Maintenance of University Facilities in Developing Country: Case study of Lagos State University Ojo Nigeria

Oyenuga, S.O.

Department of Estate Management
School of Environmental Studies Yaba College of Technology

Akinsola, O. E.

Department of Building Technology
School of Environmental Studies Yaba College of Technology

Hussaini, P. O.

Department of Building Technology
School of Environmental Studies Federal Polytechnic, Ede
E-mail: patoseni@yahoo.com,

Fatokun, A.O. (Corresponding Author)

Department of Building Technology
School of Environmental Studies Yaba College of Technolgy.
E-mail: ajibolaoladipo@yahoo.com, +2348052314874

Doi: 10.5901/mjss.2012.v3n11p69

Abstract: Cursory study of universities in developing countries has been a subject of concern. This necessitated a study into the maintenance of Lagos state university Ojo Campus Nigeria with a view to identify certain factors responsible for the deteriorating state of the facilities and also proffer remedial solution to the problems. The research used both qualitative and quantitative method. Group focus and in-depth interview are some of the many formal approaches that are used. These include; customer feedback forms, report or media clip. Data are collected using sampling techniques and structured questionnaire, incorporating a fixed set and order of questions with a closed list of responses. Out of the Twenty-Two (22) questionnaire sent, only seventeen (17) were responded to, representing a seventy-seven (77%) response rate. The data collected were analyzed using descriptive and inferential statistics. The study revealed that; lack of planned maintenance, lack of maintenance policies in the institution, lack of update security system and qualified personnel are among the major factor influencing deteriorating state of facilities at the university. The research work concludes that lack of planning approach to maintenance issue and structured maintenance policy is the banes of the university facilities problem.The study also conclude that there are no regular inspections of the facilities to check maintenance needs and the university does not use facilities to generate fund, other than government funding for maintenance purposes. The paper recommends that universities in developing countries should have a good maintenance policy in place and use facilities for investment purposes to foster increased income to cater for maintenance needs among other things.

1. Introduction

The maintenance of university facilities is important for the well-being of users; students, lecturers, administration, clerical, technical and support staff. It is indispensable for the promotion of productive activities and social development. The vast majority of people spend over Ninety95% of their time in or next to a building of one kind or another, so in this sense the built environment has become our natural environment (words worth, 2001). The conditions of the surroundings in which we live and learn are reflection of the nation's wellbeing (Lee, 1997).

Neglecting maintenance implies increased in cost of operating facilities and a waste of related natural and financial resources (Jackson, 2003). According to Banful (2004), the financial consequences of neglecting maintenance are often

not only to be seen in terms of reduced asset life and premature replacement, but also increased the cost of operating and waste of related natural and financial resources.

There is no doubt that dilapidated and unhealthy buildings in a decaying environment depress the quality of life and contribute in some measure to antisocial behavior (Wordsworth, 2001). Bastidas (1998) suggest that a school maintenance programme is an organizational activity that needs to be carried out by the school community in order to prolong the life expectancy of the school buildings, the furniture and equipment. Maintenance is a continuous operation to keep the school building as a shelter in case of an emergency caused by natural and hazardous events. Buys (2004:199), regular maintenance inspection are perceived to be one of the most important criteria in maintenance management. By having regular inspections of the building and all its facilities to identify any defective work, maintenance work can be carried out before expensive corrective maintenance is required.

Most developing countries neglect maintenance and have no policy in dealing with the deteriorating facilities. University of Malawi for instance situated in developing Malawi is deteriorating physically due to lack of maintenance. Management of the institution blame the situation on government in lack of adequate funding for the enhancement of for maintenance work. The aim of this study is to identify the problems hindering proper maintenance of the university facilities in developing country using a case study of Lagos State University by identifying whether there is a maintenance policy in the university, seeks to determine the adequacy of security structure to eliminate vandalism in the system and adequate maintenance personnel for effective maintenance practice while identifying ways to raise funds for maintenance works.

2. Study Area

Lagos State University also known as (LASU) was established in 1983 by the enabling law of Lagos state of Nigeria for the advancement of learning and establishment of academic excellence. The University caters for a population of 61,000 enrolled in full time and part time programme at diploma, undergraduate and post graduate. Lagos state university located in the city of Lagos state, Nigeria, the only state university in the former British colony.

Lagos State University (LASU) was conceived as a multi- campus, collegiate and non – residential university. Today, Lagos state university operates a multi – campuses system with (4) fully owned campuses having its main campus at Ojo (along Badagry express way) and other campuses at Epe, Ikeja and Surulere as well as six (6) affiliated / external campuses. The Ag. Vice chancellor of the university; Professor Ibiyemi Olatunji Bello has embark on a voyage of rebranding the construction and building of Private Virtual Network (PVN) and Hostels within the Ojo campus. (Wikipedia, 2012).

3. Methodology

This research used both qualitative and quantitative method. The qualitative research is used to gain insight in to people's attitude, concerns, value system, culture and life styles. It is used to inform business decision, policy formation, communication and research. Group focus and in-depth interview are some of the many formal approaches that are used. These include; customer feedback forms, report or media clip (Ereaut, 2007).Data are collected using sampling techniques and structured questionnaire, incorporating a fixed set and order of questions with a closed list of responses, although a limited number of open ended answer may be allowed (Ereaut, 2007). Out of the Twenty-Two (22) questionnaire sent, only seventeen (17) were responded to, representing a seventy-seven (77%) response rate. The data collected were analysed using descriptive and inferential statistics.

4. Research Findings

On a scale of 1 (Strongly Disagree) to 5 (Strongly Agree) the University does the following;

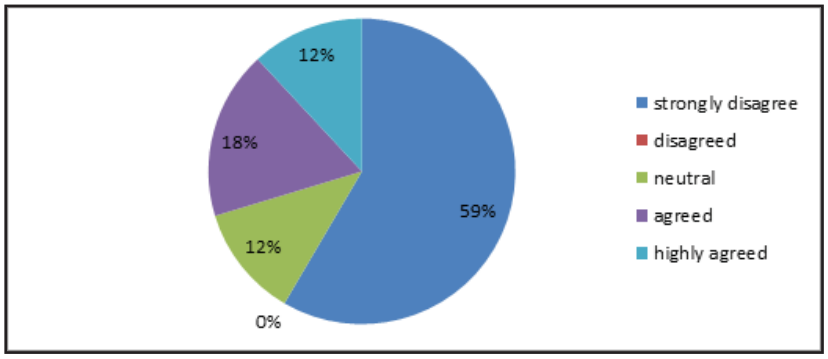
Table 1. Maintenance plan

4.1.0	Parameter	1	2	3	4	5	Mean
4.1.1	Prepare annual maintenance plan	10	0	2	3	2	2.24
4.1.2	Daily inspection of the facilities	2	8	2	2	3	2.76
4.1.3	Receive yearly maintenance	0	2	2	0	13	4.41
4.1.4	Raise fund from other source for maintenance	13	2	2	0	0	1.35

4.1.5	Receive donation for maintenance	10	2	0	3	0	1.73
4.1.6	Recover maintenance cost from users	15	0	0	0	0	1.00
4.1.7	The maintenance manager is involved in the design of new facilities	2	0	0	0	15	4.53
4.1.8	Put in place a sound maintenance policy to ensure that maintenance fund is available.	11	2	0	0	3	1.67
4.1.9	Maintenance exercise according to priorities. E.g. Emergency, routine	0	0	0	0	17	5.00
4.1.10	Put out tender for outsource maintenance work	0	0	4	9	4	4.00
4.1.11	Outsource only major maintenance work	0	0	0	0	17	5.00
4.1.12	Management determine minimum accepted standard of building	13	2	0	0	2	1.59
4.1.13	Maintenance Manager makes ultimate decision with regard to maintenance	2	12	0	0	3	2.41

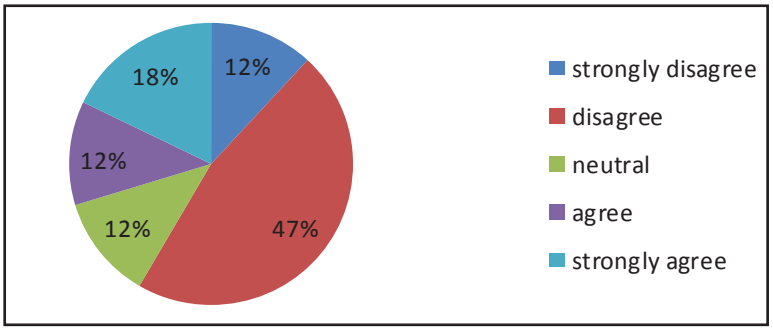
The following are chart derived from the above data in Table 4.1 on a scale 1(Strongly Disagree) to 5(Strongly Agree).

Chart 1: Annual Maintenance



59% of the respondent representing strongly disagree that there is any maintenance plan, 12% are neutral, 18% agree while 12% strongly agree that there is a maintenance planning and are mostly done on ad hoc basis, if at all. Maintaining facilities on ad hoc basis can lead to funding problems, because the lack of forward planning leads to costs that are unpredictable and therefore incorrectly included in the budget. The lack of annual maintenance planning can lead to a lack of require skilled labour of the time of need.

Chart 2: Daily Inspection



12% of the respondent strongly disagree that there is daily inspection while 47% of the respondent disagree, 12% are neutral, 12% agree and 18% strongly agree that there are daily inspections. The mean score shows that the respondents are "neutral` that the facilities are inspected on a daily basis.

This shows that some of the school annex or affiliated ones may be inspecting facilities while others may not as shown on the chat that 47% disagree.

According to Buys (2004), ranking of the criteria for the best practice in maintenance management system in order of important, established that regular inspection cycle to identify maintenance work was ranked first. On a scale of 1(Minor contribution) to 5(Major contribution) the following items contribute to the University source of funds for maintenance.

Table 2. Source of funds

		Minor Contribution			Major Contribution		
4.2.0	Sources of funding	1	2	3	4	5	Mean
4.2.1	Student fees	8	0	3	0	0	1.55
4.2.2	Donations	4	3	0	0	3	2.50
4.2.3	Government funding	0	0	0	2	15	4.88
4.2.4	Fund raising	10	0	0	0	0	1.00
4.2.5	Cost of recovery from user charges	8	2	0	0	0	1.20

Table 3. Ranking source of funds

4.3.0	Source of fund	Mean	Funding	Ranking
4.3.3	Government funding	4.88	Very large	1
4.3.2	Donations	2.50	Little	2
4.3.1	Student fee	1.55	Very little	3
4.3.5	Cost recovery from user charges	1.20	Very little	4
4.3.4	Fund raising	1.00	Very little	5

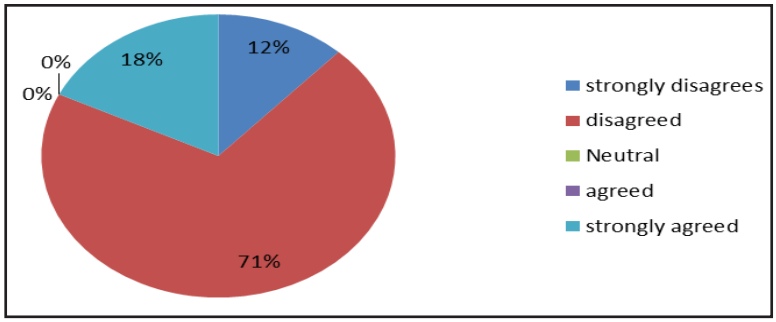
The following are result derived from the above data in Table 4.2 and 4.3 on a scale of 1(Minor contribution) to 5(Major contribution).

It was assumed that funding for maintenance is obtained from all five sources and the least source of funding is regarded as contributing very little or no funding while the one with most votes among the sources would be assumed to contribute the majority funds.

Interpretation of the mean score for funding:
Very little (≥1.0 to ≤ 1.8),
Little (≥ 1.9 to ≤ 2.7),
Average (≥2.8 to ≤ 3.6),
Large (≥3.7 to ≤ 4.2),
Very large (≥ 4.3 to ≤ 5.0).

In this case, the data shows that government funding with mean score of 4.88 is the major source of funding for the maintenance of the school facilities.

Chart 3: Maintenance Decision.



Chat 3 was based on table 1 expressing if maintenance manager makes decision. Chat 3 indicate that 12% of respondent strongly disagree, 71% representing,18% representing strongly agree that ultimate decision for maintenance are made by the maintenance manager. The mean score of 2.41 indicate that the respondents generally "disagree` those ultimate decisions concerning maintenance are made by the maintenance manager. This shows that the maintenance manager does not make ultimate decision concerning maintenance of facilities.

Table 4. Maintenance caused by vandalism

4.4.0	0%	1-19%	20-39%	40-59%	60-79%	80-99%	100%	Mean
4.4.1	1	2	3	4	5	6	7	
4.4.2	0	4	2	2	0	9	0	4.47

From the above data in table 4.4 for maintenance caused by vandalism on a scale of 1(0%) to 7(100%). This was done to find a percentage of maintenance caused by vandalism.

Interpretation, the following percentage was used regarding mean score 0%(1), 1 to 9≥1.0 to ≤2.0), 20 -29%(>2.0 to ≤3.0) , 40-59%(>3.0 to ≤4.0), 60-79%(>4.0 to ≤5.0), 80-99%(>5.0 to ≤6) and 100%(>6 to 7).

The table shows that the respondent feel that between 60% to 79% of the maintenance caused by vandalism is mainly influenced by a lack of security as vandals take advantage of deserted area / surroundings.

Table 5. Security

	PARAMETER	1	2	3	4	5	MEAN
4.5.1	General school grounds	10	0	0	0	7	2.65
4.5.2	Effective parameter boundary wall	14	0	0	0	3	1.71
4.5.3	N0 of Entrance to campus are absolute minimum	14	0	0	0	3	1.71
4.5.4	Effective access control system operated by security personnel at the entrance gates	14	0	0	3	0	1.68
4.5.5	Effective lightning between boundary and buildings	12	2	0	0	3	1.82
4.5.6	Available tools e.g. ladder around the building to enable intruder to gain access	2	15	0	0	0	1.88
4.5.7	Trees that offer concealment to intruders	8	2	0	2	5	2.65
4.5.8	Guards have unobstructed sight lines covering the building	4	0	0	8	5	3.59
4.5.9	Minimum of entrance(access points) to the building	2	3	5	0	7	3.41
4.5.10	Doors and windows with adequate construction and strength	4	0	0	5	8	3.76
4.5.11	Secure locks to windows and doors	0	3	3	2	9	4.00
4.5.12	Effective intruder detection alarm system	2	13	0	0	2	2.24
4.5.13	CCTV surveillance system monitored by security personnel	4	13	0	0	0	1.76
4.5.14	Adequate security accommodation e.g. surveillance and search rooms	4	7	3	3	0	2.29
4.5.15	Processes exist to limit any unnecessary movement of valuable items within the building.	7	2	0	2	6	2.88

According to the respondents, there is no existence of effective perimeter boundary wall` that allows intruder to access the school ground at anytime. This is backed by mean score of 1.71, thereby indicating that the boundary wall does not exist. On the other hand, the number of entrance are absolute minimum` had a mean score of 1.71, indicating that there are many entrance to the university, which makes it vulnerable to attack by vandals. "Effective access control system is operated by security personnel to the entrance gate had a mean score of 1.68, indicating that the entrance to the university is not operated by security checks. This also allow people with evil intentions to damage the school properties and enter without being checked.

Effective lightning between boundary and buildings had a mean score of 1.82, indicating that it does not really exist. This allows thieves to approach and leave the school in the dark without being noticed.

Available tools, like ladders round the school premises that can allow intruder to gain access to the building, with a mean score of 1.88 are not available, in effect the school is secure. Trees that offer concealment to intruders with mean score of 2.6 do not significantly exist, making it possible for passer-by to see attractive items on the campus grounds. The guards have unobstructed sight lines covering the building has a mean score of 3.59, showing that guards exist and have a clear sight to each other making the building secure. It was however established during the visit, that the guards had no clear line of sight and had no radio, which would make it difficult for them to communicate. Practically, there is a minimum of entrance (access points) (doors used for entering) to the building with a mean score of

3.41. This means that there are few entrance to the building which makes it easier to control and monitored entrances.

Doors with adequate construction strength have a mean score of 3.6, which means that they are strong door that offer adequate security to the building. This makes it hard for a thief to break in. Secure windows and doors with mean scores of 4.00 indicate that the secure door and window do heavily exist. The only problem is that when they are broken, they are not replace in a reasonable time frame due to lack of maintenance plan which makes it easier for intruders to occasionally have access rooms.

There is no CCTV surveillance system monitored by security personnel, evident by mean score of 1.76, which make it hard to identify vandals or thieves. "Effective intruders ` detection alarm system has a mean score of 2.24, which means that the intrusion of people cannot be detected. Adequate security accommodation e.g. surveillance and search rooms with mean score of 2.29, means there is o adequate security accommodation to effectively carry out their duties. This can allow intruder to take advantage of the weather when guards hide in unsuitable areas in rainy day. It also create environment where intruders can go without being physically searched due to lack of rooms.

Processes to limit unnecessary movement of vulnerable items within the campus has a mean score of 2.88 which means there is some control of movement of items among the rooms.

In order for security to be efficient and effective, all the above requirements need to exist on any building facility. Failures in some of the requirement of security indicate a weakness in the whole security system.

Table 6. Qualifications

Qualification	Major Programme	Years of Experience
Technical school certificate	Building Construction	12 Years
Ordinary Diploma	Estate Management	22years
Higher National Diploma	Building construction Technology	Over 20 years
B.Sc/B.Tech	Building construction	10years
PhD	Construction management	7years

All maintenance manager of the university interviewed maintained that maintenance manager have either Technical school certificate, Ordinary Diploma, Higher National Diploma, Bachelor of science in building construction and PhD in construction management. Their position is called "work supervision". These shows that the university employ them at a lower level of management, these people can therefore not make any decision that are acceptable at the top management level, even with the experience.

5. Conclusion

The results of the empirical study show that universities in developing countries lack planning approach to maintenance issue. In the study area (Lagos State University) Isolo, Lagos Nigeria the school (LASU) does not have specific maintenance policy. It was confirmed that there are no regular inspection of the facilities to check maintenance needs.

The university does not use facilities to make fund, other than government funding for maintenance purposes. Vandalism is the main reason for the need for maintenance apart from re-active maintenance caused by deterioration of the facilities. The general maintenance needs include the following; replacement of plumbing accessories, general electricity, etc.

6. Recommendations

A maintenance department needs to be structured according to the size of the organization. In university, it's important to employ a manager with high skill and high level of experience, so that maintenance work will be plan and carry out strategically.

Maintenance manager should be able to spend much time in planning by getting involved in daily operational problem. This can be done by empowering other members of the team to make decision and by encouraging problem to address at the lower level of the hierarchy.

Investment in Information Technology (IT) is another way of making information processing more easily. This enable the maintenance work to have updated planning strategy that suit the organization needs.

Another method of improving maintenance is to become more proactive. This can be through arrangement of meeting internally to discuss the service provided, which can be done every two months and it should involve the head of each department. These men would have been briefed on the meetings. Proactive behavior could also include emerging area s of significant activity, such as environmental management and business management planning.

In University, efforts are directed in ensuring the students stay as pleasant as possible, therefore, maintenance managers should target people who can provide them with needed / useful information, in order to improve their services through feedbacks.

The University can also open exclusive club for alumni and company's executive, where they can meet. The subscription fee can be used for the maintenance of building and facilities as a whole. The club offer services which include sports facilities for their members, restaurant and bored rooms. Regular inspection should be made periodically, take into account all maintenance needs in enabling preparation of annual budgets.

Investment in security would also minimize the cost caused by vandalism. It would also enhance the protection of facilities and minimize future maintenance.

References

Banful, E. (2004). *A Stitch in Time Saves Nine; Cultivating a Maintenance Culture in Ghana,* an Article Presented at a Seminar on Maintenance Culture in Banful, E. (2004). *A Stitch in Time Saves Nine; Cultivating a Maintenance Culture in Ghana,* An Article Presented at a Seminar on Maintenance Culture in Ghana. March 16, 1 – 2.

Bastidas, P. (1998). *Maintenance manual for school buildings in the Caribbean* (online) America: organization of American States. Available from http://www.oas.org/CDMP/ documents/schools/maintman.htm. (Accessed on 11th of April 201).

Buys, F. (2004). *Maintenance Management in Tertiary Education Institutions in South Africa* Unpublished PhD. Thesis, Nelson Mandela Metropolitan University, South Africa.

Ereaut, G. (2007). *What is Qualitative Research?* (Online) http://www.qsrinternational.com/what-is-qualitative-research.aspx.. (Accessed on 09th of March 2012).

Housing delivery in Nigeria. Builders Focus 1, 31-36.

Jackson, B. (2003). *DBSA Development Report 2003, Finance for Development: Enhancing the role of private sector finance* (online), http://www.gapresearch.org/ finance/DBSApaper1.pdf. (Accessed on 11th April 2012).

Lee, R. (1995) *Building Maintenance Management*, Blackwell Science Ltd, Oxford: UK

Wordsworth, P. (2001). Lee's Building Maintenance Management, 4th Edition. Oxford. Blackwell Science Ltd.