



Exploring Causes and Effects of Premature Building Dilapidation in Public Housing in Minna, Nigeria

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ABSTRACT

Buildings are constructed with the aim to last for certain duration of time while achieving other ancillary benefits, such as functionality, aesthetics, affordability, comfort and pleasure to the occupants. Over the years, some buildings have derelict within some period of construction. However, the issue of building dilapidation has caused a serious threat, discomfort and economical demanding to its' users due to early decay. It has been observed in many cases that a building may still be physically sound while its economic life has expired due to its level of structural decay. This study investigates the causes of early building dilapidation in public housing in Minna in order to enhance sustainable housing and administration. Review of relevant literatures, reconnaissance survey coupled with experts' contributions revealed some factors that form the basis for designing a questionnaire collection for relevant data from the respondents. Findings revealed that poor use of building materials, poor supervision and management, bad workmanship, aggressive environment, under specification of building materials, inadequate or no maintenance, poor usage of building and some physical influences are the causes of such dilapidation. In conclusion effective and good building construction should be adopted to prevent negative effect of building dilapidations and also professionals should be consulted to ensure right specification of construction materials with respect to the climate or the environment. Also, the study recommends for the professional builders and project managers to use funds allocated for any project to get the right materials and also adequate supervision to prevent early building dilapidation.

1. Introduction

Building demands many skills in planning, design and construction, selection and use of various materials and techniques. After the building is completed, it has to meet various requirements, withstand the rigours of the climate and at the same time, it is expected to last for many years, preferably with minimal maintenance (Son & Yuen 1993). According to NBA, (1985) cited in Zubairu, (2010), on the study which was focused on office buildings stated 50 years and above as expected

life span of the external material. The issue of building dilapidation has been a concern factor by most professionals, building owners and users. Dilapidation is the term used to denote decay/waste or state of disrepair caused due to continuous neglect in maintenance and repair works. Its common causes include natural decay, ageing, Improper or no maintenance, Misuse of buildings (Saranya &Mewa, 2017). Building can be used by the owner or leased. Building can deteriorate when used by the owner due to financial issues and in the case of leasing; building can also deteriorate due to lack of maintenance as a result of dispute between the

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parties responsible for the repair.

According to Xin & Huang (2013), certain strategy should be adopted for the entire life of a building right from design; construction straight to operations and maintenance and along with comfort quality of residents should be highly considered. All these factors considered will determine whether the building performance is good or bad. There are many cases whereby buildings that are still under construction are physically sound but their economic life has expired. Most public buildings in Nigeria are faced with these challenges resulting in deteriorations and ultimate defects at various degrees. The issue has been acknowledged by several authors within the literature indicating the existence of the problem (Olanrewaju, & Anifowose, 2015, Yau, 2008). There are some certain factors that contribute immensely to occurrence of premature building dilapidation.

- To identify the symptoms and features of building dilapidation
- To investigate the causes of building dilapidation.
- To identify some selected building that suffers this menace and studies and its effects to the users.

2. Review of Literature

Several studies have documented the causes and effects of building dilapidation. Effective design work, qualified professionals, good construction and maintenance has been a good determinant for an adequate and prolong life span of structures. There has been a significant discussion in literature that causes of early building dilapidation and its effect to end users. For centuries, the decay of building and decorative stone has caused serious concern. Winkler, (1978) stated that building decay dated back in American cities due to poor performance of material called brownstone and this leads to investigate the durability of the building stones in that area. However, this establishes the fact that materials play an important role in the durability of any structure. According to Olusola, *et al.*, (2011) early building dilapidation is the major cause of collapsed buildings structures and this can be traced down to the defective structural design of the building elements and materials. This is due to neglect of the basic considerations of design principles and procedures.

Deterioration of the physical condition of buildings has always been a matter of concern of researches. These damages affect the performance of

buildings in addition with the discomfort to the people dwelling in it. Deterioration or depreciation of building can be traced to the material elements as well as the composites used in constructing them and these materials used exhibit different reactions when exposed to the element or man-made conditions and the type of use, they are subjected to (Olusola, *et al.*, 2011). All the materials used for the construction decay with the time being and therefore inadequate or less attention to the materials may result to faster decay of the structures (Essays, UK 2018). This results for the need of maintenance program for every building. Many countries in the world have such issues of building dilapidation which eventually result to abandon of the structures.

According to Baum (1991) cited in Nwanekezie and Nwanguma (2020) stated the study done in UK through a cross-section of 125 office buildings. The study demonstrated the uses of classification of building quality with particular reference to occupier utility. The author reasoned that age is related to quality and that buildings deteriorate and become obsolete as they age. This means that age is one of the factors that cause building dilapidation. In India Saranya and Mewa (2017) undertook a surveyed approach on 33 buildings to determine the level of dilapidation in the existing apartments building in urban areas. In their survey analysed using statistical analysis in excel, DI score ranges from 1 to 3.68 where DI is the dilapidation. The results found out 19 out of 33 buildings are dilapidated.

The study also stated the most commonly found problems in the surveyed buildings which included improper ventilation, day lighting, insufficient room size, insufficient width of staircases, unavailability of fire safety services, unavailability of emergency evacuation routes, insufficient parking space and open areas and no regular inspections of building services. This remains the fact that planning, design and maintenance stage has an important role to play in the intact of any building.

In Malaysia, Barry, (1991) cited in Othuman, *et al.*, (2012) identified five (5) factors of building deterioration such as mechanical agents, electromagnetic agents, thermal agents, chemical agents and biological agents as the key causes of building dilapidation. In China, Yung, (2008) also highlighted that due to aging, a periodic maintenance and repair of buildings which is also renovation is also necessary to put back dilapidation and in doing this, the building upkeep often requires a huge sum of money. This suggests the fact that this periodic renovation exercise is not over a short period of time.

In Nigeria, Oloyede, *et al.*, (2010) cited in

Ayedun, (2012) identified that several causes of building dilapidation and failure is being attributed to either natural or man-made phenomena. The study was done in Lagos and the data was collected with the aid of questionnaires among the built professionals which was selected randomly. 245 questionnaires were distributed out of which 141 was returned. The study reveals the causes of building dilapidation as foundation works, quality of building materials, Lack or inadequate maintenance, dissolute use of building, use of underspecified materials, Poor quality of workmanship, Natural decay and aging, and physical influence.

Also, Oleteju, (1997) detailed some of the effects of building dilapidation as waste of human resources, poor landscaping and cluttered of the built environment, security threats, promotion of illegal activities, promotes economic waste, fear of collapse. This reveals the fact that due to high cost of building materials which tends to builders don't follow specification which result to early building dilapidation. Anosike and Inyang-Udoh (2015) cited in Anosike, (2021) stated that corruption is one of the factors that causes high cost of building materials which makes some developers don't adhere to specification which eventually causes dilapidation and leads to collapse.

Shubhangi, (2019) identified some symptoms of building dilapidation. The study which was conducted in RCC building in India has two major objectives which are to diagnose the symptoms of dilapidation in various components of the building and suggested repair and rehabilitation techniques. The study observed cracks in columns and beams, spilling of concrete, drainage and seepage problem, deterioration of cover are the major symptoms of building dilapidation. Umo, *et al.*, (2018) stated some of the effects of building dilapidation which are Loss of materials and capital, components of materials damaged, security threats, promotion of illegal activities, unemployment, waste of human resources and poor landscaping.

Also, Ayedun, *et al.*, (2012) in the study conducted in Lagos revealed some causes of building dilapidation which apparently will result to failure. The study which was conducted through the questionnaires distributed among the built professionals stated the possible causes of building dilapidation. From the analysis, sub- standard building materials, incompetent contactors, faulty construction methodology, poor workmanship, incompetent contractors, lack or inadequate supervision among others were the listed factors that contributed to building dilapidation.

2.1 Study Area

The study is in Minna, the capital city of Niger State located north central geo-political zone of Nigeria. It is a large community that connects Abuja, Kano, Ibadan and Lagos. It occupies a land mass of 76,363square kilometres. It is geographically located between Latitude and Longitude coordinates of 9.58 and 6.54 east of the Greenwich Meridian respectively.

3. Material and Methods

Descriptive survey was employed in the data collection. The study was conducted in six selected towns in Minna named Dutsen Kura, Maikunkele, Gidankwano, Tunga, Kpakungun and Bosso based on their large population. Purposive sampling was adopted in selecting the buildings randomly in the study areas. Secondary data collection approach also was adopted which includes comprehensive literature review of journals publications, books and internet sources. Extensive research was conducted on the cause of early building dilapidation and the secondary sources were dully acknowledged and referenced.

3.1 Data Collection Method

Survey design approach and questionnaires was adopted to access the causes of early building dilapidation in some of the selected building in the city. The survey approach consists of three processes. First is to carry out study to know the background knowledge of the building and the causes of early dilapidation, the second stage is the building inspection both the external and internal and the final stage is the surrounding of the building, photographs was also taken to ascertain the level of dilapidation of the buildings. The questionnaires contained both close and open-ended questions in order to elicit information from the respondents.

3.2 Sampling Method and Sample size

Sarantakos, 1988 cited in Akande, *et al.*, 2018 stated that the use of structured questionnaires is the most effective economical and popular method to collect required information from the respondents. During the collection of primary data, purposive sampling and random technique were employed whereby the buildings were purposively selected and the respondent were randomly selected. Structured questionnaires were adopted in the study with ten (10) questionnaires administered to the respondents in each selected sub- areas summing to total of 60 administered questionnaires out of which 51 were returned with 89.6% as the response rate. The questionnaires were distributed among the users of

the selected facility visited to ascertain the history and the actual cause of the dilapidation of the structure.

4. Result and Discussion

4.1 Population and Respondents Response Rate

Table 1 shows the number of distributed questionnaires and the response rate of the respondents. Total of 60 questionnaires distributed

among the respondents 51 were completed and returned. This represents a response rate of 85%. The response rate obtained substantial information due to the number of respondents is higher and adequate information on the causes of dilapidation will be obtained. Also, the response is higher than other studies which records 57.5% in the study conducted by (Ayedun, *et al.*, 2012) and 77% in (Akande, *et al.*, 2018) respectively.

Table 1- Questionnaires response rate

| Location | Distributed Questionnaires (A) | Returned Questionnaires (B) | %Response rate $B/A \times 100$ |
|-------------|--------------------------------|-----------------------------|---------------------------------|
| Dutsen Kura | 10 | 8 | 80% |
| Maikunkele | 10 | 9 | 90% |
| Gidankwano | 10 | 9 | 90% |
| Tunga, | 10 | 7 | 70% |
| Kpakwngu | 10 | 9 | 90% |
| Bosso | 10 | 9 | 90% |
| Total | 60 | 51 | 85% |

4.2 Field Reconnaissance Surveys of the Buildings

Surveys were carried out in the selected areas of the study area in Dutsen Kura, Maikunkele, Gidankwano, Tunga, Kpakwngu Bosso and Chanchaga and pictures were taken to show some of the dilapidated buildings. The survey below (Plate 1-4) shows Kwasau Primary School located at Dutsen Kura. The surveys shows that most of the building

were dilapidated and some were abandoned due to its level of dilapidation. This shows that the building was severely dilapidated and this exclusively calls for adequate measure to avert its occurrence. Yau (2008) in the study in solving problem of building dilapidation in Hong Kong stated the provision of maintenance reserve in each multi owner building. This measure will aid to assist when such menace occurs in any building.



Plate 1: Showing damaged *ceilings*



Plate 2: Showing corridor without *ceiling*



Plate 3: Showing damaged floor



Plate 4: Showing damaged ceilings

Plate (5- 8) below shows survey taken on classrooms and some of the structures at the at Kwasau primary school Dutsen Kura premises and the result shows that majority of the buildings were abandon due to its level of dilapidation. The dilapidated areas of the buildings are doors and windows pulled out and damaged, painted walls faded, deteriorated ceilings and floors. Also, open ended questions were carried out on the users to depict the actual cause of the dilapidation and was revealed that inadequate maintenance and misuse of the buildings are the major cause of the building

dilapidation. This shows that the structure lacks maintenance and this implies that the buildings are unsafe for the users due to fear of collapse. Randy (2012) in the article dealing with dilapidated structures: suggested some strategies for saving, maintaining and enhancing architectural assets. In the study, the solution attached is the rehabilitation of dilapidated or abandoned building bill. This will ensure the building owners to maintain their buildings which ignored will be billed for lack of maintenance.



Plate 5: Showing worn out building



Plate 6: Showing decayed ceiling



Plate 7: Showing decayed ceiling



Plate 8: Showing washed out walls

Plate 9-12 below shows the survey on the exterior observations of the buildings at Kwalakwota Primary School, Dutsen Kura. The survey shows that most of the external components of the building were damaged. The dilapidated

components of the buildings include the broken columns and the reinforced steel components exposed, external walls and ceilings damaged, absence of roofing sheet in some parts of the structure, dilapidated staircase and many pot holes

on the floors. Also, questions were asked to the respondents the cause of the dilapidation and was revealed that Wind and rainfall, poor construction of the building with low materials, inadequate use of the buildings without maintenance. The external environment is looking untidy without

landscape features and materials littered all over the entire environment. This shows that the exterior parts of the building is seriously affected by the

weather. Shanthi, *et al.*, (2019) stated some remedies of building defects in different sections of the building. The study suggested adaptation of general surface repair system, installation of an effective vapour retarder, strategic selection of moisture mitigating coating as some the remedial measures for floors and roof.



Plate 9: Showing Damaged Door



Plate 10: Damaged Roof and Structure



Plate 11: Showing dilapidated Classroom



Plate 12: Showing dilapidated eaves and parapet



Plate 13-15 shows survey of Nipost staff quarters located at Dutsen Kura. The survey of the building shows that almost the whole building is dilapidated. The affected areas include: painted walls are completely faded, wall plasters peeled of due to water capillarity, doors, windows and staircases worn out. The survey of the building reveals that the building is old and probably dilapidated due to

ageing. The survey also shows that the building lacks maintenance and it very risky of the users due to fear of collapse. Control Solution, (2017) in the article managing an ageing building: how to access and plan for upgrades specified some upgrades to consider as building age. The study suggested some aging control systems for smart buildings with up-to-date software that offers control over the buildings various functions.



Plate 13: Showing faded walls and collapse fence



Plate 14: Showing faded walls



Plate 15: Showing broken riser

Survey was taken at a government building (UBEC/ NSUBEB) at Maikunkele, Kpakungu and Tunga. Most of the building visited at the area were dilapidated and some abandoned. Plate 16-18 show the level of dilapidation in the buildings visited. The possible cause of the dilapidation according to respondents were lack of maintenance as result of neglect from government, misuse of the building and long stay of the building. Majority of the building

components like doors, windows, ceilings, and roof members have been dilapidated. The state of the buildings has resulted to being abandoned people using it for illegal activities. This has negative implication to the people around the area by attracting security treats to the community around the area.



Plate 16: Dilapidated windows and



Plate 17: Dilapidated view of the building at Maikunkele pavements at UBEC/NSUBEB Kpankungu



Plate 18: Dilapidated view of the building at Tunga

Plates 19 and 20 shows a survey of L.E.A Primary school at Gidankwano and Bosso respectively. The survey shows the state of the building are very bad and most of the building components have dilapidated. The major cause of the dilapidation is due

to aggressive weather due to wind and rainfall, lack of maintenance and poor usage of the buildings. This results to plaster removing, roof detached, ceiling damages.



Plate 19: Completely damaged ceiling and roof.at Gidankwano L. E. A Primary school



Plate 20: Dilapidating Wall plaster at Bosso

4.3 Comprehensive data on the survey of the building in the study area.

Table 2 shows a comprehensive data on the survey information from the respondents and the

users of the facilities visited. The information is what is acquired in the oral enquiry from the respondents. The information was to get the actual

history of the building and the possible causes of its early dilapidation. The result is shown in Table 3.

Table 2- Physical survey of the buildings in the study area

| Location | Building Type | No of Buildings | Dilapidated sections of the building | Causes of Dilapidation |
|--------------------|-----------------|-----------------|---|---|
| Dutsen Kura | Public Building | 5 | Decayed ceilings, Doors and windows, Missing roof sheet, painted wall are faded, Floor are beginning to have holes on them | Inadequate maintenance and Misuse of building, Rainfall Low quality materials used in building |
| Maikunkele | Public Building | 4 | Some of the ceilings are decayed and even totally damaged Doors and windows are destroyed Missing roof sheet Painted wall are faded Floor are beginning to have holes on them | Natural decay and ageing Inadequate maintenance Misuse of building Natural decay and ageing Inadequate maintenance Bad use of building Rainfall |
| Gidankwano, | Public Building | 5 | Roof Floor and ceiling Painting | Lack of proper periodic maintenance on the building. Over population of students in the hostel. Use of low-quality building materials. Improper usage of hostel facilities by students |
| Tunga | Public Building | 2 | Roof Floor and ceiling Painting Electrical | Poor maintenance culture Poor usage culture Poor mixing ratio of plaster and concrete Quality of paint used |
| Kpakwgu | Public Building | 4 | Roof Floor and ceiling Painting | Use of low-quality building materials. |
| Bosso | Public Building | 2 | Roof Floor and ceiling Walls Painting | Lack of proper periodic maintenance on the building. Use of low-quality building materials Wind Rainfall |

Source: Researchers Field work, 2021

4.4 Survey on the effects of the dilapidated building on the users by the respondents

Survey questions were carried out to determine the effect of the dilapidations to the users from the respondents. The respondents were presented with four options (Strongly Disagree, Disagree, Agree and Strongly Agree). The result in table 3 shows that Loss of material and capital with percentage of the respondents as 47.06% has high effect to respondents due to building dilapidation; Components Of Materials Damaged and fear of collapse with the percentage of the respondents as 29.41%, Results to Abandon building causing security threats and promotion of illegal activities with the percentage of the respondents as 33.33%,

Unsightly, poor landscaping and unconducive environment with the percentage of the respondents as 23.52%, Buildings Unsafe for Habitation with the percentage of the respondents as 19.60%. This shows that the dilapidated building has serious effects on the users and this calls for certain measures to curb this menace. Emechebe, (2020) specified 8 factors that can prevent adequate and sustainable built environment which invariably affect users of the dilapidated structures and environment generally. Also, Akindele, (2013) stated some effects of abandon building as reduction of property value, financial loss, and health issues associated with untidy environment.

Table 3- Effects of the dilapidated building on the users by the respondents

| Survey questions | Options | Frequency | Percentage |
|---|-------------------|------------------|-------------------|
| Loss of materials and capital | Strongly Disagree | 5 | 9.80 |
| | Disagree | 9 | 17.64 |
| | Agree | 13 | 25.49 |
| | Strongly Agree | 24 | 47.06 |
| Components Of Materials Damaged and fear of collapse | Strongly Disagree | 3 | 5.88 |
| | Disagree | 4 | 7.84 |
| | Agree | 29 | 56.86 |
| | Strongly Agree | 15 | 29.41 |
| Results to Abandon building causing security threats and promotion of illegal activities | Strongly Disagree | 9 | 17.64 |
| | Disagree | 11 | 21.57 |
| | Agree | 14 | 27.45 |
| | Strongly Agree | 17 | 33.33 |
| Unsightly, poor landscaping, and unconducive environment | Strongly Disagree | 10 | 19.60 |
| | Disagree | 13 | 25.49 |
| | Agree | 16 | 31.37 |
| | Strongly Agree | 12 | 23.52 |

| | | | |
|---|-------------------|----|-------|
| Buildings Unsafe for Habitation: | Strongly Disagree | 8 | 15.68 |
| | Disagree | 14 | 27.45 |
| | Agree | 19 | 37.25 |
| | Strongly Agree | 10 | 19.60 |

Source: Researchers Field work, 2021

The survey on the effect of building dilapidation was subjected to likert scale for evaluation shown on table 4. The result shows that the survey statement "Loss of materials and capital is most effected by the users with relative importance index as RII as 0.619 with mean score of 3.09 followed by Components of materials damaged and fear of collapse with relative importance index as 0.654 with mean score 3.27, Results to Abandon building causing security threats and promotion of illegal activities is another

survey statement with relative importance index as 0.553 with mean score as 2.76, Buildings Unsafe for Habitation has relative importance index as 0.521 with mean score as 2.60 and Unsightly, poor landscaping and unconducive environment has 0.517 as relative importance index and 2.58 as the mean score. This shows that the users still suffers different degrees of negative effects due to building delpidation.

Table 4- Assessment of the effects of the dilapidated building on the users by the respondents using Likert scale

| Survey's Statement | Respondents Ranking | | | | | | | |
|---|---------------------|-----------|--------|-----------------|-------|-----|------------|-------|
| | Strongly Disagreed | Disagreed | Agreed | Strongly Agreed | Total | Sum | Mean Score | RII |
| | 1 | 2 | 3 | 4 | | | | |
| Loss of materials and capital | 5 | 9 | 13 | 24 | 51 | 158 | 3.09 | 0.619 |
| Components Of Materials Damaged and fear of collapse | 0 | 4 | 29 | 18 | 51 | 167 | 3.27 | 0.654 |
| Results to Abandon building causing security threats and promotion of illegal activities | 9 | 11 | 14 | 17 | 51 | 141 | 2.76 | 0.553 |
| Unsightly, poor landscaping. and unconducive environment | 10 | 13 | 16 | 12 | 51 | 132 | 2.58 | 0.517 |
| Buildings Unsafe for Habitation: | 8 | 14 | 19 | 10 | 51 | 133 | 2.60 | 0.521 |

Source: Researchers Field work, 2021

Table 5 shows the survey questions carried out to determine the causes of early building dilapidations from the respondents. The respondents were presented with four options (Strongly Disagree, Disagree, Undecided, Agreeand Strongly Agree). The result shows that survey question "Negligence and inadequate or no maintenance due to lack of funds" with percentage of the respondents

as 35.29% that strongly agree; Poor use of building materials and under specification of building materials with percentage of 37.25%; Poor supervision, management and bad workmanship with percentage of 35.29% and Aggressive environment and bad usage of building with percentage 27.45%. This shows that the respondents strongly agree that the stated factors are the main cause of building dilapidation.

Table 5- Causes of the dilapidated building on the users by the respondents

| Survey questions | Options | Frequency | Percentage |
|---|-------------------|-----------|------------|
| Negligence and inadequate or no maintenance due to lack of funds | Strongly Disagree | 3 | 5.88 |
| | Disagree | 6 | 11.76 |
| | Undecided | 5 | 9.80 |
| | Agree | 19 | 37.25 |
| | Strongly Agree | 18 | 35.29 |
| Poor use of building materials and under specification of building materials | Strongly Disagree | 3 | 5.88 |
| | Disagree | 8 | 15.68 |
| | Undecided | 9 | 17.64 |
| | Agree | 12 | 23.52 |
| | Strongly Agree | 19 | 37.25 |
| Poor supervision, management and bad workmanship | Strongly Disagree | 5 | 9.80 |
| | Disagree | 8 | 15.68 |
| | Undecided | 7 | 13.73 |
| | Agree | 13 | 25.49 |
| | Strongly Agree | 18 | 35.29 |
| Aggressive environment and bad usage of building. | Strongly Disagree | 9 | 17.64 |
| | Disagree | 11 | 21.56 |
| | Undecided | 5 | 9.80 |
| | Agree | 12 | 23.52 |
| | Strongly Agree | 14 | 27.45 |

Source: Researchers Field work, 2021

Assessment on the major Causes of the building dilapidation from the respondents was subjected using Likert scale. Table 6 shows that all the survey statement contribute to the causes of building dilapidation by the respondents. The result analysed showed that survey statement “Negligence and inadequate or no maintenance due to lack of funds” chronicled 0.768 as the relative importance index with mean score as 3.84, “Poor use of building materials and under specification of building materials” with relative importance index as 0.741 and mean score as 3.70, Poor supervision, management and bad workmanship with relative importance index as 0.721 and mean score as 3.60

and Aggressive environment and bad usage of building with relative importance index as 0.643 with mean score as 3.21. The data shows that the buildings are rarely maintained due to lack of funds. This shows that inadequate funds are the main cause of having building dilapidation because with funds good materials can be specified during construction stage and it is also what is used for constant maintenance when is due for such.

Table 6- Causes of the building dilapidation

| Survey’s Statement | Respondents Ranking | | | | | | | | |
|---|---------------------|-----------|-----------|--------|----|-------|-----|------------|-------|
| | Strongly Disagreed | Disagreed | Undecided | Agreed | | Total | Sum | Mean Score | RII |
| | 1 | 2 | 3 | 4 | 5 | | | | |
| Negligence and inadequate or no maintenance due to lack of funds | 3 | 6 | 5 | 19 | 18 | 51 | 196 | 3.84 | 0.768 |

| | | | | | | | | | |
|---|---|----|---|----|----|----|-----|------|-------|
| Poor use of building materials and under specification of building materials | 3 | 8 | 9 | 12 | 19 | 51 | 189 | 3.70 | 0.741 |
| Poor supervision, management and bad workmanship | 5 | 8 | 7 | 13 | 18 | 51 | 184 | 3.60 | 0.721 |
| Aggressive environment and bad usage of building. | 9 | 11 | 5 | 12 | 14 | 51 | 164 | 3.21 | 0.643 |

Source: Researchers Field work, 2021

4.5 Survey on level of maintenance on buildings in the study location by the respondents

Survey question was asked to the respondents on how the building were maintained. The respondents were subjected to four (4) options (Very low, Poor, Good, very good) shown in Table 7. Survey was conducted with 10 questionnaires to the respondents in order determine the level of maintenance of buildings in the study area. According to the data,

the buildings in the study area are poorly maintained. Dutsen Kura, Tunga, have the same level of maintenance with RII as 0.480 and mean score as 2.4; Maikunkele, Gidankwano, Kpakwgu also have the same level of maintenance with RII 0.460 and mean score as 2.3, and Bosso with RII 0.440 and mean score as 2.2.

Table 7-Survey on maintenance level on buildings by the respondents

| Study Area | Survey statement | Very Poor | Poor | Good | Very Good | Total | Sum | Mean Score | RII |
|--------------------|---------------------------------|-----------|------|------|-----------|-------|-----|------------|-------|
| | | 1 | 2 | 3 | 4 | | | | |
| Dutsen Kura | Maintenance of Public Buildings | 2 | 3 | 4 | 1 | 10 | 24 | 2.4 | 0.480 |
| Maikunkele | Maintenance of Public Buildings | 1 | 5 | 4 | 0 | 10 | 23 | 2.3 | 0.460 |
| Gidankwano | Maintenance of Public Buildings | 2 | 4 | 3 | 1 | 10 | 23 | 2.3 | 0.460 |
| Tunga | Maintenance of Public Buildings | 1 | 5 | 3 | 1 | 10 | 24 | 2.4 | 0.480 |
| Kpakwgu | Maintenance of Public Buildings | 2 | 4 | 3 | 1 | 10 | 23 | 2.3 | 0.460 |
| Bosso | Maintenance of Public Buildings | 2 | 5 | 2 | 1 | 10 | 22 | 2.2 | 0.440 |

Source: Researchers Field work, 2021

Table 8 shows the level of satisfaction with the maintenance of the buildings in the study location by the respondents. This survey question is to know whether the users are satisfied with the level of maintenance given to the public buildings by the authorities. The survey data analysed shows low level of satisfaction from the users with the level of

maintenance. The survey question was subjected to four (5) options (Very Dissatisfied, Dissatisfied, Neither Satisfied nor Dissatisfied, Satisfied and very satisfied). Ten (10) questionnaires were used to determine the level of satisfaction by the respondents shown on Table 8.

Table 8- Level of satisfaction with maintenance level of the buildings by the respondents in the study area

| Study Area | Survey statement | Very Dissatisfied | Dissatisfi | Neither satisfied nor dissatisfied | Satisfied | Very satisfied | Total | Sum | Mean Score | RII |
|-------------|-----------------------|-------------------|------------|------------------------------------|-----------|----------------|-------|-----|------------|-------|
| | | 1 | 2 | 3 | 4 | 5 | | | | |
| Dutsen Kura | Level of satisfaction | 1 | 5 | 2 | 1 | 0 | 10 | 20 | 2.0 | 0.400 |
| Maikunkele | Level of satisfaction | 1 | 6 | 2 | 0 | 1 | 10 | 24 | 2.4 | 0.480 |
| Gidankwano | Level of satisfaction | 2 | 4 | 3 | 0 | 0 | 10 | 19 | 1.9 | 0.380 |
| Tunga | Level of satisfaction | 1 | 5 | 3 | 1 | 0 | 10 | 24 | 2.4 | 0.480 |
| Kpakwgu | Level of satisfaction | 2 | 6 | 2 | 0 | 0 | 10 | 20 | 2.0 | 0.400 |
| Bosso | Level of satisfaction | 1 | 4 | 2 | 2 | 1 | 10 | 28 | 2.8 | 0.560 |

Source: Researchers Field work, 2021

5. Recommendation And Conclusion

Based on the study the following recommendations are specified. There should be provision of adequate supervision, planning and monitoring of construction and its processes in addition of highly established by policy makers to ensure all the buildings are constructed based on design and specifications stated to avoid early dilapidation. All the built professionals should close the gap of being absent on the site during construction, this will enable them find the quacks and to detect the substandard material used that will eventually lead to dilapidation.

Government agencies like Standard Organization of Nigeria should monitor the standard of building materials both imported and locally produced to ensure the quality of materials used in construction and sanction properly the defaulters. Buildings age and the materials used in construction normally damaged. It is advisable for the authorities to do periodically maintenances in all their public building facilities as this will enable the building being prevented from being abandon and possible collapse. And finally, the Architect as the prime consultants should ensure and direct the client the use of right professionals. This is achieved that other professionals are dully registered and their drawings meet the approval standard

before forwarding the design to construction site.

In Conclusion, according to the study inadequate funding, poor supervision, lack of maintenance is the major cause of dilapidation in public buildings which has a lot of negative effects on the users. Therefore, government and appropriate authorities should take suitable steps by providing adequate funds both for construction stage and also for maintenance purposes to avoid such reoccurring menace.

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Conflict of Interests

The authors declare no conflict of interest

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