

# Promotion of Maintenance Culture in Government Owner Occupier Building for Sustainable Development

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**Abstract:-** A building is a man-made entity that requires regular maintenance for it to serve its purpose of providing shelter and comfort for its occupiers. Maintenance seeks to retain, restore and replace any constitute of building that is affected by adverse weather elements, continuous usage and poor handling. Lokoja has witnessed the development of several housing estates since it was made the capital city in 1991. However, many of these are in a state of disrepair, altering the city's picturesque and making the investment of several millions of naira a waste. The paper examined the objectives and benefits of building maintenance using Phase I housing estate, Lokongoma as a case study. Besides reviewing of relevant literature and fifty (50) questionnaires were administered to the estate occupiers in course of the study. The data generated were analyzed using tables and charts and recommendations made based on the study's findings which revealed high level of ignorance of regulations on maintenance, negligence and wrong approach to the practice of maintenance as causes of poor maintenance culture.

**Key Words:** Building, Maintenance, Culture, Defects, Disrepair, Quality

## I. INTRODUCTION

Maintenance has been described by many researchers to mean the practice of restoration to optimum performance standard of an object, entity, process or a system by way of checking, repairing, replacing, refurbishing or upgrading. Culture on the other hand means a practice, tradition, ideology or total way of life peculiar to a people or persons that gave them an identity in the world. This includes their approach to issues and attitudes to things generally. These two that is maintenance and culture often intertwine in life to define what we do with our possessions such as buildings in which the act of living is conducted on a daily basis.

Iwarere and Lawal (2011), stated that 'maintenance are the various activities undertaken with the intent of preventing future breakdown of facilities or equipment.' This implies that for an object, item, entity or a system to keep performing at the optimum required standard, the user, owner or occupier ought to check, repair, replace, refurbish and upgrade it from time to time in order to ensure its efficiency, economy and quality. This becomes necessary as everything in life is vulnerable to deterioration as a result of continuous use and

adverse effects of weather elements on them. Building which can be described as an assemblage of beams, columns, bars, slabs, walls, partitions and roof in a way that when it is supported with a foundation it can safely transfer load, falls into the category of objects like this. When buildings are constructed, they are expected to remain in a good structural state and maintained a high aesthetic value as delivered on completion. This is to ensure the realization of optimal performance of the structure during occupancy.

Maintenance culture in building industry and among building owners in Nigeria seems to be lacking as a glance at the various neighborhood in our city centers revealed shanty structures, aesthetically unappealing buildings and refuse laden environment. The call for concern on maintenance culture among the various stakeholders in the building industry becomes imperative as a great portion of a nation's wealth is evident in the value of its public property and buildings; it is also an important factor in the production of the building to be preserved. A poorly maintained building in a decaying environment depresses the quality of live and contributes in some measures to anti- social behavior which threatens socio political environment it find itself.

For the past twenty five years when Lokoja assumed the status of a state capital, several housing unit schemes had been developed to cater for accommodation need of its people. A great number of these are presently in a state of disrepair with corroded roofing sheets; stain dotted walls; foundation exposed parts; paint peeling claddings and sagging/ leaking ceiling boards. These are proofs of poorly maintained facilities, whose trend need to be checked before these housing unit schemes degenerate into slum. This study selects phase I housing estate in Lokongoma area of Lokoja as a case study of occupiers' attitude towards maintenance of buildings in their care/ownership. This will be done with a view to creating awareness, education and sensitization on how to prevent and correct defects in buildings (maintenance) in order to enhance their value.

### *Conceptual Clarification*

*Promotion:* Enhancing the practice of maintenance of the various components of building in order to preserve, beautify and enhance its value and durability.

*Maintenance:* a conscious effort made to counter the adverse effects of weather, poor handling and continuous use of building or any of its parts.

*Culture:* the practice, tradition and customs adopted as an identity peculiar to a people for the purpose of preserving their buildings.

*Defects:* these are manifestation of failure evidences in existing building as a result of wear and tear induced on any part of existing building by reason of continuous use, weather effects and poor handling of facility.

*Regulations:* the promulgated laws and bye-laws to enforce the practice of maintenance by the various authorities in charge municipal planning.

#### *1.1 Statement of Research Problem*

Maintenance was described by Oladimeji (1996) as the combination of any continuous actions carried out to retain a property in or restore it to an acceptable condition. For a building to be in an acceptable condition reflecting the value and quality it possessed as at the time of its completion when it was made ready for use and occupation, continuous checking, repairing, replacing and upgrading must be ensured. The study is examining causes of high rate of deterioration; reasons for poor attitude to maintenance; the level of awareness on the legislations and regulations on maintenance of buildings and how to promote buildings' owners/occupiers/users consciousness on the need to maintained their facilities.

#### *1.2 Aim and Objectives of the Study*

*AIM:* The aim of the study is to promote the practice of routine maintenance among building owners/ occupiers/ users in order to enhance building value and quality.

#### *Objectives*

- Examining ways of improving maintenance culture in Lokoja
- Bringing to the fore the poor attitude of building owners/ occupiers/ users towards maintenance and its consequences on the city's picturesque
- Creating an awareness about the various regulations and legislations enacted on building maintenance

## II. MAINTENANCE AND BUILDING OBSOLESCENCE

When buildings are constructed, they are expected to remain in a good structural state and maintained a high aesthetic value as delivered on completion. This is to ensure the realization of optimal performance of the structure during

occupancy. However, wear and tear factor sets in as a result of continuous use and adverse weather conditions which take their toll on the materials that constitute the fabrics of the buildings. These factors all play important roles in putting the building in a state of disrepair which can result in structural failure if nothing is done to correct them.

Buildings are not framed to last forever, but with proper maintenance their lifespan can be elongated (Zubair, 2003). A building framed with conventional materials such as hardwood, glass, asbestos and sand and cement elements like concrete columns, beams, lintels, slabs and foundation footings is expected to last up to eighty years if well-built but with good maintenance programme executed during the building's lifespan, it can add another twenty years to its existence (Zubair, 2003). In the face of several decaying Nigerian cities, Obabori and Olomu (2002), revealed that 'many cities have become unattractive to employees because the deterioration of the city life and also businesses are no more flourishing because of contaminated lots and toxic materials buried in the ground. Things noticed in such places are sewage systems breaking down, inability to purify enough water for consumption, deteriorating apartment building where little children eat paint products that contain lead.' Maintenance seeks to restore building components, elements and parts in a state of disrepair and prevents those which are intact from deteriorating.

#### *2.1 Types of Maintenance*

According to Aderibigbe (2002), 'a complete maintenance program has the two basic arms of restoration and prevention of defects with the aim of keeping building elements and components intact'. He also define maintenance as a routine activities consciously executed to prolong buildings' lifespan, they include repainting of wall surface, replacement of any damaged part or component, fumigating of wood and checking of electrical conduct wiring system to ensure it is as fixed. However, subjection of building materials to continuous usage is sufficient to wear them out and put them in a state of disrepair. Moreover, most of the building elements and components contrast and expand on installation as a result of change in temperature and consequently wear out. In order to fix any part or portion affected as a result of these, maintenance has to be ensured.

Buildings that are not well-maintained deteriorate fast and displayed several defects which often get worse with time. Structure being an assemblage of elements and consists of several components with the stability of one depending on that of the other, will have its stability and value in jeopardy if not well maintained. Property maintenance management identified the importance of maintenance and as such incorporated it as a significant unit of cost estimate value into the cost of owning a building. The ratio 1:5:200 depicting the initial cost of construction, the cost of maintenance and the administrative cost of operating the office of their

establishment give any client or potential clients the clue of the need for setting aside certain amount of money for maintenance works. Obsolescence easily set in when building elements are left to rot and defects are not repaired. A structural crack on wall that is left unchecked widened with time, corroded metal roofing sheet that is not replaced will leak, hinges of door that is not well fixed will later fall off its initial position and sagging ceiling boards not attended to may completely fall off the battens to which it is nailed. The consequence of this is not only in the depreciation of the building's aesthetic value but continuous deterioration of its structural components and exposure to more deteriorating effects of usage and weather elements, thereby making it becoming obsolete. Damp rising through the foundation of buildings whose ground floor slab is not well constructed to check capillary movement of underground water will deface the finishes on the walls; weaken its stability and results in structural failure. One of the tools for Urban renewal is remodeling and the miniature activities that define this concept in planning is maintenance. Okwarajesu (2002), explain this by saying 'houses are remodeled or old ones are out rightly demolished for a new scheme. Hence routine maintenance remains a panacea to building deterioration as a result of usage and ageing'.

### 2.2 Maintenance Prone Building Design

Alfred and Pao-chi (2010), declared that 'the history of building is marked by a number of trends, one is the increasing durability of the materials used and the other is a quest for buildings of ever greater height and span which was made possible by the development of stronger materials and by knowledge of how materials behave and how to exploit them to greater advantage'. Certain building designs subject the edifice to continuous maintenance activities throughout its lifespan. This increase the cost of ownership of such building and where the building owner fail to execute the maintenance work, deterioration set in and the building begin to age. Poorly oriented building will administer more heat into the interior and raise damaging effect of solar radiation on building materials which expand and contract when the temperature varies. This will also damage pigmented surfaces and alter their appearance. Buildings sited on flood plain are vulnerable to collapse as a result of continuous digging of their underneath by runoff water and pressure exerted on them by same.

### 2.3 Maintenance Culture in Nigeria

Aderibigbe (2002), defined 'maintenance as a combination of any action carried out to retain an item or restore it to an acceptable condition, in other words maintenance is a combination of management financial engineering and other practices applied to physical asset in pursuit of economic life cycle cost'. In order to inculcate this issue in Nigerian citizens so as to ensure good attention is paid to maintenance, the federal government set up a committee in 1979 to look

into the various aspects of maintenance in the country. This was to control the propensity of an average Nigerian to repair and maintained instead of replace. However, Maureen (2014), reveal that maintenance culture in the country was almost non-existence. He suggested that we need to reshape Nigeria's maintenance culture by promoting good facilities management in the country. He also opined that maintenance culture is the ability of people, which have become their way of life to constantly maintain in their highest efficiency all they value most in life so that, they could be of greatest use to them. In line with the aforementioned points, UNESCO (2012) also revealed that the maintenance culture in Nigeria is very poor. In its words, 'in a situation when parts are allowed to break down without replacement or servicing there would be system collapse which could lead to disruptions of production'. It went further to point out greed, carefree attitude and corruption as factors impeding the development of maintenance culture in Nigeria.

### 2.4 Challenges of Economic and Social Changes on the Practice of Building Maintenance

The two basic factors that define the development of architecture of a people is the level of economic index and their social preoccupation. 'These factors combined to constantly modify the towns and buildings of yesterday to suit the current needs of today' (Norman, 2010). However, the urban environment is society's investment in its future, and the new cities that eventual emerged is brought about by continuous cycle of renewal over a long period of time. Thus, the problems of building maintenance and renewal are complicated by long-term economic and social changes.

Hence the following challenges are identified. First is the accelerated pace of physical growth. This has resulted in gradual disappearance of old buildings and the craftsmanship, labour and sometimes the materials that are used for their construction. This portrays the potential demerit of constant fading of special characteristics and identity that old building gives to a locality. An appendage to this is the tangible evidence that old buildings provide for its location a kind of social and environmental continuity – a reassuring reference point in a constantly changing world. Secondly, the insecure fate of old buildings in the face of continuously growing world population and the steeply climbing value of urban land. The common experience is that eventually the old buildings on a valuable urban site cannot compete any more with the financial pressure of continuous maintenance. Then they are soon overtaken and financial subsidy is incapable of rescuing them from demolition. Moreover, building being a constitute element of its environment; the maintenance of an old building on a deteriorating neighbourhood may become no longer economically worthwhile thereby condemning it to early death by neglect. Finally, the rapid increase in mobility also poses a serious challenge to the practice of building maintenance. The emergence of new city centres with

accompanied network of roads often brings about the abandonment of old city centres for the new ones which often emerged inform of ring upon ring of suburbs. This peripheral accretion of cities is allied with their central decay as communities. The consequence of this is the frequent thrombosis of express high ways in our cities which calls for constant road widening and as a result lead to eroding of several historic areas (Encyclopaedia Britannica, 2010).

### III. RESEARCH METHODOLOGY

For the purpose of this study, Phase I, Housing Estate (8-Man Quarters) Lokongoma, Lokoja was selected as a case study among the many government-built housing estates in Lokoja because it has been occupied for 24years after its completion and the issue of maintenance is now pertinent to its existence and evaluation.

The estate consist of 240 flats of two bedroom semi-detached and located adjacent NYSC secretariat, Lokongoma, Lokoja. A cluster sampling technique was adopted for which fifty questionnaires were distributed to 50 flats selected for the study. All the questionnaires were returned collated and the responses reported inform of tables and charts for proper data analysis. Oral interviews were also conducted to know more about the history and usage of the facility. The information from the interview helped in grouping of the flats, historical background of the facilities and the ones to be sampled for analysis.

#### 3.1 Data Presentation and Analysis

##### 3.1.1 Sample Characteristics

The 240 flats in the estate were grouped into seven with varying quantity of flats. The first group is tagged GP 170-173. These were the first sets of flats in the estate built closed to the main road, in the year 1992. The second group is GP 174-177. These were located closed to the main drainage in the estate which was not well maintained and the surface runoff water exposed the foundation footings of these flats. The third group is located behind the first group of an inclined terrain. The fourth is at the eastern wing were the setting daily bid the estate farewell. The fifth and the sixth groups are at the extreme end westward and eastward respectively. These two groups had big gully with seasonal water flowing in it some meters behind them. The seventh group consists of flats that were erected late about eighteen years ago. A sample of one ratio four was adopted for each group except group five and six in which many of the flat had been converted to other use.

The questionnaire consists of three major parts having thirteen questions in all. The first part seeks to know about the respondent and his/her level of knowledge about maintenance. The various maintenance approaches adopted by the facilities occupiers in the estate constitute the second part and the third part is design to know the level of awareness about

regulations on maintenance practice among building occupiers in the estate

Table 1 showed the population of flats in Phase I housing estate in Lokongoma where the study was conducted and the selected number of unit flats sampled for the research work. Effort was made to ensure even distribution of the questionnaire across the various blocks (clusters) marked with GP label on them. This represents 21% of the total population and about 30% of the functioning existing units. This is a fair representation which gives good idea of occupiers/owners/users attitudes toward building maintenance in the estate.

**Table 1:** FLATS IN PHASE I HOUSING ESTATE SAMPLED FOR THE STUDY

S/N	BLOCK NO. RANGE (CLUSTERS)	TOTAL NO. OF FLATS	NO. OF FLATS SAMPLED	PERCENTAGE (%)
1	GP 170-173	32	8	16
2	GP 174-177	32	8	16
3	GP 178-181	30	4	8
4	GP 182-185	26	6	12
5	GP 186-191	48	8	16
6	GP 192-197	48	8	16
7	GP 198-200	24	8	16
	<b>TOTAL</b>	240	50	100

**Source:** Field Survey, (2016).

##### 3.1.2 Year of Occupancy of the Respondents Sampled For the Study

Table 2 showed that respondents whose opinions were being analyzed in this study are occupants who had lived in the estate between one to twenty-four years of its existence. These are people who had experienced development of defects in their buildings and as such expected to have conducted one form of maintenance activity or the other.

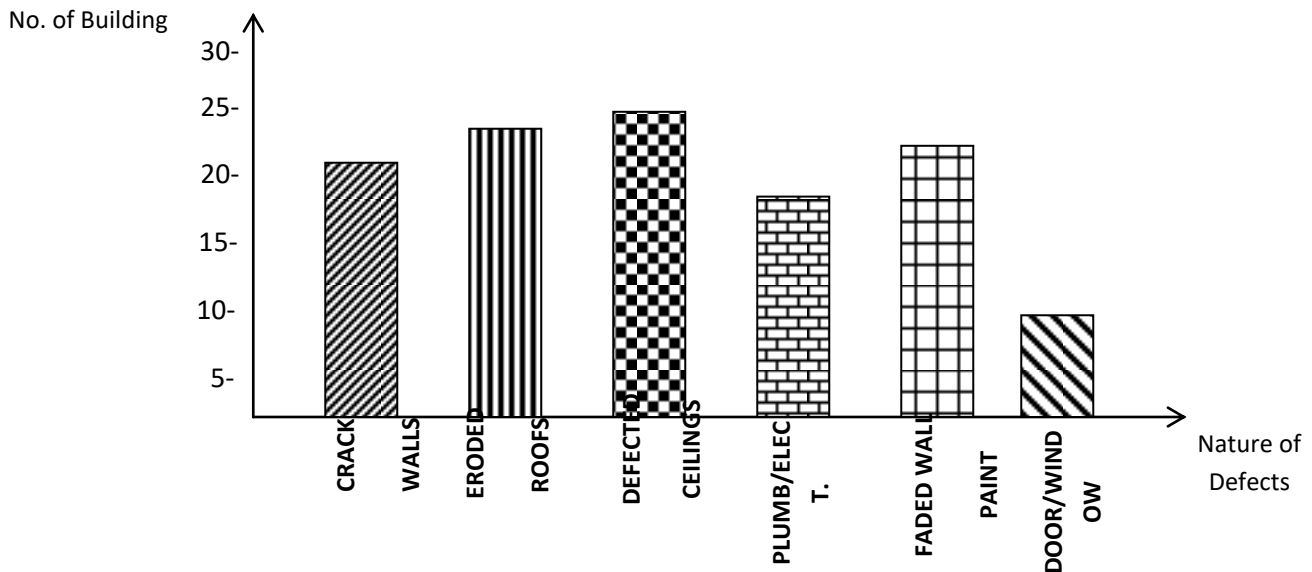
**Table 2:** YEARS OF OCCUPANCY OF RESPONDENTS

DURATION	FREQUENCY	PERCENTAGE (%)
1-5 years	13	26
6-10 years	09	18
11-15 years	12	24
16-24 years	16	32
<b>TOTAL</b>	50	100

**Source:** Field Survey, (2016).

##### 3.2 Various Defects in The Estate's Buildings Indicating Need For Maintenance

Figure 1 shows the various defects in the buildings of the estate with the corresponding number of facility affected among the 50 respondents sampled for the study.



**Figure 1:** Existing Defects in the Estate’s Buildings that Signaled the Need for Maintenance

Source: Field Survey, (2016)

**3.3 Routine Maintenance Activities In The Estate Among The Respondents**

Some of the respondents adopted a form of maintenance to keep part(s) of their buildings functioning in order to serve

them. This they do mainly by way of replacement of worn-out parts or elements. However, some do no such thing since taken possession of the building and the study also revealed none of the respondents prevent defects from emerging in their building

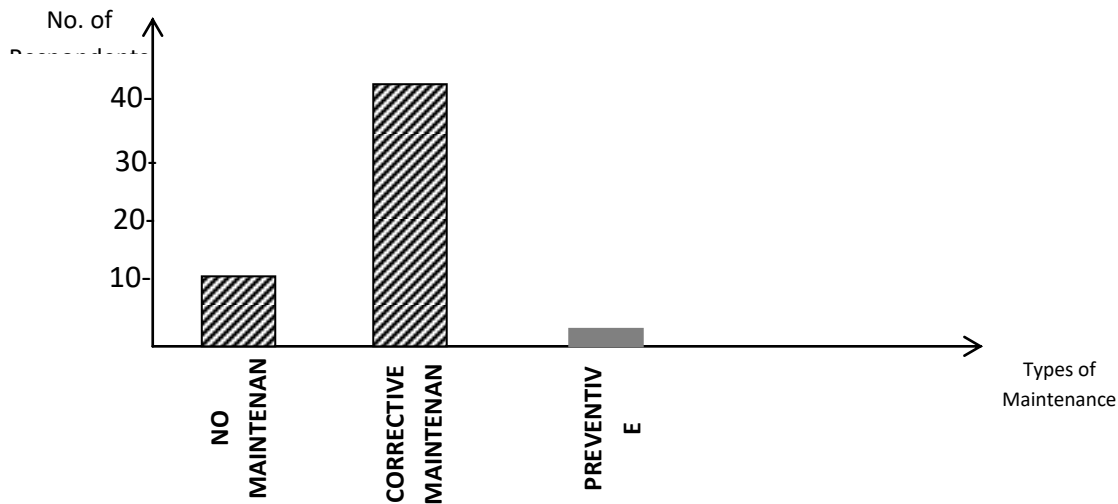


Figure 2: Routine Maintenance Activities in the Estate Source: Field Survey, (2016).

### 3.4 Respondents Awareness on the Importance and Regulations on Building Maintenance

The two figures indicate the respondents' awareness on the importance of building maintenance to building value and quality and the existing regulations (legislations) on maintenance of buildings. Ten out of the fifty respondents claimed not to be aware of the importance of maintenance to

the value and quality of building which represent 20 degree sector in the pie chart (fig 3A). The second pie chart shows that the entire sampled population claimed ignorant of the existence of any regulation or legislation on building maintenance (fig 3B).

### Level of Respondents' Awareness on the Importance and Regulations on Building Maintenance

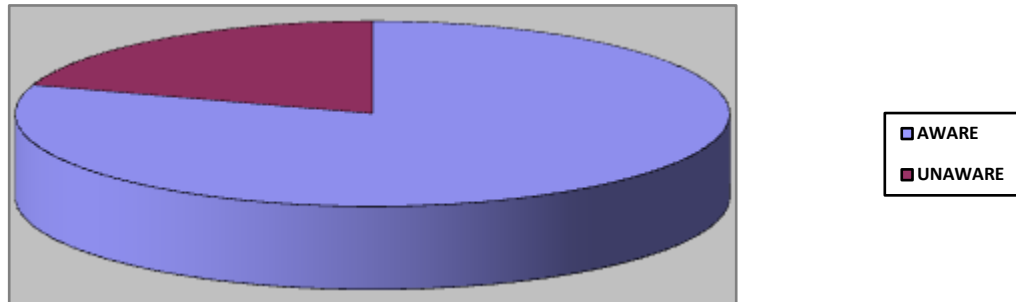


Figure 3A: Awareness on Importance of Building Maintenance among Respondents

Source: Field Survey, (2016).

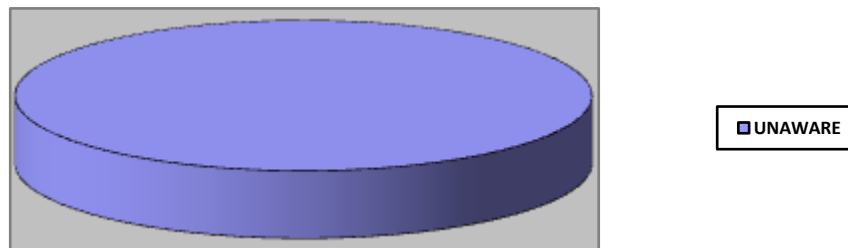


Figure 3B: Awareness on Regulations on Building Maintenance among Respondents

Source: Field Survey, (2016).

## IV. SUMMARY OF FINDINGS/ RESULTS

The cluster sampling technique was adopted for the purpose of this study in order to ensure buildings of the estate completed at different time and sited on various spots within the estate are all represented in the analysis. The study revealed low level of awareness about the various regulations on maintenance; wrong approach to the practice of maintenance, as 25% found are guilty of negligence and none maintained their facility to prevent deterioration and a hope for change of attitude if awareness can be promote

## V. CONCLUSION

The respondents in the study seemed to appreciate the need for maintenance but negligence and ignorance had made them not to respond positively to the task of maintaining their

buildings in the estate. Simulating a periodic maintenance schedule and campaign for well-maintained facility will change occupants' attitudes and eventually create a culture of maintenance.

## VI. RECOMMENDATIONS

In the light of the findings from this study, the followings are suggested as solutions to poor maintenance culture among building owners in general and occupiers of Phase I housing estate, Lokongoma, Lokoja in particular.

- Collation of maintenance manual with the building documents by the authority in charge.
- Periodic (A Decade Interval) review of the state of our physical facilities such as housing estate to avoid early obsolescence

- Enlightenment programmes in the media to intimate the users/owners/occupiers of buildings with the various regulations on maintenance.
- Government owned facilities should be subject to routine maintenance so as to inspired individuals.
- Legislations can be put in place to withdraw ownership right from owners of facilities that are in state of disrepair for a certain number of years.

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