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ASSESSMENT OF FACTORS AFFECTING EFFECTIVE HOSTEL MAINTENANCE IN FEDERAL POLYTECHNIC OKO, ANAMBRA STATE NIGERIA

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ABSTRACT: *Building maintenance until recently has been a neglected and resented field of knowledge, as reflected in most of our schools and governmental policy formulation and execution. This ugly scenario is evidenced in the maintenance execution on hostel buildings in Federal Polytechnic, Oko. The study is focused on the assessment of factors affecting effective hostel maintenance in Federal Polytechnic, Oko. It evaluated the operational state of maintenance (physical-functional condition) of public and private hostel buildings in the study area, articulated the factors affecting maintenance management of public and private hostel buildings in the study area. The data collected were analysed using simple percentage and inferential statistics. The analysis revealed that the operational state of hostel maintenance in Federal Polytechnic Oko is poor. There is a significant difference between the perception of hostellers and developers as to the operational state of maintenance. Two hundred and seventy five questionnaires administered to a targeted population were returned out of the total number of three hundred and forty eight administered to Hostel occupants, students and heads of maintenance management in the polytechnic and private developers. The method of analysis for the study is a simple percentage and inferential statistical tool for the analysis of data. Data analysis indicated that, maintenance is carried out whenever a fault is detected within the building after a protracted period of abandonment and complaint by users. This situation has made hostellers complacent in maintenance management. The research in conclusion recommends proactive measures to keep identified key factors affecting effective maintenance of hostel in Federal Polytechnic Oko in check for improved maintenance culture and ensure upbeat approaches to maintenance such as planned maintenance for a predetermined schedule, most significantly on the side of the developers but not neglecting students.*

KEYWORDS: federal polytechnic, hostel maintenance, inferential statistics, Oko-Nigeria, planned maintenance.

INTRODUCTION

It has been identified through research that building maintenance has been the most neglected field of building technology, precisely in most of our governmental policy formation and execution. This situation is reflected in the maintenance operations of housing stocks in the various tertiary institutions of higher learning in Nigeria today. Most regrettably therefore, is the state of apathy and decline in the attitude towards government schools building

maintenance? By and large every tertiary institutional building whether old or new requires maintenance for a maximum durability, performance and realization of its value, since hostels constitute stringent part of school's valuable assets providing learners with a conducive environment for learning and leisure. Before now the accommodation of students within their immediate school environment of study had always been part of the integral part of the design and layout of tertiary institutions in Nigeria. This arrangements no doubt stimulates team and communal spirit among students and enhances learning which is better served by the proximity of classrooms, libraries to hostels (Daily Champions, 2004).

However, with the rapid increase in student population and the ever-dwindling resources of tertiary institutions, coupled with government misplacement of priority and lack of vision in policy formation and execution, this desirable practices and arrangement is no longer fully tenable nor attainable. Given this situation, Institutional hostels could no longer cope with the population of students which led to an unacceptable levels of overcrowding stress on existing facilities, incessant breakdown of services and the promotion of cultism and other vices. This is actually not far from the situation of things in Federal Polytechnic Oko. To correct this ill therefore, some institutions have taken bold steps in finding curative remedy, like Federal Polytechnic Oko, the school management resolved to restrict the use of school hostel accommodation to female students alone so as to pacify the situation, and encouraged private developers to develop and manage student hostels as a costs saving exercise in other to alleviate the problem of accommodation.

The aim of the study is to assess the factors affecting maintenance management in public and private hostel buildings with a view to providing effective maintenance guidelines to hostel building users in the Federal Polytechnic Oko in Anambra state of Nigeria. The study is therefore undertaken in order to:

1. To evaluate the operational state of maintenance (physical-functional condition) of public and private hostel buildings in the study area.
2. To determine factors affecting maintenance management of public and private hostel buildings in the study area.

LITERATURE REVIEW

Hostel Defined

Oxford Advanced Learners Dictionary (2015) defined hostel as a building that provides cheap accommodations and meals to students, workers or travellers. It is an inexpensive, supervised short lodging especially for young people. It is not always that hostels provide meals. There are self-catering hostels provided with kitchenettes in which hostellers provide and prepares their meals. It is right to say that most hostels in Nigerian Institutions fall within this category, just as it is the case with the female hostels in Federal Polytechnic Oko.

Hostels depending on the method adopted provide single and shared bedroom accommodations. The bedrooms are furnished and the students have access to share bedrooms, laundry, lounge and recreational facilities (Accommodation Service, University of Adelaide 2009). In other cases only bare necessities are provided in the bedrooms: the students moved

in with their own beddings and basic needs. This is most significantly the case prevalent in most hostels of Nigerian tertiary institutions today.
However hostels should contain facilities adequate and necessary for a favourable learning environment and should be commensurate to the fee paid for hostel accommodation. For instance the modern standard for hostel accommodation stipulates that hostel accommodation should include electricity, good water supply, library, bank, sports/recreational facilities, shop, kitchenette/cafeteria, medical centre, post office, business centre, laundry. Car park, and refuse disposal facilities. It was also recommended that the design of hostels, in addition to bedrooms will provide for common rooms, meeting rooms management office/reception/ waiting area, general store managers warden's flats (HKUST 2002; IIT Hostels, 2009).

A Survey on Maintenance
Maintenance objective is primarily to preserve buildings in their initial functional, structural and aesthetic states and values. This is to ensure that they continue to remain in such state and retain their investment value over a long period of existence.

Historically, in both public and the private sectors, maintenance is seen as an avoidable task which is perceived as adding little to the quality of the working environment, and expending scarce resources which would be better utilized (Higher Education Backlog Maintenance Review, 1998). In Nigeria, according to Adenuga and Iyagba (2005), public buildings are in poor and deplorable conditions of structural and decorative disrepairs. In spite of millions of Naira spent to erect all these buildings, they are left as soon as commissioned to face premature but steady and rapid deterioration, decay and dilapidation. This no doubt is a serious economic sabotage and technological encumbrance on any institution or government what so ever.

The Built environment expresses in physical form the complex, social and economic factors, which give structure and life to a community (Lee, 1995). This is only possible with attendant deep sense of maintenance culture, that such physical structure instead of adequately constituting life giving structure to the built environment, turned to become environmental pollutant.

According to Banful (2004) the financial consequences of neglecting maintenance is often not only seen in terms of reduced asset life and premature replacement, but, also in increased operating cost and waste of related and natural and financial resources. Therefore, maintenance we can argue is strongly related to the background of any project, unfortunately development plans and approved recurrent and capital estimates in public hostels in Nigeria has revealed that, that thought have not be given to maintenance work (Onifade, 2003).

According to BS 3811 (1984), maintenance is the work or a combination of actions associated with initiation, organization and implementation carried out to retain an item in or restore it to an acceptable standard. However, building maintenance becomes more difficult depending on the age of the structure and this depends on the quality of the original building coupled with the rate of maintenance of the structure (Adenuga, 1999). This i agrees with the author, that the competent maintenance of an old structure depends largely on the superiority of the building quality of the structure. In order words no amount of maintenance work can be carried out on a structure with bad foundation from onset that would sustain the building.

Generally speaking, in Nigeria there is a low response to the value attached to maintenance. Such that, if maintenance were to be a man or woman nobody will ever seek his or her hand in marriage. For it would be considered expensive, not really important a task to engage in or should only be attended to at the call of requirement. That is the extent our value systems has left us such that the culture of maintenance in our country is still at the level of orientation and even poorly done with ultra-despondency. This negligence is worse in the maintenance of building, for this received very little attention from both the users, designers and contractors. The users do not always make use of the property and the services in good condition, often users do not obey the information contained in the maintenance manual of the building if at all it exists, simply because it is rented and not their private property. While most property owners sometimes endeavour to keep maintenance expenditure to the least, eliminating the consequence of the long-term effect of such action. On the part of the designers, they may forget the durability of the materials and its serviceability before including them in their designs (Adejimi, 2005).While builders or contractors prefer new projects rather than maintenance job, While the attitude of city landlords is totally negative towards maintenance, Students see the school property as no man's business, and therefore remain totally indifferent to the unappealing panorama of these buildings, facilities and ventures.

Building Maintenance

BS3811 defines maintenance as work undertaken in order to keep or restore every facility i.e. every part of the site, building and contents to an acceptable standard. It went further to define it 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. The committee on building maintenance (HMSO) in its submission added to the definition of the subject matter to include, "work undertaken in order to keep, restore or improve every facility, its services and surroundings to a currently acceptable standard and to sustain the utility and value of the facilities." This definition invariably goes beyond the need to keep a property in a state as to command its full rental value always. In other words, the efficiency, convenience, life span, economic viability and appearance of any building can be affected by decisions taken and actions performed at any time in the history of building. Therefore, the maintenance of the built environment according to (Smith, 2003), affects everyone continually, for it is on the state of our homes, offices and factories that we depend not only for our comfort, but for our economic survival. Maintenance genuinely starts the day the Builder leaves the site. Design, materials, workmanship, function and their interrelationship, greatly determines the amount of maintenance required during the lifetime of the building. To this extent therefore, Seeley (1987), opined that, effective (hostel) building maintenance requires the correct diagnosis of defects, and implementation of the correct remedial measures, all based on sound technical knowledge. It is highly desirable but hardly feasible to produce buildings that are maintenance free, although much can be done at design stage to reduce the amount of subsequent maintenance work.

Factors Affecting Building Maintenance

The above subheading revealed the effects of numerous factors affecting residential building maintenance and since hostels are building construction it is suitable to place it under this general discussion not neglecting its specification in terms of maintenance. Assaf, for instance, in (1996) opined that design and construction faults that affect maintenance of buildings are defects in civil design, defects in architectural design, defects due to consultants firm's

administration and staff, defects due to construction drawings, defects due to construction inspections, defects due to construction, defects due to contractual administration, defects of construction materials, defects due to construction equipment, defects arising from specifications and design defects in maintenance practicability and adequacy. In other words there are myriads of factors arising from the overlapping but never ambiguous functions and services of the seven professionals who serve as key actors in the delivery process of housing in the construction industry. They play responsible role in realising maintenance objectives from the phases of initiation, documentation and delivery. Adejimi (2005) asserted that to a large extent, building maintenance problems can be attributed to problems originating from poor design. Adejimi (2005) further stated that the design process could be optimised to achieve adequate planning in choosing the right materials, good workmanship, plants and equipment and labour in order to reduce maintenance problem. Adejimi (2005) in his study identified twelve relevant factors affecting the maintenance strength of buildings as design resolution, structural strength, specified material strength, maintenance manual, safety measures, skill maintenance personnel, maintenance plants, environmental factors, usage factors, quality control factors and post construction prevention strength. Kiong and Akasah (2012) analyse the maintenance factors for IBS precast structural system in Malaysia in order to produce a better quality of the IBS precast building. They identify design aspect as an important factor of the building quality, which could either help reduce maintenance problem or complicate it. Zulkarnain et al. (2011) reviewed the critical success factor in building maintenance management practice for University sector under four perspectives; customer (customer satisfaction, service quality, customer complaint, reaction to customer needs), internal processes (service excellence, technology capability, customer employee, competence, process efficiency, etc.), financial perspective (management expectations, financial growth, cost reduction, productivity improvement, etc.) and learning and growth perspective (technology leadership, continuous service improvement, upgrading staff competence, etc.). They concluded that critical success factor can help in providing a successful competitive performance for the University sector in the area of maintenance management. Olagunju (2012) identified factors that influence the level of maintenance of residential building standard. In the study eight factors were identified to be significant to physical condition of building in Niger State, Nigeria. The variables are structural components condition, roof components, toilet facilities, discharge of waste water component, exterior wall condition, condition of walkway within the building premises, electrical wire and switches conditions, interior walls surface condition.

Hostel Management

To ensure an effective management of hostel, there must be a clear understanding of terms used in other to avoid ambiguity between the parties involved. For instance, it must be clear to occupants especially students, that a hosteller is a licensee and not a tenant. For an informed understanding of the rights of a hosteller therefore, it is pertinent to comprehend the difference between a lease and a licence. A licensee is a person entitled merely to some temporary use of land or some part of it or a person merely permitted to be there, so that his presence which would otherwise be a trespass, is made lawful. However the person has no legal estate in the land. A tenant has a legal estate in land. A landlord commits trespass if he enters property without the tenant's permission and without authority under the lease. If a licensed is granted, the licensor by entering may commit a breach of contract but not a trespass (Yates and Hawking's 1986), opined that one of the essential attributes of a lease is the right to possession

of the tenant to the exclusion of the landlord. The occupier of a hostel therefore, has no such right as a lease. Although the licensee has a right to quiet enjoyment of their rooms, (Smith V.Nottinhamshire C.C Noiv .3.1981, HL.),they do not have the right to exclusive possession: the property owner does not require a formal notice to enter his property and can withdraw the licence at any time without recourse to the law court.

Types and Forms of Hostel Management

The management of hostels can take any of these five forms:

a) Private hostels managed by private sector property managers
b) Institutional hostels managed by private sector property managers.
c) Institutional hostels managed by the institutional property managers.
d) Institutional hostels managed by students, and
e) Institutional hostels in a build-operate and transfer (BOT) management.

It must be noted that among these forms of management practices, the management of institutional hostels by private sector property managers has been encouraged and advocated by the federal ministry of Education. And has greatly taken over other forms of hostel managements however it is good to note that in the Federal Polytechnic Oko, we have significantly two forms of hostel management in operation. These include the private hostels managed by private sector property managers and the institutional hostels managed by the institutional property managers.

Hostel Maintenance

According to Shohet (2003), the performance of tertiary institutional hostel buildings and their components depends to a large extent on continuous and planned periodical maintenance, which obviously challenges the management and maintenance managers of institutions, to institute precise planning based on a well-structured maintenance programme. For Seeley (1976) it is highly desirable to produce maintenance free building; the task according to the study is hardly feasible. Amusan (2003) opined that all elements of houses deteriorates at a greater or lesser rate dependent on the materials, design adequacy quality of workmanship environmental condition; function and use of the building the economic boom of the seventies and eighties made the country to witness rapid development in all facets of its infrastructural facilities amongst which are hostel buildings. But this was not sustained as subsequent government did not complement that crusade either by ensuring qualitative maintenance practice by making fund available or embarking on infrastructural development especially in tertiary institutions.

MATERIALS AND METHODS

In this research a simple random sampling method of questionnaire distribution was adopted to ensure suitable and genuine response. Out of the seventeen (17) hostels accommodating students of the studied area only the opinions of the members (students) of four hostels were sampled, with School management, Maintenance Heads and Private Developers to draw conclusion. This is consequent upon the fact that most private hostels share some qualitative similar characteristics in operation while the two owned school hostels share common operational systems. This to say that the maintenance practices adopted and the available facilities found in the sampled hostels and other hostels not sampled but are accommodating students of the school under study are the same.

Data for this study was collected through primary and secondary methods of data collection. The primary data was obtained through the administration of a well-structured questionnaire, site survey and oral interviews of the students occupying the hostels. The secondary data comprised information derived from textbooks, paper presented at conferences, journals and information from the internet which were relevant to the study.

The primary data were collected using the following instrument of data collection, Questionnaires, Oral Interview, Direct Inspection (field survey). Questionnaires consist of questions structured by the researcher and sent to the respondents, which includes Heads of Maintenance, Students, School Managements and Private Developers. A total number of three hundred and forty eight questionnaires were given out while two hundred and seventy five came in as valid information for the research. Some responses to the questions came on the sport while others were collected on a later date. This method of data collection was used because it is less time consuming, economical and practicable. Apart from the interviews and questionnaires, inspection of surroundings and special places like rest room, kitchen, laundry cafeteria, reading hall and bed rooms in the areas of study was undertaken. This is necessary since the research topic is such that needs some visual observation. The research undertook direct inspection of some hostel buildings in question.

The secondary data utilized in this work were harnessed from documented information. They include books, articles in journals, conference papers, seminars and workshop papers, internet materials etc. Secondary sources of data are second hand data collected from published and unpublished works stored in libraries, public places or any other as the case may be.
The population of this study covers sampled hostel buildings accommodating students of Federal Polytechnic Oko. In the survey a total number of seventeen (17) hostels were investigated, out of which two (2) are institutional hostels. And fifteen (15) owned by private individuals.

In order to determine the sample size, the researcher applied Yaro Yamane's formula for determining sample size for a finite population.

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

Where

N = Finite population

n = Sample size

e = Error Margin, in percentage (%)

1 = Constant.

Using the 5% error margin (in percentage) the sample size.

$$n = \frac{10516}{1+10516\ (0.05)^2} = \frac{10516}{10516 \times 0.0025}$$

$$n = \frac{10516}{262.9025} = 399.996725$$

$$\approx 348$$

A sample size of 348 was obtained. Three hundred and forty eight copies of questionnaires were administered to selected respondents in Federal Polytechnic Oko Anambra State Nigeria. The questionnaire was structured to capture information from Head Maintenance Units, Students, School Management and Private Developers.

In order to achieve the desired goal the sampling technique of a stratified random sampling was adopted, in which the population for the study is divided into sub-strata due to peculiarities of those involved in the investigation so as to ensure that reasonable opinion and population is covered. Here data for the study were obtained from a structural questionnaires served on a target population. The questionnaires were administered on selected respondents in the Federal Polytechnic Oko Anambra State Nigeria using a simple random sampling to draw the appropriate sample size from each sub stratum. Therefore, the questionnaire was structured to capture information from maintenance heads, technical staffs and office /hostel occupants.
To obtain validated and good quality findings, various statistical tools were used for analysis of the data collected. The methods include; Frequencies and percentage and mean.
Frequencies are number of times variables occur. This procedure at the end shows table having the difference in responses in each item of variables.

Percentage: Percentage is used to show the proportional differences of responses to a given (348) questionnaires were distributed and response was from (275) respondents.
Mean item score (MIS) were computed from the responses to the factors listed in the scale of Likert used for the study. The factors were then ranked in order of importance, effectiveness and agreement respectively. The variable is in relation to 100%. The percentages are computed using this formular.

$$MIS = \frac{5ns + 4n4 + 3n3 + 2n2 + n4}{N} N$$

Where: n = frequency of occurrence of the options
N= total number of respondents

Out of many hostels accommodating students of the Federal Polytechnic Oko, in Orumba North Local Government Area of Anambra State, Nigeria; only two (2) of the hostels is owned by the Government. For the purpose of this study, two hostels will be studied. One of the private hostels and one out of the two government owned hostels understudied to concretely identify the level of maintenance exercise and culture obtainable as well as identified some of the problems of maintenance associated with those hostels so as to determine the implications of any of these threat on the real value of school hostels. The hostels studied are; Grace Obayi Hostel and Ezeugo Hostel (the former owned by the school and the latter owned by a private individual).

The Grace Obayi hostel was built in about 1976, before the inauguration of the school. The hostel is located inside the school premises. With its location the problem of distance is resolved and as such it shares some facilities with the school. There are two different types of hostel operation in the school. There are 12-bedroom block containing about 240 hostellers i.e. 20 students per room. The hostel has undefined rules of maintenance operations, lack of prompt response to request for repairs, leaking roof, inadequate funding and unconcerned attitudes of maintenance staff that are not monitored. The nature of the Entrances posits specific

maintenance challenge, for it makes it possible for people to easily come in and exit through there. This situation has made the wall of the hostel a place to post posters and information materials for easy access and a drawing board for children. These therefore, create a nasty scene on the wall of the hostel and difficult to correct. Although the buildings were purposely built for hostel, they were built without shops, cafeteria recreational room, with poor water supply, adequate light supply, car park, sports facilities, waste bin, medical centre, post office, bank and security. All these make maintenance difficult because it made it possible for users to turn the veranda to either a games room; cafeteria and where to dump refuse, since no appropriate provision. However, it is the most affordable hostel in the whole academic environment; however, it is characterized with lack of adequate bank, female hostellers, poor maintenance culture on the side of hostellers and poor response from both maintenance staff and the school proprietor for replacement of bad facilities and repairs. Given this situation it is obvious from investigation and the analysis of the investigation that the building overused but inadequately maintained. This however, serves as a major challenge to the technological durability and value of buildings. This most definitely is the dreaded implication of exclusive and unplanned maintenance culture.

It is on this note that Akinsola (2012) reiterates that the performance of tertiary institution buildings and their components depends to a large extent on continuous and planned periodical maintenance, which according to him challenges the management and maintenance mangers, to institute precise planning based on a well-structured maintenance programme (Shohet, 2002). Seeley (1976) stated that it is highly desirable to produce maintenance free building; the task according to the study is hardly feasible. Amusan (2003) opined that all elements of houses deteriorates at a greater or lesser rate dependent on the materials, design adequacy quality of workmanship environmental condition; function and use of the building the economic boom of the seventies and eighties made the country to witness rapid development in all facets of its infrastructural facilities amongst which are educational buildings which the hostel under discussion is a living testimony.

Ezeugo Hostel

This hostel as the second hostel sampled was built in 2000; it came later after in history of the school. It shares some features with Grace Obayi hostel, only that they were built at different locations, time and managed by different maintenance agents and personnel's. One may sometimes be tempted to adduce that they were built by the same construction firm. However, Ezeugo is larger in terms of accommodation capacity and appears solid in terms of the quality of the physical structure. It has 120 bedrooms and can accommodate about 252 hostellers. Since it is located outside the school premises it has no sporting facilities, the same thing with bank, despite those inadequacies the fee is higher than that of the school. However there is a good security and water supply. It mostly a mix accommodation for students as it hosts both male and female depending on who can afford the rent.

Data Analysis

A survey of the maintenance of hostels housing the students of Federal Polytechnic Oko in Anambra State was undertaken for the period of three years with particular emphasis on those hostels within the school premises and owned by the institution. Also a sample of two other hostels housing students of the institute, but located outside the campus was examined. Namely Ezego hostel and Elizabeth hostel. This section of the research presents the result and analysis

of the data obtained from the questionnaires distributed. Eighty seven (87) questionnaires were distributed in each of the four hostels; sixty eight (68) questionnaires were returned in Obayi Hostels while seventy one (71) were returned from Okoye Hostels, in Ezego hostel, sixty nine (60) input was made while (34) was returned from Elizabeth hostel. Therefore, a total of sixty four (64) questionnaires were returned and was used for the analysis of this study.

Data for the study were obtained from a structural questionnaires served on a target population. The questionnaires were administered on selected respondents in the Federal Polytechnic Oko Anambra State Nigeria. The questionnaire was structured to capture information from maintenance heads, students, school management and private developers. (348) questionnaires were distributed and response was from (275) respondents. Mean item score (MIS) were computed from the responses to the factors listed in the scale of likert used for the study. The factors were then ranked in order of importance, effectiveness and agreement respectively. The formulae used was

$$\text{MIS} = \frac{5ns + 4n4 + 3n3 + 2n2 + n4}{N}$$

Where: n = frequency of occurrence of the options
N= total number of respondents

SURVEY RESULTS

Table 1: Maintenance Problems in Federal Polytechnic, Oko Nigeria

Maintenance	Respondents	Ranking	MIS
Irregular cleaning	10.0	1.0	6.6
Untimely replacement of bad (plumbing)	8.0	2.0	8.25
Plumbing leakage	8.0	2.0	8.25
Untimely replacement of defective fitting	7.0	3.0	9.43
Untimely disposal of refuse	7.0	3.0	9.43
Algae growths on walls	6.0	4.0	11.0
Irregular dislodgement of septic tanks	6.0	4.0	11.0
Non-instant connection to generator	4.0	5.0	16.5
Untimely response to repair call	2.0	6.0	33.0
Irregular sweeping of Rooms and Hostel Environment	2.0	6.0	33.0
Total	74.0		

The most occurring complaints prevalent in Federal Polytechnic Oko among maintenance problems from the sampled respondents are irregular cleaning, untimely replacement of bad fittings (plumbing), and plumbing leakage. Others followed suit as can be seen in table 1 above.

Table 2: Factors influencing Defects Occurrence in Hostel buildings.

Influencing factors	**Respondents**	**Ranking**	**MIS**
Environmental & climatic conditions	28	1	2.64
Non Availability of funds	25	2	2.96
Socio-political reason	12	3	6.16
Lack of appropriate knowledge of maintenance	9	4	8.22
Total	74		

The respondents in all indicated agreement unanimously, that environmental and climatic conditions, non- availability of funds, socio-political reason and lack of appropriate knowledge of maintenance, as factors influencing defects occurrence of hostel buildings in Federal Polytechnic Oko in Anambra Nigeria.

Table 3: Factors Leading To Maintenance Problems

Factors	**Ranking**	**MIS**	**COMMENTS**
Lack of foresight for projection	1	4.1	Most leading factor
Inadequate experience of designer	2	1.8	Moderator leading factor
Client insistence constraints	3	1.4	Least leading factor
Non-corporation of user's need into design	3	1.4	Least leading factor
Non-introduction of feedback from previous Works into design	3	1.4	
Use of inappropriate materials	1	4.1	Most leading factor
Poor workmanship	2	2.4	Moderate leading factor
Poor control mechanism	2	2.4	Moderate leading factor
Poor funding	1	5.0	Most leading factor
Poor management attitude to maintenance	2	4.5	Most leading factor
Inadequate maintenance tool	3	4.1	Next after leading
Absence of effective maintenance culture	4	2.3	Moderate leading factor
Ineffective use of maintenance vote	4	2.3	Next after moderate
Absence of maintenance plan	5	1.4	Leading factor
Non-involvement of user' idea on maintenance	6	0.5	Least leading factor
Absence of effective maintenance staff	6	0.5	Least leading factor

The analysis of Table 3.0 highlighted those factors contributing to defects occurrence in hostel building as remarked and ranked by respondents. These problems are classified into three factors at design stage which contributes to the development of future defect. In this stage also, lack of foresight for projection of user's needs is considered and ranked most prevalent, followed by inadequate experience of designers.

While the choice and use of inappropriate materials at construction stage, is chosen ahead of poor workmanship and poor control mechanism. However at user's stage; poor funding is ranked most, followed by poor management attitude and inadequate maintenance tool while non- involvement of user's idea in maintenance is considered as not contributing much to defect developments in hostel building maintenance.

Table 4: Common Maintenance Problems in Hostel Buildings

	Grace Obayi Hostels block		& Ezeugo Hostel blocks		
Maintenance problems	**Respondents**	**MIS**	**Respondents**	**Ranking**	**MIS**
Blocked drain	3	8.2	3	1	8.33
Warded doors	2	12.3	3	1	8.33
Broken pipes	2	12.3	2	2	12.5
Cracked titles	2	12.3	2	2	12.5
Loss of water pressure	2	12.3	2	2	12.5
Faulty electric accessories	2	12.3	2	2	12.5
Cracked sanitary fittings	2	12.3	2	2	12.5
Loss of shower head	1	24.6	2	2	12.5
Rusty balustrades	1	24.6	1	3	25
Broken pain/louvers	2	12.3	2	2	12.5
Leaking roof/slab	5.6	4.39	4	1	6.25

There is agreement between the respondents, that is the hostel occupants and the office users that the most occurring defects in both public hostels blocks and private hostel apartments surveyed, are blocked drain, loss of water pressure, faulty electric accessories and broken pipers which are ranked highest. Cracked wall cracked ceiling and filled septic tank are rare occurrence.

Table 5: Factors Affecting Maintenance of Hostel in Federal Polytechnic Oko, Nigeria

Factors	**MIS**	**Ranking**	**Comment**
Wear and tear	4.3	1	Most influencing factors
Fittings and components ageing	3.0	2	Second most influencing
Exposure to weather	2.70	3	third most influencing factor
Inadequate fund	4.70	1	Most influencing factor
Delay in release of funds	2.30	2	Second most influencing factor
Over population	3.0	1	Most influencing factor
Approval protocol	2.70	1	Second most influencing factor
Delay in report	2.0	3	Third most influencing factor
Willful damage	1.5	4	Fourth Most influencing factor
Delay in response to complaint	1.0	5	least influencing factor
Delay in response to complaint	4.0	1	Most influencing factor
Mismanagement	3.0	2	Second most influencing factor
Unavailability of appropriate tools	3.0	2	Second most influencing factor

The result of the analysis in Table 5.0 indicated that inadequate fund is the most influencing factor militating against effective hostel maintenance programme in Federal Polytechnic Oko. While the least influencing factor as indicated in the survey is delay in response by the management and maintenance department. This result can be appreciated in that in table 5; willful damage came a distant 4th in ranking. The reason for this might not be unconnected with the fact that at point of decision certain funds might have been set aside while at programme development and maintenance execution. Therefore, how much fund available to the institution may play significant role on the planning process, strategy and execution.

Table 6: Factors Militating Against Management to Execute Maintenance Works

Factors	MIS	Ranking	Comments
Building characteristics	5.0	1	Most influencing factor
Building status	5.0	1	Most influencing factor
Building age	5.0	1	Most influencing factor
Building complexity	4.3	2	Moderately influencing factor
Building size	3.7	3	Next after moderate influencing
Building shape	1.0	4	least influencing factor
Building location	1.0	4	least influencing
Political factor			
User status	4.7	1	Most influencing factor
Use of buildings	3.7	2	Moderately influencing factor
User's persistent complaint	2.3	3	Next after moderate influencing factors
Management decision	2.0	4	least influencing factor
Economic Factors			
Proximity to defect	5.0	1	Most influencing factor
Generating factors			
Age of building	4.7	2	Moderately influencing factors
Availability of funds	4.3	3	Next after moderate influencing
Willingness of users foot	2.7	4	least influencing factor
The bill for later refund			
First come first treated	2.3	5	Next to least influencing factor

Respondents in Table 6.0 is on factors militating against management's decision to effect repairs when interviewed to rank what they considered as factors influencing their execution of effective hostel maintenance, in their opinion, under hostel building characteristics, status and age is the most influencing factor while they believed that hostel building location and shape had little to do with decision to maintain it. On socio political factors, users status is best considered by the management as perceived by the respondent to management arbitrary decision and under economic factors, proximity to defect generating factors, age of building, revenue generating status of the building and availability of fund are the most influencing of the factors. Overall, therefore, it is observed from Table 6.0 that economic considerations takes uppermost place in the minds of the managers of hostel building. Also building characteristics and socio political factors in taking decision to affect repair in a hostel building is paramount.

Table 7: Responses from Resident Students

S/N	Location of Students Hostels	Student Responses	Percentage
1.	FPO Campus	38	15.6
2.	FPO Campus	37	54.7
3.	Outside Campus	34	21.8
4.	Outside Campus	36	7.8

Table 8: Statistics of Sample Private Hostels

	Hostels	**No of Rooms**	**Students Per-Room**	**Students Population**	**Rent Per annum (N)**
1.	St Augustine	19	2	38	80,000
2.	Green House	150	30 –3each 100-2 each 20 – 1each	310	80,000
3.	Williams	20	8- 1 each, 12 -2 each	32	230,000
4.	Ozed Hostel	41	1	41	45,000
5	Arch-Angel Micheal	67	37-2 each, 30- 1 each	104	105,000
6	Ugonwa Scholar	50	1	50	120,000
7	Eze Obi	30	10-2 each, 20-1 each	40	60,000
8	Uchechukwu	32	20-1 each, 12- 2 each	44	37,500
9	Academy	48	22-1 each 20-2 each 6 -3 each	80	90,000
10	Izuora	45	2	90	110,000
11	Elizabeth	92	50 -2 each 40- 1 each 2- 3 each	146	47 ,500
12	King Solomon	28	1	28	80,000
13	Rosary	12	10-1 each 2-2 each	14	60,000
14	ABC Hostel	75	50-1 each 25-2 each	100	56,000
15,	Queens Hostel	120	2	240	120
16	Ezego Hostel	120	114-2 each 6-4 each	252	31,000

Table 9: Facilities Available Within Hostel and Hostel Environment

Facilities	Water	Electricity	**Waste Bin**	**Cafeteria**	**Recreation Centres**	**Post Office**	**Bank**	**Car Park**	**Laundry**
Vivi Okoye (FPO)	Inadequate	Adequate	Inadequate	Nil	Adequate	Adequate	Inadequate	Adequate	Nil
Grace Obayi (FPO)	Inadequate	Adequate	Inadequate	Nil	Adequate	Adequate	Inadequate	Adequate	Nil
St Augustine	Adequate	Adequate	Inadequate	Nil	Nil	Nil	Nil	Adequate	Nil
Green House	Adequate	Adequate	Inadequate	Adequate	Nil	Nil	Nil	Nil	Nil
Williams	Adequate	Adequate	Inadequate	Nil	Inadequate	Nill	Nill	Nill	Nil
Ozed	Inadequate	Inadequate	Inadequate	Nill	Nill	Nill	Nill	Mill	Nill
Arch Angel Micheal	Adequate	Inadequate	Inadequate	Nill	Nill	Nill	Nill	Nill	Nill
Ugonwa Scholar	Adequate	Adequate	Adequate	Adequate	Nill	Nill	Nill	Mill	Adequate
Eze Obi	Nill	Adequate	Inadequate	Nill	Adequate	Nill	Nill	Adequate	Adequate
Uchechukwu	Adequate	Adequate	Inadequate	Nill	Nill	Nill	Nill	Adequate	Adequate
Academy	Adequate	Adequate	Inadequate	Nill	Nill	Nill	Nill	Adequate	Nill
Izuora	Adequate	Adequate	Inadequate	Nill	Inadequate	Nill	Nill	Inadequate	Nill
Elizabeth	Inadequate	Adequate	Inadequate	Inadequate	Inadequate	Nill	Nill	Inadequate	Nill
King Solomon	Adequate	Inadequate	Inadequate	Nill	Nill	Nill	Nill	Nill	Nill
Rosary	Adequate	Inadequate	Inadequate	Nill	Nill	Nill	Nill	Nill	Nill
ABC Hostel	Adequate	Adequate	Inadequate	Nill	Nill	Nill	Nill	Adequate	Nill
Queens	Adequate	Adequate	Inadequate	Nill	Nill	Nill	Nill	Adequate	Adequate

TABLE 10: Private Hostels and Available Facilities

Facilities	Water	Electricity	**Waste Bin**	**Cafeteria**	**Recreation Centres**	**Post Office**	**Bank**	**Car Park**	**Laundary**
St Augustine	Adequate	Adequate	Inadequate	Nill	Nill	Nill	Nill	Adequate	Nill
Green House	Adequate	Adequate	Inadequate	Adequate	Nill	Nill	Nill	Nill	Nill
Williams	Adequate	Adequate	Inadequate	Nill	Inadequate	Nill	Nill	Nill	Nill
Ozed	Inadequate	Inadequate	Inadequate	Nill	Nill	Nill	Nill	Mill	Nill
Archangel Micheal	Adequate	Inadequate	Inadequate	Nill	Nill	Nill	Nill	Nill	Nill
Ugonwa Scholar	Adequate	Adequate	Adequate	Adequate	Nill	Nill	Nill	Mill	Adequate
Eze Obi	Nill	Adequate	Inadequate	Nill	Adequate	Nill	Nill	Adequate	Adequate
Uchechukwu	Adequate	Adequate	Inadequate	Nill	Nill	Nill	Nill	Adequate	Adequate
Academy	Adequate	Adequate	Inadequate	Nill	Nill	Nill	Nill	Adequate	Nill
Izuora	Adequate	Adequate	Inadequate	Nill	Inadequate	Nill	Nill	Inadequate	Nill
Elizabeth	Inadequate	Adequate	Inadequate	Inadequate	Inadequate	Nill	Nill	Inadequate	Nill
King Solomon	Adequate	Inadequate	Inadequate	Nill	Nill	Nill	Nill	Nill	Nill
Rosary	Adequate	Inadequate	Inadequate	Nill	Nill	Nill	Nill	Nill	Nill
ABC Hostel	Adequate	Adequate	Inadequate	Nill	Nill	Nill	Nill	Adequate	Nill
Queens	Adequate	Adequate	Inadequate	Nill	Nill	Nill	Nill	Adequate	Adequate

Table 11: The Evaluation of the Overall Annual Hostel Maintenance

S/N	Hostels	Amount	Overall Maintenance	State of the Hostel
1.	St Augustine	6,000	Inadequate	Good Condition
2.	Green House	5000	Inadequate	Fair Condition
3.	Williams	10,000	Inadequate	Good Condition
4.	Ozed	Combined	Inadequate	Good Condition
5.	Arch Angel Micheal	Combined	Inadequate	Good Condition
6	Ugonwa Scholar	Combined	Inadequate	Good Condition
7	Eze Obi	Combined	Inadequate	Good Condition
8	Uchechukwu	4,000	Inadequate	Good Condition
9	Academy	Combined	Inadequate	Good Condition
10	Izuora	5,000	Inadequate	Good Condition
11	Elizabeth	3,000	Inadequate	Good Condition
12	King Solomon	1,200	Inadequate	Good Condition
13	Rosary	2,400	Inadequate	Good Condition
14	ABC Hostel	Combined	Inadequate	Good Condition
15	Queens	Combined	Inadequate	Good Condition
16	Vivi Okoye	Combined	Inadequate	Good Condition
17	Grace Obayi	Combined	Inadequate	Good Condition

In Table 11 above, the analysis of data showed that while some hostels have specific fee for maintenance others do not have the fee separated from the hostel fee. For such hostels it is indicated combined to demonstrate that both the accommodation fee and the hostel fee are lumped together. Also it is observed that the overall maintenance of the hostels examined is inadequate. Assessing from the data of table 9 where we discovered that the available facilities for hostellers do not meet up the required percentage which is supposed to be at least ½ except Archangel Michael, Uchechukwu, Eze-Obi, Ugonwa Scholar and the two school hostels (Vivi Okoye and Grace Obayi). However the hostels investigated are mostly in good condition, in terms of physical structure, most probably because of their life span at the time of study.

With reference to the data collected as shown in Table 8, it is observed that majority of private hostel developers spend less on the maintenance of their hostels on annual basis. This shows that the maintenance level is low. Responses from the respondents show that, those developers whose rent is high spend less on maintenance work. Out of the nine (9) respondents that receives rent above N60, 000 annually, more than half spend less than N20, 000 to N30, 000 on maintenance annually. It was also discovered that those who receives rent between N15, 000 and N60, 000 also spend less amount on maintenance. This situation has necessitated the conclusion to the fact that negligence and lack of maintenance consciousness is a generic problem of many years of maintenance neglect. This is obvious from investigation where it is observed that the phenomenon is common to all categories of developers in all the private

hostels sampled. Insufficient difference can only being noticed among those who are educated among the categories of developers. Such set of people although insignificant have an enlightened attitude towards maintenance different from others and this greatly reflect the culture of maintenance found operational in such hostels. Thus, it could be argued that the developers' attitude towards Maintenance work in the hostels contributes greatly to the level of maintenance culture found among occupants which could either affect positively or negatively the general maintenance disposition of hostellers and of the hostels as witnessed by the researcher.

Table 12: Frequency of Maintenance Works

S/N	Income	Frequency	Percentage
1.	Whenever I remember	60	42.2
2.	Always	12	10.9
3.	Quarterly	15	12.5
4.	Annually	20	12.5
5.	Whenever fault is detected	35	21.9

Table 12, indicates that majority of the respondents', precisely 60% carryout maintenance whenever they remember or like without a definite maintenance plan; which is not a good practice as far as maintenance is concerned. Faulty parts of some of the hostel buildings are not given adequate attention or repairs and this definitely will affect other parts of the building with time and thereby causing more damage to the building components.12% carry out maintenance always with a practicable maintenance culture aimed at prevention. 15% engaged in quarterly maintenance practice. This is fair but it does not often satisfy the interest of the occupants as they would at times have to wait until it is time for maintenance of a faulty facility or building parts to be repaired or replaced until the stipulated period. 20 respondents make use of annual maintenance practice and this is a practice that is most suitable for overall maintenance according to most respondents who adopt this practice. 35% of the respondents said they carry out maintenance whenever a fault is detected. This nonchalant attitude towards building maintenance and particularly hostels is a problem which poses a serious threat to most hostel buildings in the studied area. Reasons being that despite the fact that students pay considerable amount for maintenance, those in charge of maintenance hardly and often times don't respond to the maintenance request of hostellers.

DISCUSSIONS

From the survey conducted, it was shown that the amount spent on maintenance of hostels is low (Table 10 gives detailed information on this); since majority of the developers carryout maintenance work whenever they remember or like. Thus, the amount spent on maintenance is expected to be low and not just that the money is low, that kind of maintenance attitude exposes the hostel building to high risk, dilapidation and gradual degeneration. Table.11 buttresses the fact that few of the developers carry out maintenance work whenever a fault is detected. No wonder the quality and physical outlook of the first generation hostels accommodating students of the campus are declining at a rate faster than they should be.

It is to be affirmed that in all honesty the greatest resistance to effective maintenance is unprofessionalism. Azzaro (1980), affirming the danger of this ugly trend insisted that; "Lack of knowledge of maintenance by hostel building developers and users has prevented the application of good and professional approaches to maintenance activities" It was also discovered that lack of maintenance culture by the residents is one of the major factors affecting maintenance within the hostels. Finance is a prime factor in maintenance work because it dictates the extent of repairs that will be carried out. Therefore, lack of fund affects maintenance work.

Summary of Findings, Conclusions and Recommendations

From the analysis of the results, certain factors affecting effective maintenance of hostel buildings of Federal Polytechnic Oko, became obvious as, overpopulation, un-availability of fund, absence of proactive regulatory body, lack of unseasoned regulation climatic and environmental problems, choice of building materials, high cost of maintenance works; inadequacy of skilled maintenance workers and wilful vandalism.

CONCLUSION

This study is essential in the sense that it would not only contribute to knowledge and theory, but will also contribute to good and effective maintenance practice in the public institutions in Nigeria and particularly in the Federal Polytechnic Oko in Anambra State where the survey had been carried out. This is because the study will attempt to find out factors affecting effective maintenance in the study area which is almost next to non-maintenance of hostel buildings; some of which have been abandoned due to its state of defects and recommend appropriate building maintenance strategy to be taken to enhance effective hostel maintenance. This study has revealed the various causes of maintenance works, types of maintenance, nature of maintenance works and the factors responsible for poor maintenance of hostels in Federal Polytechnic Oko in Anambra Nigerian. This statistically, is not far from the situation in other tertiary institutions. In this work, the opinion of students have been examined based on these factors. It was discovered that, bad workmanship, conversion of building, faulty design and construction and environmental or climatic factors are the major causes of maintenance work in the hostels while lack of fund, lack of maintenance culture, bad economy and quality of building materials have been the major factors responsible for poor maintenance of the hostels. However this research from investigation concludes that buildings left unmaintained pose different threats on students and the environment such as; sickness, eye and skin irritation. But more severe is the risk of total collapse of such buildings and the breakdown of its components. This situation, the research contends posit serious economic sabotage to the growing economy of the country and phobia on the part of students zeal for education or studies. This danger we must understand is not just to the inhabitants but also to the built environment. Therefore it is worthy to note, and recommend that, the effective maintenance of hostels will have a positive effect on the health of the inhabitants and a preservative effect on the value of the property. Since Nigerians in large proportion certainly lack effective maintenance culture, it is upheld in this research work that professionals responsible for the design and construction of buildings should give their clients buildings with reduced minimum maintenance stress and responsibility, so as to help preserve the value of the property and reduce the risk of poor maintenance on the inhabitants and the built environment. Finally, Nigerians should learn and

embrace maintenance culture as this will elongate the anticipated life span of our buildings and help to improve our economy and make education more attractive.

The following conclusions were made from the research in line with the findings, that inadequacy of staff and lop-sidedness in their distribution across the professional discipline, exerts significant influence on prompt and qualitative delivery of service to end users measure of efficiency of maintenance works, users measure of efficiency of maintenance departments is anchored on present state and conditions of facilities in the institution as well as prompt response to complaints by both management and maintenance departments while the common maintenance problems in the tertiary institutions are in the area of services. This is more in plumbing and electrical works while cleaning is equally a major problem in routine maintenance works.

Environmental factors and climatic conditions were also found to influence to a large extent, the effectiveness of maintenance programme in the tertiary institution, while availability of funds is the most critical factors militating against effective maintenance of hostel buildings in Federal Polytechnic Oko Nigeria. It is also noteworthy that socio-political reason is an influencing factor of maintenance programme as well as building characteristic e.g. Building complexity, building size, building status and building age. Also some of these factors influence management decision to effect repairs on a hostel building. Minimal among these factors is the epileptic academic calendar characterized by unending strike and students' unrest, this is equally is a factor affecting workable maintenance activities in the institution, while wilful damage and vandalism also contributes to defects manifestation and maintenance needs in Nigerian school system of which Federal Polytechnic Oko, the school under study is no exception.

Recommendations

It has been revealed from this study that there is need to improve the condition of most hostel buildings in Federal Polytechnic Oko, in terms of facility and maintenance practice, since the assessment reveals that the level of maintenance is low and the method adopted ineffective. However, based on the findings, the following recommendations are proposed as tools to drive at effective maintenance of hostels in Federal Polytechnic Oko and other tertiary institutions in Nigeria.

Hostellers should be enlightened on the need for proper maintenance of their dwellings.

It is recommended that the management of the school should endeavour to provide maintenance department with adequate staff, because most departments are understaffed and this in turn delays maintenance execution. Also appropriate tools and equipment should be made available for maintenance to be effective

The rate of response to maintenance need, damages, and faults reported should be prompt because minor fault get expanded if immediate action is not taken and thus increase the cost of repair.

Management and senate of the polytechnic should evolve a conflict resolution technique that will ensure that steady and stable academic calendar is sustained and consequently eliminates wilful damages and vandalism associated with students' unrest.

An enlightening programme should be undertaken by ways of hand bills and postal educating students on collective responsibility of keeping hostels vandalized and ensuring properly is maintained.

There is need for good preventive maintenance through regular inspections to avoid breakdowns and repairs, which costs more.

REFERENCES

Adejimi, A. (2005). Poor building maintenance in Nigeria: Are architects free from blames? A Paper Presented at *the ENHR International Conference on "Housing:* New Challenges and Innovations in Tomorrow's Cities" in Iceland between 29th June - 3rd July, 2005. 45

Adenuga, O.A and Iyagba, R.O.A (2005) Strategic approach to maintenance practices for public buildings in Lagos State, *Journal of Environmental Studies,* Faculty of Environmental Sciences, University of Lagos 5(1).

Adenuga, O.A. (1999): Building maintenance in Nigeria: Structural deterioration, recognition diagnosis of causes and remedies. *Shelter Watch,* Vol.001June-July pp 0063v, 5-25.

Akinsola, O.E. & Iyagba, R.O. (2006) Assessment of the factors Influencing maintenance expenditures of Federal Tertiary Institution in Nigeria.

Amusan. J. (2003) Evaluation of factors influencing hostel maintenance in University of Lagos. B.Sc. Building Dissertation, University of Lagos , Nigeria.

Assaf, S. (1996). Effects of faulty design and construction in building maintenance. *Journal of Performance of Constructed Facilities*. 1996 (171).

Azzaro, D.W. (1980): The economics of maintenance: Building maintenance and preservation. British Standards Institution (1974): BS 3811: Glossary of General Terms Used in Maintenance Organization. BSI, London.

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.

British Standard Institution (1984). BS3811. Glossary of maintenance management terms in technology. London

HKUST (2002) Student hostel development. Retrieved May 26, 2009 from *http;//www.ab.ust.hk/emo/527/hostel.htm*

IIT Hostels (2009). Accommodation, hostels, academic hostels, non-academic hostels, Retrieved

Kiong, N.B. and Akasah, Z.B. (2012). Analysis of building maintenance factors for IBS precast concrete system: A Review. *International Journal of Engineering Research and Applications*. 2 (6):878-883.

Lee, R (1995) *Building maintenance management*, Blackwell Science Ltd, Oxford: UK. Limited London Ltd Ltd.

Olagunju, R.E. (2012). Predictive modelling for sustainable residential Building maintenance in developing countries: A Nigerian case. *Interdisciplinary Journal of Contemporary Research in Business.* 4(6):1237-1283 Usman, *of Engineering Research and Applications.* 2(6):878- 883

Onifade, K (2003) *Informatics in hospital management*, An unpublished M.Sc. Research Report, Department of Business Administration, University of Lagos.

Oxford Advanced Learners Dictionary (2015). New 9th Edition. International Student's Edition. UK: Oxford University Press

Seeley, I. H. (1987). Building maintenance, London: Macmillan Educational

Seely, I.H (1976) *Building maintenance*, 5, Macmillan Press Ltd: London.

Shohet, I.M (2003) *Key performance indicators for maintenance of health care facilities* 21(1) 512.

Smith, R (2003) Best maintenance practices; *Journal for Maintenance and Maintenance Management, 16(1),* 9-15.

Zulkarnain, S.H., Zawani, E.M.A., Rahman, M.Y.A and Mustafa, N.K.F. (2011). A review of critical success factor in building maintenance management practice for University Sector. *World Academy of Science, Engineering and Technology.* 53:195-199.