

PROCEEDINGS OF
**MAIDEN
CONFERENCE**

OF THE NIGERIAN INSTITUTE OF BUILDING (NIOB)
NIGER STATE CHAPTER



Venue:
LT1, School of
Environmental
Technology,
Federal University of
Technology, Minna,
Niger State,
Nigeria

THEME:

**QUACKERY & BUILDING COLLAPSE:
ROLES OF PROFESSIONALS
IN CURBING THE MENACE**

Editor in Chief:

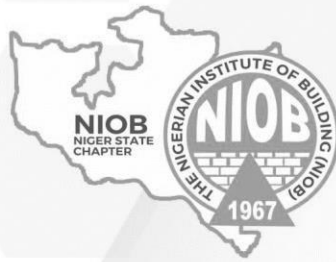
Bldr. Dr. Ogunbode Ezekiel Babatunde

Collaborating Institutions:

Department of Building, FUTMINNA

Department of Building Technology, Federal Polytechnic, Bida

Department of Building Technology, Niger State Polytechnic, Zungeru



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FOREWORD BY THE CHAIRMAN, NIOB NIGER STATE CHAPTER

Current environmental challenges that are confronting the world and Nigeria in part, like climatic change, building collapse, quackery in the practice of building profession, desertification, flooding among others, have inflicted grave risk to human habitation, health and social-economic life.

It became essential to take weighty action to deal with the problems. This can only be achieved through pragmatic intellectual ideas and knowledge in tackling these challenges to achieve building collapse free environment.

The maiden conference of the Nigerian Institute of Building (NIOB) Niger State Chapter therefore, provides a niche for the compilation and cross breed of professional ideas, researches and knowledge for addressing these great challenges.

I therefore recommend proceedings of maiden conference of the Nigerian Institute of Building Niger State Chapter for every one seeking knowledge or willing to share it.

Bldr Dr Shehu Ibrahim Abubakar
Chairman
NIOB Niger State Chapter

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The scientific committee and the review panel who are involved in the handling of the technical session and peer review process for a conference of this nature requires the expertise and contribution of a number of seasoned academics. We wish to thank the following people who carried out the review of abstracts and papers for the NIOB Conference 2023. Thank you for your contribution.

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ABOUT NATIONAL INSTITUTE OF BUILDING (NIOB)

THE NEED FOR BUILDING AS PROFESSION

Building (shelter) is critical to human existence and the need to successfully address complexity in its production and maintenance require the involvement of a trained specialist and licensed professional. Builders are rightly according to Nigerian laws responsible for the technology and management of the construction, maintenance and deconstruction processes.

THE MEDIUM FOR ACTUALIZING GOOD BUILDINGS

In order for the society to have confidence that the building that is produced is functional, safe and sustainable, there is need for the society to properly locate and appreciate the NIOB as the organization that is committed to the Nigerian society in upscaling and verifying the performance of buildings and the capability of those who produced and maintain them. Specifically, the NIOB is the appropriate institute for the training and retaining of builders in practice and those aspiring to be builders. NIOB members can be identified and monitored. NIOB is also a professional medium through which the products of Building research and development efforts can be disseminated and adapted for the good of society.

THE PROFESSIONAL BUILDER

A builder is a person who has appropriate academic training in the science, technology and management process of the production, maintenance and deconstruction of buildings and has been licensed by the Council of Registered Builders of Nigeria (CORBON).

THE PROFESSION OF BUILDING

The core practice of the profession is Building Production Management which includes but is not limited to the provision of Building Production Management Documents (otherwise known Builders Documents, which documents are Construction Methodology, Construction Program, Project Health and Safety Plan, Project Quality Management Plan, for the management of time, quality health and safety and resource deployment on building construction projects. Other areas of services include Building Surveying, Project Management, contract management, as well as Building Facilities Management.

DEFINITION OF BUILDING

Building is an enclosed space for the use and protection of mankind. Examples of building include schools, hospitals, Churches, mosques, commercial and industrial buildings, public buildings, residential and housing estates with associated infrastructure.

CORBON

CORBON means COUNCIL OF REGISTERED BUILDERS OF NIGERIA (CORBON). It was established by Act Cap613LFN, 2004 (formerly known as Degree No. 45 of 1989, CORBON was established to regulate and control the practice of building profession in all its aspect and ramifications. WHO IS A REGISTERED BUILDER? A registered Builder is a person who has received an approved standard of professional training and practice in building and is found competent and is licensed by the Council of registered Builders of Nigeria.

TRAINING

At present, there are over thirty-one (31) Universities offering BSc. Building programs and about fifty-six (56) Polytechnics offering National Diploma (ND) and Higher National Diploma (HND) Building Programs in Nigeria, Graduating of Building Programs would have to undergo pupillage period under the supervision of a fully registered builder and passed the appropriate examinations of the Nigerian Institute of Building (NIOB) and the interview of the Council of Registered Builders of Nigeria (CORBON), before attaining full professional status.

WHERE CAN A REGISTERED BUILDER BE USEFUL FULL PROFESSIONAL STATUS?

A registered Builder could be engaged in the following areas: Construction Industry, Educational Institutions, Banks, Finance Insurance, Housing Corporation, Military Establishment, Oil industry, three tiers of Government and their agencies etc.

HOW CAN A PROFESSIONAL BUILDER BE ENGAGED?

He could be engaged either as a consultant or employed as a full-time Registered Builder in the area stated above.

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SECTION 1: KEYNOTES





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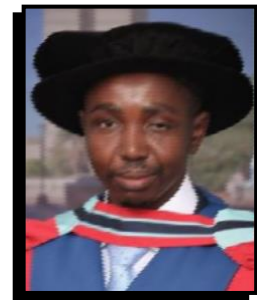


NIOB Niger State Chapter

Quackery and Building Collapse: The Roles of Stakeholders in Curbing the Menace

Professor Richard Ajayi Jimoh

Department of Building, Federal University of Technology, Minna



Introduction:

- The construction industry is complex
- Contribution to the economy
- GDP
- Boom and downturn
- Highly cyclical and volatile business
- Diverse stakeholders with diverse needs
- High industry fragmentation
- Employment generation
- Developed and developing countries
- What then is the industry called construction?
- Can be defined from three perspectives; as an economic activity that
- Covers the entire construction process
- Covers the physical work carried out on the production site
- In between the two above, covers production process of the built environment

“In Nigeria today Builders are the most monopolized professionals in the construction industry with the way things are structured, others have taken up most of their responsibilities”

QUACKERY

What is a profession?

A profession is the pursuit of a learned art in a spirit of public service

- Educational fields prerequisite to the calling
- Ethical conduct of its members
- Obligation to the society

Question has often been asked of “what is the necessity for a Builder when there are tradesmen like bricklayers, carpenters etc.?”

- Who is a Builder?
- Who is a quack?
- ✓ “Quackery” derives from the word *quacksalver* (someone who boasts about his salves or remedies)
- Classification of quacks
- ✓ Professionals who engage in the act of quackery
- ✓ Non-professionals who claim to be professionals
- ✓ No knowledge of a particular profession but learn the trade
- Causes of quackery
- ✓ Client related factors
- ✓ Ethical related factors
- ✓ Regulatory related factors
- ✓ Job security related factors
- ✓ The major consequence of quackery is BUILDING COLLAPSE leading to loss of lives and property

Building Collapse

- Buildings is said to fail when it can no longer satisfy its primary function
 - Building collapse is the partial or total falling apart of building structural members
 - Causes of building collapse
 - ✓ Design/procurement related factors
 - ✓ Technical/management related factors
 - ✓ Client related factors
 - ✓ How did stakeholders contribute to building collapse?
 - ✓ Client related factors
 - ✓ Unclear project brief
 - ✓ Excessive changes and alteration
 - ✓ Inadequate funding/delay in progress payment
 - ✓ Builder related factors
 - ✓ Failure to provide building production documents
 - ✓ Failure to study the production information
 - ✓ Failure to assess the workmanship of artisans
- End product; SORROW, TEARS & BLOOD

Epilogue (Newspapers headlines)

- Quackery: How Should It Be Defined?
- Quacks have taken over Lagos construction sites — LASBCA GM
- Of builders, quacks and safe buildings in Nigeria
- How to curb incessant building collapse in Lagos – Experts
- How Usage Of Quacks Fuels Building Collapse Incidents In Nigeria
- The Gerard Road Lagos Building Collapse, My view
- Enforcement of punishment for quacks can end building collapse, NIOB tells FG
- Give legal backing to NBC to end building collapse, NIOB begs NASS
- Building Collapse: Is FG afraid of quacks?
- Building collapse: NIOB calls for enforcement of standard

Roles of Stakeholders


- ❖ Government
 - Strengthening of laws
 - Enforcement of laws
 - Domestication of laws by State Governments
 - Collaborating with tertiary institutions in R & D
- ❖ NGOs e.g. Building Collapse & Prevention Guild
 - Collaborating with tertiary institutions in R & D
 - Awareness
- ❖ Society
 - Engage professionals; Kobo wise and Naira foolish
- ❖ Professionals
 - Practice in your profession and area of competence
 - Creation of inter-regulatory E & M unit like CORBON PEMU
 - Sub-ordinate and peer reviews
 - Regular practice update (CPD)
 - Adherence to the seven CORBON cannons
- PS: Is there no way professional fees charged can also be linked to complexity of the project instead of project value and repetitive work?

Concluding Remarks

- As a country, we are all guilty as no one can be absolved from the blame, we must (Governments, NGOs, Professional bodies, Academia and the citizenry) all come together and resolve that enough is enough and do away with the syndrome of MILT that has destroyed every fabric of our society. There is no better time than now! Let the father not eat grape and the teeth of the child be set on edge. Quackery and building collapse are Siamese twins that must be taking to the theatre for a precise and concise surgical procedure so that we can all heave a sigh of relief. Distinguish ladies and gentlemen, this is the way to go so that Nigeria can breathe fresh air to avoid being asphyxiated.



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Collective Effort of Building Professionals in Curbing Quackery in Building Collapse Problems in Nigeria

Professor Remi Ebenezer Olagunju

Dean, School of Environmental Technology, Federal University of Technology, Minna



1. Introduction:

Building collapse is a significant problem in Nigeria, and one of the main causes of this problem is quackery in the building industry. Quackery refers to the practice of unqualified individuals performing tasks that should be done by professionals. In the building industry, quackery occurs when unqualified individuals engage in building design, construction, and maintenance activities. To curb quackery in building collapse problems in Nigeria, building professionals need to work collectively. Building professionals include architects, engineers, builders, quantity surveyors, and other professionals involved in building design, construction, and maintenance. They can take several steps to curb quackery in the building industry:

Advocacy: Building professionals can engage in advocacy campaigns to raise public awareness about the dangers of quackery in the building industry. They can use various media platforms such as newspapers, television, and social media to educate the public about the importance of using qualified professionals for building design, construction, and maintenance.

Training: Building professionals can organize training programs to upgrade the skills of qualified professionals and educate them on the latest trends and technologies in the building industry. This will enable them to provide better services to clients and reduce the incidence of building collapse.

Collaboration: Building professionals can collaborate with government agencies responsible for regulating the building industry, such as the Nigerian Institute of Building (NIOB), to develop policies and regulations that will promote the use of qualified professionals in the building industry.

Certification: Building professionals can work towards developing a certification process that will enable clients to verify the qualifications of professionals before engaging their services. This will help to reduce the incidence of quackery in the building industry and promote the use of qualified professionals.

Enforcement: Building professionals can work with government agencies responsible for enforcing building regulations to ensure that only qualified professionals are involved in building design, construction, and maintenance activities. This will help to reduce the incidence of building collapse caused by quackery.

Therefore, curbing quackery in the building industry requires collective effort from building professionals. Advocacy, training, collaboration, certification, and enforcement are some of the steps that building professionals can take to promote the use of qualified professionals and reduce the incidence of building collapse caused by quackery in Nigeria.

2. The Roles and responsibilities of the professional for a sustainable Building construction project as outline in the 2006 National Building code of the federal republic of Nigeria are:

2.1 Land Surveyor

A land surveyor is the government authorized specialist who is licensed to determine boundaries; they establish the beacons on site to define boundaries, they determine the relative positions of places on or beneath the surface of the earth by measuring distances, directions and elevations. They are the first professionals to carry out physical work on the construction site. All these are represented in a plan called Cadastral survey which is duly stamped by registered surveyor which shows the features of the land such as rocks, water body, and site topography.

In the construction phase surveying commences with correct placement of footings, foundations, piers and other items of building construction are essential for a sound structure. The second essential role is establishing a level

for the proposed construction and establishing a benchmark that would be used as reference point throughout the construction phase. This is mostly neglected in Nigeria and the cause of flooding in most buildings.

2.2 Architect

Architects allocate space, create the overall aesthetic and look of buildings and other structures, but the design of a building involves far more than its appearance. Buildings also must be functional, safe, and economical and must suit the needs of the people who use them. The plans also specify the building materials and the interior furnishings. Architects consider all these factors when they design buildings and other structures.

The architects provide various designs, and then prepare drawings presenting ideas to the client based on his needs. After discussing and agreeing on the initial proposal, architects develop final construction plans that show the building's appearance and details for its construction.

The role of an architect does not end in the design stage during construction (it's not the responsibility of an architect to undertake the actual construction activities) continual revision of plans on the basis of client needs, budget and other constraints not envisaged during design stage is often necessary. As construction proceeds, he visit building sites to make sure that contractors follow the design, adhere to the schedule, use the specified materials, and meet work quality standards. The job of the Architect is not complete until all construction is finished.

2.3 Geo Technic Engineer

Geo-technic Engineer determines the physical, mechanical, and chemical properties that will influence the project under consideration carry out Site investigations, soil tests to gain an understanding of the area in or on which the construction will take place. A geotechnical engineer then determines the soil bearing capacity for the site under investigation.

2.4 Structural Engineer

After the architectural design is completed, Structural Engineer is the next professional to work on the design. He designs the structural members (slabs, beams, columns and foundations), he designs foundations working with the Geotechnical Engineer. He determines the sizes (thickness span and depth) of structural members and the quality, size, type and quantity of reinforcements. Structural Engineer decides on the quality and type of materials used for structural members and the required concrete strength. He also designs the roof trusses to sustain all expected loads and forces. He produces the structural drawings which is required for building construction approval.

During construction he inspects materials and supervise the construction of structural members, (it's not the responsibility of the structural engineer to undertake the actual construction activities), he gives approvals, conduct test on materials and structural integrity test on the structure as a whole and declares the structure safe or not.

2.5 Building Service Engineers

Building services engineering is an aspect handled by Mechanical and Electrical Engineers they are referred to as (M&E), in the local Nigerian parlance it called plumbing and electrical.

This involves the production and maintenance of a stable internal environment that has the correct temperature, air quality and lighting levels. It requires the provision of all the necessary backup support systems such as power, hot and cold water and lifts. The installation of life protection systems such as fire alarms, and sprinkler systems is an important responsibility as well. These functions must be linked to sophisticated building management systems to ensure effective control and to minimize energy consumption.

They influence the architecture of a building and play a significant role on the sustainability and energy demand of the building. They design layouts and requirements for building services for residential or commercial developments which is one of the requirements for building approval. Design and development of electrical systems required based on envisaged power consumption for safety and energy sustaining operation of buildings, construction and operation of Heating, ventilation and air conditioning (HVAC) systems.

2.6 Quantity surveyor

A Quantity Surveyor is a construction industry professional who specializes in estimating the value of construction works.

The quantity surveyor is responsible for quantifying the various resources that it takes to construct a given project, such as labour, supervision, plant and materials. He estimates the project budget, analysis the effect of design changes on the budget and the most noticeable role preparation of Bill of Quantities that assist in the tender process, produce tender document and manage the tender process, clarify and evaluate tenders, variations control, contract administration and assessment of claims, negotiate and settlement of accounts, Valuing completed work and arranging for payments, expert witness report in case of dispute.

2.7 Builder

A Registered Builder is an academically trained specialist and statutorily registered professional responsible for Building production management, Construction and maintenance of buildings for the use and protection of mankind and his assets.

Builders are unique in that they are the only professional saddled with the responsibility of building production management, as well as management of both artisans and Craftsmen on site.

The Builder studies the production information from drawings, schedules and specifications. They analyses the buildability and maintainability of buildings and prepare a report of such analysis. He/she prepares the Construction program, Construction methodology plan, project health and safety plan, project quality management plan. Also assesses the workmanship skill of artisans and suggest solution to technical problems that may arise on site.

2.8 Artisans and Craftsmen

These are the real workmen/women on site. The Artisans and Craftsmen are those personnel on site that are engaged in the execution of trades operation e.g. carpentry, masonry etc. The Craftsmen were trained and certified on a particular trade by a technical institute while the Artisans were trained by a trade-master.

The Artisans and Craftsmen are engaged in various operations in the building construction industry for example, Masons, carpenter, electricians, tillers, painters, plumbers and steel benders.

3. Conclusion

Building construction is one of the most important activities of any economy and a large proportion of the country's resources are usually used in the construction and maintenance of buildings. The construction of a building project of any kind involves the services of many people, who design, construct and maintain it from conception to completion, and terminal demolition. The building project team members range from architects, land surveyors, quantity surveyors, builders, structural engineers, facilities and construction managers, and contractors.

The importance of the professionals in the construction industry cannot be overemphasized because building projects is a complex one. In Nigeria, it is, nevertheless, baffling that there still exists confusion and misinterpretation of the roles of some of the professionals and artisans in the management of construction projects. The building process has been faced with such problems as patronage of quacks, greed, and corruption, which often result in the sad occurrence of building collapse.

Apart from natural disasters, a building can collapse for so many reasons, but I will just mention a few. One is the entrance of quacks into the construction industry. Now, we have quacks at all levels in the construction industry. Who is a quack? A quack is anyone who dishonestly claims that he/she has acquired the requisite training/knowledge in a particular field but has no certification or licensed to prove that. Such a person is fake, fraudulent and has no integrity to deliver the expected standard/quality on any project/job given to him/her.

For instance if a Builder, who is a trained professional but not registered and licensed by Council of Registered Builders of Nigeria (CORBON) is involved in building production management, we consider such a person as a quack, likewise an Architect who is a trained professional but not registered and licensed by Architect Registration Council of Nigeria (ARCON), also an Engineer who is a trained professional but is not registered and licensed by Council for Regulation of Engineering in Nigeria (COREN) we consider such persons as quacks.

In a building project, all the professionals should see the works as an entity and cooperate not thinking that the other want to usurp his position. All professionals must come together, work together to produce structurally safe, stable, durable and aesthetically pleasing buildings.

SECTION 2: CONFERENCE PAPERS





Minimizing Building Collapse: The Case for Maintenance of Students' Hostel Accommodation in Higher Institutions of Learning in Nigeria

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Abstract

Building collapse is a typical occurrence throughout the world, but in Nigeria in particular it is more frequent and the results are more terrible. Building maintenance has been largely ignored up until recently, as was demonstrated by a bad situation and confirmed by the upkeep of student housing facilities. The factors affecting the maintenance of student residences in Nigeria are evaluated in this study. The objective is to assess the hostel buildings' operational maintenance condition (physical and functional condition) and to suggest ways to reduce the frequency of building collapses in Nigeria by improving building maintenance. Descriptive and inferential statistics were used to examine data obtained from questionnaires given to hostel residents, students, and maintenance management personnel about their opinions of the present maintenance status of the hostels. The results demonstrate that timely and suitable maintenance management practises would maintain the current student hostel structure and avoid the building's probable collapse owing to sporadic disregard for maintenance management policy.

Keywords: Building collapse, Building Maintenance, Maintenance management, Student's hostel

1. Introduction

Building collapses are a common occurrence in Nigeria, posing serious problems for all parties involved in the construction industry (such as architects, building consultants, governments, developers, landlords, and users). While there have been many instances of building collapse in Nigeria over the years, the majority of them were caused by human activity. Lack of maintenance culture is one of the key causes of building collapse that has not gotten much attention. Buildings require ongoing care, and if that care is put off, what might first seem relatively trivial could quickly escalate into an expensive tragedy that was caused by humans. In light of this, no building can last the entirety of its useful life without needing care in some way. Building maintenance has allegedly been the most underestimated area of building technology, particularly in the majority of governmental policy creation and execution, argued by Lovina and Fidelis (2021). The poor housing stock maintenance practises in Nigeria's numerous academic institutions of higher learning reflect and exacerbate this problem.

Institutional hostels could no longer accommodate the population of students due to the rapidly rising student population and the dwindling resources of tertiary institutions, which has resulted in an unacceptable level of overcrowding and stress on existing facilities and a constant breakdown of services. The buildings can't perform to their full potential without ongoing measures to maintain them in order to stop the process of decay and degradation, to maintain structural stability and safety, and to avoid needless weather damage. A building must be maintained to keep it operating at its best for providing services, according to Auyong et al. (2013), as this is essential and can optimise the building's performance. Since timely building repair is crucial, it must be prioritised by all organisations (Yasin et al., 2016). The fact that all buildings, as well as the materials and components inside, deteriorate or experience losses in aesthetic, structural, and/or functional value with exposure to the elements of weather over time serves as a reminder of the need for maintenance work on buildings.

Building collapses occur in Nigeria regardless of whether they are private, corporate, or public buildings. As a result, it is not restricted to buildings outside of higher education establishments. They are also starting to cause worry within facilities used for education. For instance, a male student was reportedly crushed to death in a school in Adamawa State after the hostel where he and other students were staying collapsed. The issue of structural dilapidation, which affects many of the students' hostel facilities in many of Nigeria's major educational institutions,

caused the hostel building to collapse. According to Lovina and Fidelis (2021), the Federal Ministry of Education ordered federally-owned tertiary institutions to transfer hostel management in 2004, which exacerbates the issue. There are undoubtedly several ramifications for how hostels are managed and maintained in Nigeria as a result of this. Universities, colleges, and schools in Nigeria lack a significant amount of the necessary infrastructure, while those that do exist lack adequate maintenance plans.

Hostels at publicly supported institutions are currently worse off for students due to overpopulation and poor facilities. Rising instances of insecurity outside the university setting have made students who are staying off-campus come to the school to squat alongside the original owners of the rooms, which has made the issue worse. Due to this development, the hostels became overcrowded, which put further strain on the facilities. The danger that the situation could lead to a building collapse if nothing urgent was done was increased by the fact that many hostel buildings had design deficiencies. In light of the aforementioned, it is important to evaluate building maintenance and how it affects facilities like student housing in order to reduce the likelihood of future collapse.

This paper assesses the factors influencing students' hostel maintenance in Nigeria with the following objectives: (i) examine the maintenance problems associated with building collapse in students' hostels; (ii) determine how building maintenance can be improved to minimize incessant building collapse in Nigeria.

2. Literature review

According to research done by Bamidele and Fadamiro in 2000, there are five main reasons why buildings collapse in Nigeria. These reasons include: natural phenomena, improper design or construction, mistakes in the design or construction process, improper materials or workmanship, improper maintenance, abuse of the building, etc. According to research, poor design and materials accounted for 45% of all building collapses in Lagos State. According to (Ogunsemi, 2002), poor workmanship accounts for 19% of building collapses, while substandard materials account for 18.4% of all causes. Building flaws that are not promptly identified and corrected by the property owner may lead to a building's collapse. Some of the defects include: (i) fungus stain and harmful growth (ii) erosion of mortar joints (iii) peeling paint (iv) defective plastered renderings (v) cracking of walls and tearing walls (vi) defective rainwater goods (vii) decayed floor boards (viii) insect or termite attack (ix) roof defect (x) dampness penetration through walls (xi) an unstable foundation (xii) poor installation of air-conditioning units, etc.

According to Gafar (2004), these construction flaws can cause an unanticipated building collapse if they are not adequately managed and maintained. Bamgboye (2006), argued that maintenance is the art of bringing back an asset's regular working condition at a low cost while extending the asset's lifespan. The designed life span of many facilities is now quite short in Nigeria, according to Uma et al. (2014), but life-span extension requires a culture of sufficient maintenance. Maintenance is the capacity and skill of maintaining infrastructures available for normal usage. Building maintenance management is an activity that involves the interaction or combination of the various factors that control and manage the usage of buildings on a technical, social, legal, and financial level (Edmund et al., 2017). Hence, maintenance starts as soon as a building is completed.

In the body of existing literature, maintenance is defined and understood in a variety of ways. Barbarosoglu (2018), stated that maintaining a building requires a mix of administrative and technical operations during the operating phase to make sure all of the structure's components are in the proper operational condition. Maintenance is defined by British Standards (BS 3811:1984) as a combination of all operations carried out to keep an item or restore it to an appropriate state. The economic worth of a structure is retained and its lifespan is increased significantly by building maintenance. Odediran et al. (2012) posited that the main purpose of buildings is to create hospitable and secure environments for a variety of social and economic activities. But, as a building's components and components deteriorate, it becomes necessary to choose strategies that ensure the positioning and availability of features that support ease and safety.

According to Alani (2012), maintaining and sustaining infrastructure is still important for national growth, while its absence, particularly in the public sector, is harmful. Several academics and professionals have identified a number of root causes for Nigeria's appalling maintenance culture. A lack of maintenance policies, mediocre leadership, attitude issues, and corruption are some of the key causes of the poor maintenance culture, according to Tijani et al. (2016). For all other areas of the Nigerian economy, the situation is essentially the same. Similar to this, Iruobe (2011) stated that the lack of awareness and appreciation of maintenance dynamics in most businesses was one of the factors causing the poor maintenance cultures on the Nigerian infrastructures. Iruobe (2011) claims that this has hampered the use of a reliable professional approach to maintenance tasks.

According to Shohet (2003), the effectiveness of tertiary institutional hostel buildings and their constituent parts depends largely on continuous and planned periodical maintenance, which obviously presents a challenge to the management and maintenance managers of institutions to implement precise planning based on a well-structured maintenance programme. According to Amusan's (2003) research, every component of a house degrades at a

different rate depending on the building's function, materials used, design quality, level of craftsmanship, environment, and use. Olagunju (2012) discovered variables that affect how well residential building requirements are maintained. According to the study, there are eight elements that are important to the physical state of buildings in Nigeria's Niger State. The factors include the state of the building's structural components, its roof, its restrooms, how waste water is discharged from them, the walkways inside the structure, the state of the electrical wires and switches, and the surface of its inner walls.

Pintelon and Parodi-Herz (2008) noted that maintenance management has grown to be a very complicated role that requires both technical and managerial expertise while also demanding flexibility to adapt to the changing business environment. The body of knowledge for maintenance management has not been nearly as extensively established or structured over the past 1.5 decades as those of other disciplines (Visser, 2002). Poor building maintenance, according to Bamidele (2006) and Fadamiro (2002), is a major contributing factor to building collapses in Nigeria. Natural occurrences, flawed designs, shoddy construction, use of inferior building materials, improper procedure, and exploitation of the construction process are a few others. Hence, it is impossible to overstate the cost of construction failures in terms of human lives lost and immense economic waste (loss of investments, jobs, revenue, etc.).

3. Research Methodology

3.1 Study area

The research was conducted at the Federal University of Technology Minna (FUTMINNA), a nationally funded institution of higher learning situated in Minna, the state capital of Niger State, in Nigeria's north central geopolitical region (Figures 1 and 2). As a sizable city, Minna metropolis covers an area of 76,363 square kilometres. Its geographic coordinates are 9.58 east of the Greenwich Meridian for latitude and 6.54 east of the Greenwich Meridian for longitude, respectively. There are two distinct local governments in Minna (Chanchaga and Part of Bosso LGA).



Figure 1: Map of Nigeria Showing Niger State



Figure 2: Map of Minna Showing Gidan Kwano

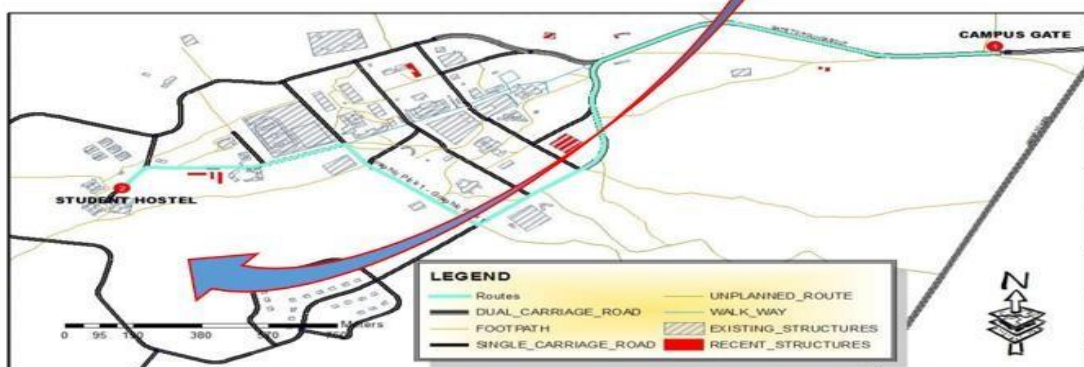


Figure 3: Map of Fed. Uni. of Tech. Minna Gidan Kwano Campus Showing the Students' hostel

On 10,650 hectares of land in Gidan Kwano, which is situated alongside the Minna-Kataregi-Bida Road, is where FUTMINNA is situated (Figure 3). The Bosso local government is in charge of the community of Gidan Kwano, which is part of Minna. The presence of the university explains 70% of the entire population, which is primarily made up of university students, living in the Gidan Kwano community, making it the most significant growth factor.

The most practical method for gathering data is the quantitative research strategy, which is used in this study. It entails a number of sequential processes of collecting quantitative data. An organised questionnaire that could be understood by individuals both within and without the building industry was utilised as the research instrument in order to collect primary data for this study. It provides priority to figuring out the hostel's maintenance level and the various aspects that affect it. The checklist and Likert item/scale were used as closed-ended questions, which were adapted from Akande et al (2021). Residents of the various levels and departments of the hostels of tertiary institutions in Minna, Nigeria, are the study's target population. Out of 150 issued questionnaires, a total of 120 responses were gathered at the end of the survey period. Just 108 responses, however, met the criteria for the analysis: each question was thoughtfully answered, with no ambiguous responses (i.e., marking all the same answers). The most recent version of the Statistical Package for Social Sciences was used to analyse the data from the questionnaire (SPSS).

4. Results

4.1 Demographic information of the respondents

The following list includes all respondents' complete demographic data: A total of 108 people, 66.7% of whom were men and 36% of whom were women, participated in the study, according to the demographic distribution. Further research revealed that the majority of respondents (38.0%) and 500-level (final-year) students were 100-level students. This is to be expected as first-year students typically receive preference for hostel rooms so they can acclimatise to the new academic setting. The Gidan Kwano campus hostel is home to the most respondents (48.1%), followed by the Bosso campus hostel (36.1).

4.2 Various factors affecting building maintenance

As a result of Table 1, the primary variables influencing building maintenance were determined. The respondents agreed that each of the criteria stated in the table are some of the numerous aspects impacting building maintenance, and this was accomplished using a 5-point Likert scale with a mean score of 3.0 as the conclusion of the analysis. Lack of finances (WM = 3.48), which has a ranking of 1, is the factor that is most commonly accepted when compared to other factors. This finding is in line with that of Osuagwu et al. (2021), who claim that there are numerous issues with the maintenance of the country's infrastructure, including buildings. One of the major issues is money; inadequate government funding exists for both public and private building maintenance.

Table 1: Factors Affecting Building Maintenance

S/N	Factors Affecting Building Maintenance	WS	WM	Decision rule	Rank
1	Un-qualified expert	361	3.34	Agree	2nd
2	Lack of adequate fund	376	3.48	Agree	1st
3	Building Materials	355	3.29	Agree	3rd
4	Climate change	339	3.14	Agree	4th
5	Government Policy	338	3.13	Agree	5th

WS =weight sum, WM = weight mean

4.3 Prevailing factors affecting building maintenance of students' hostel buildings

The analysis's findings are shown in Table 2, which highlights the key elements that influence the maintenance of buildings housing students. Using a 5-point Likert scale with a mean score of 3.0, this conclusion was reached. The findings showed that the top four problems impacting the maintenance of the students' hostel building are underfunding, overpopulation, delays in releasing funds, and exposure to weather (WM = 4.44, 4.38, 4.33, and 4.25) with rankings of first, second, third, and fourth correspondingly. Moreover, wear and tear (WM = 2.45) has been identified as the least pervasive element in this study, with a ranking of 10. The first-placed inadequate fund may not be unrelated to the possibility that, at the time of decision, specific funds may have been put aside during programme development and maintenance execution. Hence, the amount of funding that the institution has at its disposal could have a big impact on how the plan is developed, how the strategy is carried out, and so on.

Table 2: Prevailing factors affecting building maintenance of students' hostel buildings

S/N	Prevailing Factors Affecting Building Maintenance of Students' hostel	WS	WM	Rank	Remark
1	Wear and tear	265	2.45	10th	Least
2	Fittings and Components ageing	356	3.30	8th	Moderate
3	Exposure to weather	459	4.25	4th	Most
4	Inadequate fund	479	4.44	1st	Most
5	Delay in release of funds	468	4.33	3rd	Most
6	Over-population	473	4.38	2nd	Most
7	Approval protocol	387	3.58	5th	Next to moderate
8	Delay in response to complaint	372	3.44	7th	Moderate
9	Mis-management	385	3.56	6th	Next to moderate
10	Unavailability of appropriate tools	299	2.77	9th	Next to least

4.4 Maintenance Planning/Improvement

The outcomes of maintenance planning and improvement are displayed in Table 3. This was established with a 3.0 mean score. According to the table, the respondent answered that hostel or lodge management prioritises maintenance duties and follows up on complaints to a low degree (WM = 2.60 and 2.57), placing them first and second, respectively. While the administration of the hostel and lodge works to prevent breakdowns and failures, yearly maintenance is completed, and shutdowns and significant repairs that are planned in advance are extremely uncommon (WM = 2.39, 2.24, and 2.17) with rankings of third, fourth, and fifth, respectively.

Table 3: Maintenance Planning/Improvement

S/N	Statement	WS	WM	Rank	Remark
1	Priorities set for maintenance tasks in your hostel/lodge	278	2.57	2nd	To low extent
2	Shutdowns and major repairs planned in advance	234	2.17	5th	To a very extent
3	Yearly maintenance done	242	2.24	4th	To a very extent
4	Hostel/lodge management follow up complaints	281	2.60	1st	To low extent
5	Hostel/lodge management try to prevent breakdowns and failures from occurring	258	2.39	3rd	To a very extent

Table 4 shows the correlation result for the various factors affecting the maintenance of a student's hostel. From the result, there is a negative association between fittings-component ageing and priorities set for maintenance tasks in the hostel ($p\text{-value} = 0.013 < 0.05$), while there is a positive correlation (relationship) between fittings-component ageing and approval protocol ($p\text{-value} = 0.01 < 0.05$). In addition, there is a negative association (correlation) between hostel management's attempts to prevent breakdowns and failures from occurring and fittings and component ageing ($p\text{-value} = 0.046 < 0.05$).

Table 4: Correlation analysis on various factors and building maintenance

Building maintenance/Factors	Wear and tear	Fittings and Components ageing	Exposure to weather	Inadequate fund	Delay in release of funds	Over-population	Approval protocol	Delay in response to complaint	Mis-management	Unavailability of appropriate tools
To what extent are priorities set for maintenance tasks in your hostel? Sig. (2-tailed)	0.04	-.238*	-0.069	0.091	0.05	-0.036	.248**	-0.041	-0.104	0.044
To what extent shutdowns and major repairs planned in advance? Sig. (2-tailed)	0.681	0.013	0.476	0.348	0.605	0.71	0.01	0.675	0.285	0.653
To what extent is yearly maintenance done. Sig. (2-tailed)	-0.016	-0.162	-0.019	-0.088	0.041	0.022	0.093	-0.1	-0.036	-0.041
Does the hostel management follow up complaints? Sig. (2-tailed)	0.867	0.094	0.844	0.363	0.671	0.822	0.339	0.304	0.71	0.673
To what extent the hostel management try to prevent breakdowns and failures from occurring? Sig. (2-tailed)	0.051	-0.135	0.075	0.057	0.115	-0.093	0.017	-0.111	-0.001	-0.071
	0.597	0.163	0.442	0.558	0.234	0.34	0.863	0.252	0.99	0.464
	-0.065	-0.151	-0.033	0.187	0.013	-0.044	0.037	-0.119	-0.071	0.036
	0.505	0.121	0.734	0.055	0.892	0.654	0.707	0.225	0.471	0.718
	0.055	-.194*	-0.032	0.15	0.024	-0.11	0.1	-0.173	0.098	-0.02
Sig. (2-tailed)	0.577	0.046	0.745	0.124	0.809	0.258	0.307	0.075	0.315	0.837

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

5. Discussion

The unqualified expertise of hostel managers and the compromise of the quality of building materials used during construction and restoration lead to little attention being paid to hostel maintenance, which is practically equivalent to non-maintenance of hostel buildings. This can be because there is little to no money left aside for maintenance once the structure is completed. The results of this study also showed that the hostels' poor maintenance management system is strengthened by insufficient financing and an excess of guests. One of the variables that contributes to structural degradation and failure is identified as low maintenance culture. Studies and observations reveal that many of the campus' buildings were neglected for years after they were constructed and occupied, which caused several of them to deteriorate to the point of collapse. This study backs up Adenuga's (2012) assertion that poor building management and construction practises, in addition to poor design, can shorten a structure's lifespan.

Many hostels and other academic buildings need to undergo tests of structural integrity and investigations to establish their structural stability as part of the efforts to stop the threat of building collapse. Building systems will deteriorate with time, and this can be severe enough to compromise a building's structural integrity. This viewpoint is in line with Olubi & Adewolu's (2018) assertion that building deterioration, failure, and collapse rates are significantly influenced by the kind and method of maintenance. Building materials begin to age and degrade as soon as they are constructed (i.e., wear and tear), and some of these processes might impact the building's structural integrity. No building should be expected to last indefinitely, but buildings last longer when they are subjected to good quality control, routine inspections to spot flaws and potential causes, and proper maintenance. Institutions of higher learning need to adopt a culture of maintenance by hiring experts to do routine maintenance on their structures.

The results showed that poor maintenance and a careless attitude on the part of institution authorities towards building maintenance could lead to decay, degradation, and poor performance, which could eventually endanger the safety of building occupants. This was supported by the claims made by Windapo and Rotimi (2012) that some construction industry stakeholders engage in unsustainable practises by failing to take the long term into account in their decisions, significantly contributing to the general underperformance of buildings, their failure, and the frequent building collapses in Nigeria. Building maintenance should therefore not be disregarded as a process to guarantee that buildings and other assets have a good appearance and perform as efficiently as possible. Building owners and facility managers have a responsibility to examine and assess their properties to identify risks, develop maintenance schedules, and, if necessary, take corrective action.

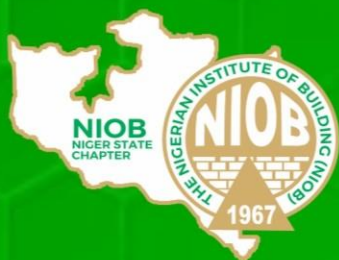
6. Conclusion and Recommendation

This study evaluates the variables affecting the maintenance of student residences in Nigeria. It assessed the hostel buildings' operational state of maintenance in higher education institutions and suggested maintenance improvements to lessen frequent building collapses. This study is important since it improved maintenance procedures in Nigeria's public higher education institutions in addition to contributing to the body of knowledge. Relevant problems that hinder efficient maintenance in the on-campus hostel for students have been identified. Improvements to maintenance procedures that might reduce building collapse include: (i) appropriate and prompt maintenance should be given priority so that the more urgent and unsafe buildings may be handled first and the less urgent ones can be completed later. So, the problem of a small or constrained budget should be solved by enabling the wise use and maximising of the maintenance budget's resources. (ii) To enable the least amount of maintenance stress and lower the risk of substandard maintenance having an adverse effect on users and the built environment as a whole, professionals in the built environment should be responsible for the design and construction of buildings without compromising those standards. (iii) Since minor flaws progress over time into significant flaws, there should be adequate and clear channels for channelling concerns connected to building repairs in order to reduce building repair time lag and, as a result, expense.

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