, technical know-how, etc) required on the job.

Research and development problems

There is lack of adequate funds and interest in this direction. In fact, research and development directed towards building maintenance is non-existent or at best, very minimal.

Inadequate finance and financial budgeting

Usually there is no thought of financial provision for maintenance when the building is being designed. No funds are set aside for the eventual replacement of the wasting assets. Esenwa (2000) in his own contribution stated that indiscipline and ignorance on the part of users of facility often lead to persistent facility breakdown. In such situations, maintenance becomes problematic. (User's manual can be provided to assist). Establishment that de-emphasized training, retraining and continuing education (CPD) can hardly possess an effective maintenance programme.

Absence of efficient inventory system leads to frequent shortage of materials and spare parts. Lack of data and poor information processing is a handicap to effective maintenance.

Methodology

This research covers public hospital buildings in Lagos State, Nigeria. From the comprehensive list of public hospitals, a selection of ten (10) public hospitals was done using the random sampling method. The simple random sampling method was chosen so as to give equal chances to all the listed hospitals. Questionnaires were designed for this study and were directed to the maintenance staff of these selected public hospital buildings respectively. Hence, a total of sixteen (8) questionnaires were sent out to each of the ten selected public hospitals, Thus a total of eighty (80) questionnaires were sent out to the ten selected public hospitals of which a total of fifty(50) questionnaires were completed and used for the analysis.

Method of data analysis

The data collected was analyzed using statistical package for social sciences (SPSS) so as to obtain a comprehensive and accurate analysis in both the descriptive statistics and inferential statistics as applicable.

DATA PRESENTATION- (MAINTENANCE MANAGERS)

Table 1 Hospital name and address

Hospital name and address	Frequency	Percent	Valid Percent	Cumulative Percent
Lagos University Teaching Hospital	5	3.3	10.0	10.0
Lagos Island Maternity Hospital	5	3.3	10.0	20.0
General Hospital, Lagos	5	3.3	10.0	30.0
Psychiatric Hospital, Lagos	5	3.3	10.0	40.0
Orthopaedic Hospital, Yaba	5	3.3	10.0	50.0
Lagos State Teaching Hospital, Ikeja	5	3.3	10.0	60.0
National Military Hospital, Yaba	5	3.3	10.0	70.0
Gbagada General Hospital, Gbagada	5	3.3	10.0	80.0
Military Hospital, Ikoyi Lagos	5	3.3	10.0	90.0
Massey Children Hospital, Lagos	5	3.3	10.0	100.0
Total	50	33.3	100.0	

The table above shows that 5 questionnaires each were distributed in each of the 10 hospitals.

Table 2 Number of years spent in this maintenance department

Number of years	Frequency	Percent	Valid Percent	Cumulative Percent
No response	2	1.3	4.0	4.0
Less than 10 years	35	23.3	70.0	74.0
10-19 years	7	4.7	14.0	88.0
20-29 years	6	4.0	12.0	100.0
30 years & above	---	---	---	---
Total	50	33.3	100.0	---

The table above shows that majority of the respondents (70%) have worked for less than 10 years which may be due to staff migration

Table 3 Approximate number of full time employees in the department

number of employees	Frequency	Percent	Valid Percent	Cumulative Percent
1-10	---	---	---	---
11-30	19	12.7	41.3	41.3
31-60	22	14.7	47.8	89.1
61-100	5	3.3	10.9	100.0
101-500	---	---	---	---
Above 500	---	---	---	---
Total	46	30.7	100.0	

The above table shows that majority of the respondents (41.3%) have between 31-60 employees and another (47.8%) 11-30 have employees which shows that they are adequately staffed.

Table 4 Written maintenance policy available

maintenance policy	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	1	.7	2.0	80.0
No	10	6.7	20.0	100.0
No response	39	26.0	78.0	78.0
Total	50	33.3	100.0	

The above table indicates that majority of the respondents do not have a policy or even operate a maintenance policy.

Table 5 Kind of maintenance policy operated

maintenance policy	Frequency	Percent	Valid Percent	Cumulative Percent
No response	49	32.7	98.0	98.0
Emergency	---	---	---	---
Unplanned	---	---	---	---
Planned	1	0.7	2.0	100.0
Total	50	33.3	100.0	

The table above indicates that majority do not know what kind of policy is in operation.

Table 6 Maintenance log book available

Log book	Frequency	Percent	Valid Percent	Cumulative Percent
No response	42	28.0	84.0	84.0
Yes	1	.7	2.0	86.0
No	7	4.7	14.0	100.0
Total	50	33.3	100.0	

The table above shows that majority of the respondents (14%) do not have a log book available and only 2% possess one.

Table 7 Maintenance manual to guide the operatives available

Maintenance manual	Frequency	Percent	Valid Percent	Cumulative Percent
No response	42	28.0	84.0	84.0
Yes	8	5.3	16.0	100.0
No	---	---	---	---
Total	50	33.3	100.0	

The above table shows that only 16% have a maintenance manual to guide operatives.

Table 8 Maintenance strategy used

Maintenance strategy	Frequency	Percent	Valid Percent	Cumulative Percent
No response	12	8.0	24.0	24.0
Corrective maintenance	---	---	---	---
Preventive maintenance	---	---	---	---
Condition-based maintenance	---	---	---	---
The combination of the above	38	25.3	76.0	100.0
Total	50	33.3	100.0	

The above table shows that majority of the respondents (76%) use a combination of the strategies

Table 9 When maintenance work is executed on building component

Execution of maintenance work	Frequency	Percent	Valid Percent	Cumulative Percent
At the end of its useful life time recommended by the maker	10	6.7	20.0	20.0
When it has failed to a point at which it cannot perform its required function	1	0.7	2.0	22.0
A response to breakdowns or user requests	39	26.0	78.0	100.0
A significant deterioration in a unit	---	---	---	---
In accordance with a predetermined plan at regular intervals	---	---	---	---
When there is a condition survey report from regular inspection from those elements	---	---	---	---
Total	50	33.3	100.0	

The above table shows that majority of the respondents (78%) only replaced their building component after it was broken 20% of the respondents replaced building components at the end of its useful life and the remaining 2% do not replace any components which shows a lack of maintenance culture and a if it don't broke don't fix it attitude.

Table 10 Distribution of Maintenance Components by Source of Service

Maintenance service	Frequency		
	In-house Staff (%)	Selective Outsourcing (%)	Full outsourcing (%)
Cleaning interior	100.0	---	---
Cleaning exterior	96.0	4.0	---
Inspection of building systems	100.0	---	---
Inspection of equipment	80.0	20.0	---
Repair and replacement of building systems	54.0	6.0	---
Repair and replacement of equipment	14.0	86.0	---

The table above shows that in-house personnel is used mostly for inspecting building systems (100%), for cleaning interior (100%), exterior cleaning (96%), repairing/replacing building systems (54%)and inspection of equipment (80%). Selective outsourcing is used for repairing/replacing of equipment (86%)

Table 11 Efficiency of maintenance operation under outsourcing and in-sourcing services

[1] For Not Important [2] of little importance [3] of somewhat importance [4] for important [5] for very important.

Efficiency of maintenance operation	Outsourcing					In-Sourcing				
	Frequency (%)					Frequency (%)				
	1	2	3	4	5	1	2	3	4	5
Reduced cost	61	4.9	2.4	22	9.8	---	30.6	---	58.3	11.1
Higher quality work	4	2	16	48	30	---	11.1	26.7	62.2	---
Better control of services	2	4	62	10	22	---	---	60	40	---
Better adjustment to workload fluctuations	32	2	66	---	---	---	---	66.7	28.9	4.4
More flexibility in staffing	34	10	6	50	---	---	57.8	8.9	4.4	28.9
Reduced equipment expenditures	22	---	4	74	---	22.	42.2	---	31.1	4.4

Avoiding penalties for delay	4	46	4	40	6	8.9	53.3	11.1	---	26.7
Better access to special skills	---	---	12	84	4	51.1	48.9	---	---	---
Get the latest technologies	10		6	78	6	66.7	33.3	---	---	---
Higher security	24	40	22	14	---	---	4.4	---	40	55.6
Specialized expertise	6	30	10	34	20	---	48.9	35.6	11.1	4.4
Minimize equipment downtime	48		22	30	---	---	---	40	60	---

The table above indicates that using outsourcing will not reduce cost (61%) but using in-sourcing will reduce cost (58.3%). Higher quality of work to both outsourcing (48%) and in-sourcing (62.2%) is important. Better control of services is of somewhat importance to both outsourcing (62%) and in-sourcing (60%). Better adjustment to workload fluctuations is also of somewhat importance to both outsourcing (66%) and in-sourcing (66.7%). More flexibility in staffing is important (50%) to outsourcing while for in-sourcing it is of little importance (57.8%). Reduced equipment expenditures is important to outsourcing (74%) while for in-sourcing (42.2%) is of little importance. Avoiding penalties for delay is of little importance to both outsourcing (46%) and in-sourcing (53.3%). Better access to special skills is important to outsourcing (84%) while for in-sourcing (51.1%) it is not important. Getting the latest technology is important to outsourcing (78%) while it is not important to in-sourcing (66.7%). Higher security is not important to outsourcing while it is important to in-sourcing (55.6%). Specialized expertise is important to outsourcing (34%) while it is not important to in-sourcing. Minimize equipment downtime is important to in-sourcing (60%) which means that their equipments are always in use while for outsourcing it is not important because when there is no work the equipment is not in use.

Table 12 Rate the overall performance of your department within the limit of your resources

Variable	Frequency	Percent	Valid Percent	Cumulative Percent
Very bad	---	---	---	---
Bad	---	---	---	---
Average	5	3.3	25.0	25.0
Good	15	10.0	75.0	100.0
Very good	---	---	---	---
Total	20	13.3	100.0	
No response	30	20.0		

The above table shows that majority of the respondents consider the performance of building maintenance good within the limits of the resources available to them.

HYPOTHESIS TESTING

Hypothesis one

The hypothesis was tested using the simple T-test.

Ho: There is no significant difference in the work performed by contractors to that of in-house provision in the maintenance of the building.

H1: There is significant difference in the work performed by contractors to that of in-house provision in the maintenance of the building.

The results show that for hypothesis 1, significance value for the t test was found to be 1.417
Decision: Since $1.417 > .005$ H_0 is rejected. Hence, H_1 (alternative hypothesis) is accepted.

Hypothesis two:

H_0 : The funds provided for maintenance work is not adequate to carry out the work.

H_1 : The funds provided for maintenance work is adequate to carry out the work.

The result shows that for hypothesis 2, significance value for the t test was found to be 0.635

Decision: Since $0.635 > .005$ H_0 (null hypothesis) can be accepted.

Summary of finding

The study revealed that majority of those public hospitals do not have a maintenance policy, maintenance manual or log book to guide the maintenance work being carried out. Most of the problems faced in executing building maintenance operations are the inadequacy of funds, lack of specific budget for maintenance, insufficient skilled employees and shortage of materials to carry out effective maintenance and repair of the facilities and therefore maintenance needs have to be prioritized. Service maintenance, corrective maintenance, and deferred maintenance are mostly delivered by selective outsourcing. Routine maintenance and preventive maintenance are mostly delivered by in-house personnel. The staffs used in cleaning the interior and the exterior are mostly obtained by full in-sourcing. Inspection and repair and replacement of building systems/equipment are mostly delivered by in-sourcing. The findings indicate that outsourcing and using in-house personnel are two methods of providing maintenance services each of which appears to have distinct advantages and disadvantages given the circumstances. Both methods are used and justified given the nature of the work and type of maintenance.

Conclusion and Recommendation

The majority of the respondents do not have budgetary allocations for maintenance and all maintenance expenditure have to be within the annual budgetary allocation of the hospital (which does not amount to much), and therefore have very limited funds for maintenance of their facilities. They have to rely on voluntary donations and grants and those that do not receive such grants either do without maintenance which spirals out of control in the future or have to prioritize and get support from other sources. And a lot of the participating hospitals do not have or operate a maintenance which is not good so presently and for the future. The public needs to be re-educated that management and maintenance of existing properties is part of the overall process of building development. This means that planning, designing, construction and management is a cycle and needs to be worked at.

The performance of buildings is likely to be enhanced if maintenance managers efficiently communicate with building users, are aware of users' concerns, and take action to eliminate these concerns. Some of the users' maintenance-related concerns are not likely to develop if maintenance managers are in constant communication with designers during the design phase and after the building have been put in service, and make the designers cognizant of maintenance-related matters. The annual budgetary allocation should be well managed to meet expenditure for maintenance and more funds should be provided in the annual budget for maintenance. Also, the decision to use outside contractors or in-house personnel should not be made indiscriminately but should be based on the type of maintenance and the nature of the maintenance work involved. There should be more regular routine inspections but this would be useless, where the faults noticed cannot be repaired because of lack of finance and inadequate resources.

While concerns about cleaning and repair/replacement appear to be among a hospital users' top concerns, maintenance-related issues are certainly not on maintenance managers' priority lists when they maintain buildings. This situation may be due to the fact that maintenance managers who are not in touch with the hospital users are not fully aware of their problems so periodic evaluation and re-training of staff and user's should be put in place.

There is a need for an aggressive thrust to provide necessary guidelines, training programmes and support for maintenance staff and users of these facilities. And a need to improve on the public perception of maintenance culture, serious efforts should be made to reverse the public perception of maintenance as a charade.

From the foregoing, it cannot be over-emphasized that the hospital's if not maintained will deteriorate and will constitute an offence to the sight of sensitive observers. Mainly because the hospitals were constructed for the use of more than a quarter of the residents of Lagos state, it is very important that the necessary authorities promote the maintenance culture.

References

- Adebayo, S.O. (1990) *Building Maintenance: and Nigeria Economy*. Department of building Technology, Yaba College of Technology, Yaba, Lagos.
- Atkin, B. and Brooks, A. (2000) *Total Facilities Management*. Blackwell Science, Oxford.
- Barret, P.J. 1996. *Asset Management Handbook*. Commonwealth of Australia: Australian National Audit Office.
- Chanter, B. and Swallow, P. (1996) *Building maintenance management*. Blackwell Scientific, Oxford, England.
- Harris, A., Giunipero, L.C. and Hult, G.T.M. (1998) Impact of organizational and contract flexibility on outsourcing contracts. *Industrial Marketing Management*, 27, 373– 84.
- Holland, B.K. (1987): Managing single family home. *The Institute of Real Estate Management*, Chicago. 20(15), 4 – 9.
- Iyagba, R. O. A. (2005): The menace of sick buildings – a challenge to all for its prevention and treatment. An Inaugural lecture delivered at University of Lagos, Lagos.
- King, C. S., Langendoen, C., and Hummel, L. H. (1984). *The successful On-site manager*. The Institute of Real Estate Management, Chicago.
- Lee, R. (1987). *Building Maintenance Management*, 3rd Ed., William Collins Sons & Co. Ltd., London.
- Neely, E.S. and Neathammer, R. (1991) Life-cycle maintenance costs by facility use. *Journal of Construction Engineering and Management*, 117(2), 310– 20.
- Smith, R. (2003) *Best Maintenance Practices*. Journal for maintenance and Management. 16 (1).
- Valence, G. (2000) Strategic Management and outsourcing maintenance of public schools in New South Wales. Proceedings of the CIBW70 International Symposium on Facilities Management and Maintenance, Brisbane, Australia, 439– 46.