

**MANAGEMENT OF PUBLIC BUILDINGS: A CASE STUDY OF UNIVERSITY OF
BENIN TEACHING HOSPITAL STAFF QUARTERS**

BY

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**DEPARTMENT OF ESTATE MANAGEMENT
FACULTY OF ENVIRONMENTAL SCIENCES
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**THESIS SUBMITTED TO THE DEPARTMENT OF ESTATE MANAGEMENT,
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**IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF
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CERTIFICATION

This is to certify that **OGWUDA FAITH OKWUKWECHUKWU** with matriculation number ENV1504148 carried out this research work titled **Management of Public Buildings; A Case Study of University of Benin Teaching Hospital Staff Quarters** under my supervision and that this research work has not been previously submitted for the award of any degree in this or any other university.

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DATE

DEDICATION

This thesis is dedicated to God almighty for giving me the grace, knowledge, wisdom and strength that led to the successful completion of this work.

ACKNOWLEDGEMENTS

My deepest gratitude goes to God almighty for the gift of life and for giving me the courage and wisdom to complete this project. My gratitude also goes to my supervisor professor P.S Ogedengbe for the valuable support, patience , encouragement as well as the corrections he gave me from the beginning till the end of this thesis.

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I am highly indebted to my loving parents, Mr Austin Ogwuda and Mrs May Ogwuda for their prayers, financial support, moral advice and encouragement. May God almighty keep and preserve you to reap the fruit of your labor, Amen.

Finally, I want to express my heartfelt gratitude to my colleagues in the department of estate management and to all those that contributed to my successful stay in the University of Benin, for the teachings, encouragement, and the memories we shared. I pray we all meet at the top!

May God bless you all.

DECLARATION

I hereby declare that this thesis hereby submitted to the University of Benin for the partial fulfilment of the requirements for the award of Bachelor of science(B.Sc) in Estate Management has not been submitted in parts or full to any other institution. All information that has facilitated this research has been obtained and presented in accordance with academic rules and ethical conduct. I also declare that as required by these rules and conduct, I have cited and referenced all material that are not original to this work.

Signature: _____
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Date: _____

ABSTRACT

This research seeks to appraise the management practice adopted in public buildings in Benin city using university of Benin teaching hospital(UBTH) as a case study. It examines the condition and state of the public building, investigate the maintenance strategies adopted in the management of the public building, evaluate the challenges associated with the maintenance of the public building and assesses the user's satisfaction on the maintenance of the property. In order to achieve these objectives the view and opinions of the estate officers at UBTH and the tenants of the staff quarters were obtained through the administration of questionnaires to them and data was collected and analyzed with the aid of Statistical Package for Social Sciences(SPSS 10) and Microsoft Excel 2010. The result showed that on the condition and state of the building, the buildings are not habitable and the estate officers do not carry out regular inspections to ascertain the maintenance needs. In the aspect of the maintenance strategies adopted it was found that the corrective, routine, and planned maintenance are the core strategies employed by the management. The maintenance challenges were also discovered and ranked from top to bottom. In respect to the level of User's satisfaction with the maintenance of the public building, there was clear indication of dissatisfaction by the occupants with the state and maintenance of the buildings.

The study recommends a direct communication chain that would afford the occupants easy access whenever the need arises. To ensure more efficient and effective results this research also recommends a review of the maintenance strategies in the hospital. In addition it further recommends a comprehensive maintenance action on the dilapidated facilities and structures of the staff quarters. Lastly and most importantly, this research recommends the enlightenment of the users or tenants on the proper and sustainable use of the buildings.

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CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

With the beginning of the 21st century, property is recognized as a large capital-centre which can contribute to competency and profit and, as such, needs to be effectively managed (Douglas, 1996). A building exists to serve the user's space requirement (Lateef, 2012). The essence of management is to maximize the service life of a building, by delaying deterioration, decay, and failure. Building management is a complex and multi-faceted thought process that involves planning, directing, controlling, and organizing resources for the sustenance of the building's functional performance. There is a need for proper maintenance management to achieve excellent performance and yield maximum value on investment of public buildings (Emma & Syahrul, 2009).

Various definitions have been proposed for the term “maintenance”. An example of a conclusive one is ‘processes and services to preserve, repair, protect and care for a building’s fabric and engineering services after completion, repair, refurbishment or replacement to current standards to enable it to serve its intended functions throughout its entire life span without drastically upsetting its basic features and use (Olanrewaju, 2010). From this definition, maintenance is not about the building per se; rather, it is about the building’s occupants or users. This is the case because buildings are procured for the sake of the services (that is, comfort, protection, accommodation, security, and esteem) they offer to the users. It is the correct functioning of the building that the users desire, not the physical condition of the building. To the extent that the building is capable of allowing the users to perform their functions, the building is a source of value creation to the required service of accommodating, learning, teaching, and

doing research with specific reference to university buildings. Naturally, this is where the definition of maintenance should stem from. Unfortunately, this is not often the case; instead, building fabric is assumed to be the object or mission of maintenance. Optimum building performance is the most desirable pre-requisite in any maintenance process.

The use to which a building is put, the suitability of its design for the purpose, and the intensity and how it is used will, directly and indirectly, determine its maintenance management system. For instance, the value of a building varies according to the use of the building, and different standards may be adopted for the different types of building. Hospitals are complex organizations with various stakeholders, facilities, and materials closely linked and working together to accomplish their vital missions. The complex combination of people with different organizational roles and various types of materials and facilities working together with a variety of sensitive medical procedures makes operating costs of hospitals the highest among the public service organizations.

Maintenance management of hospital buildings is one of the complex subjects in the field of facilities management (Shohet, 2005). The management has to be considered in terms of the building function, the users' perception of the building's condition, and its relevance to their primary needs (Laccase et al, 1997). Contributing to this is the complex nature of hospital buildings, the delicate mechanical and electrical systems, and inadequate maintenance budgets. The qualities of the physical environment in which patients receive care affect patient recovery rate, staff satisfaction, and organization productivity. Such effects can be positive or negative. The hospital buildings have numerous different end users of indoor spaces and functions (Balaras et al, 2007).

According to Zawawi et al, (2010), public hospitals represents the most challenging group of public sector buildings to maintain. Over time, maintenance function has continuously gone up in terms of its importance. It is recognized that since poor maintenance practices lead to more frequent breakdowns, which may cause anything from inconvenience to catastrophe, maintenance has to be more reliable, more efficient, and more cost-effective.

From the foregoing, users' requirements are the essential prerequisite for the evaluation of the building. It is only then that maintenance activities can be planned, controlled, organized, and coordinated effectively and efficiently. What is critical to the users or occupiers of a building is the ability of the building to efficiently and effectively support the performance of the activities within and around the building and not necessarily the physical condition of the building per se. What is also critical to the maintenance organization is to meet the complex requirements of the users, and the building itself effectively and efficiently considering the organization's resources. This study, therefore, seeks to investigate the management of public buildings; A Case Study of the University of Benin teaching hospital staff quarters, Benin city as a representative case study.

1.2 Statement of Research Problem

Although research on public building maintenance as a whole continues today with more momentum than ever, the focus on hospital buildings choice has been overlooked with more focus on commercial buildings that generate higher financial returns. Government-owned hospital buildings especially their Staff Quarters are confronted with unique challenges that threaten their existence. The colonial architecture in some of the older hospitals, which were hitherto famous for their sturdiness and functionality, has now become less attractive because of the general neglect of the maintenance of the building. Overcrowding has also led to the

deterioration of these facilities. The state of maintenance and the physical surroundings in public hospital buildings are present health problems in public health care delivery. This deficiency is further found to originate from the institution's inherent government structure, which promotes inefficiencies and inflexibility through the imposition of bureaucratic impediments to operational effectiveness.

Maintenance works in public hospitals are often complex in nature. The quality of the maintenance manager is another factor found to be affecting the execution of maintenance operations in public buildings (Iyagba, 2005). This has a direct impact on staff performance, productivity, satisfaction, and turnover. Management is a living force and it is the force that gets things done to acceptable standards. According to Nous Hospital Consultants (2002), a hospital is not a mere building, but a complex social institution that handles the dynamics of life and death situations during the process of rendering health care. Furthermore, a mistake in hospital building management can cost the lives of many human beings at a time. These characteristics represent unique operating conditions and a bottom-line that involves much greater stakes than the profit-only vision of most business ventures. There is a need to evaluate the existing maintenance management practices of public hospital facilities to improve their standard for effective service delivery.

The health services provided by hospitals have led to become very important buildings. Healthcare has different groups of stakeholders such as patients, public or visitor, administrative and medical staff. It forms a complicated network that needs to be looked into, and the complexity of many services that require high support is the main challenge in managing hospital facilities. According to Ahmad-Riza (2006), building size and users' standards are the main factors in maintaining buildings. A proper maintenance management strategy helps to minimize

the problem of a major breakdown. In complex and complicated buildings such as hospitals which have a lot of very critical mechanical and electrical equipment, due to a shortage of budget for maintenance, a strategic plan needs to be developed. Managing health care facilities requires a special touch to improve outcomes and allow cost reductions (Hoadley, 2010). There are various factors that affect the performance of a hospital such as actual occupancy relative to planned occupancy, age of the building, building surrounding, managerial resources invested, and labour sources for implementing maintenance work either in-house or outsourced. Sometimes, what makes any organization fail is bad planning by the management. Another challenge to building maintenance is the lack or minimal consideration of input from the expertise of facilities managers who takes oversight responsibility of maintenance management in the design and utilization stages. Accordingly, most of these challenges can be minimized if the inputs of facilities management professionals are fully engaged.

1.3 Research Questions

The following questions are pertinent in achieving the goal of this study:

- a. what is the condition of the public building in university of Benin Teaching hospital?
- b. What form of maintenance strategies are adopted in the management of the public building?
- c. What are the challenges associated with the maintenance of the public building ?
- d. How satisfied are the end-users with the maintenance of the public facility?

1.4 Aim and Objectives

This study aim to appraise the management practice adopted in public buildings in Benin City; A Case Study of University of Benin teaching hospital (UBTH) Staff Quarters . This is with a view to providing information that can enhance the management of Public Buildings and improve their standard for effective service delivery. The objectives of this study are to:

- i. examine the condition of the public building in University of Benin Teaching hospital;
- ii. investigate the maintenance strategies adopted in the management of the public building;
- iii. evaluate the challenges associated with the maintenance management of the public building;
- iv. assess the users' satisfaction with the maintenance of the public facility;

1.5 Significance of Study

Improving the management and maintenance of buildings in public hospitals is a potential point for both reducing money spent and enhancing the quality level of services provided to users of the public buildings. The studies of Cobinah (2010) and Amankwa (2013) revealed that issues related to defects in the facility or building are not quickly reported by staff or users particularly in the use of hospital facilities in most developing countries. Consequently, they wait till the complete breakdown or shutdown of the asset before they report. This leads to the deterioration of these facilities that could help boost the level of productivity and hence increases the cost of repairs or maintenance of such items that have been spoilt. The study is however carried out for the sole purpose of determining the rate at which reports are made on defects in hospital buildings in Ghana and not public hospitals in Benin city.

Al-khatam (2003) identified and grouped the factors responsible for the high cost of maintenance in hospital buildings into seven (7) categories. They include engineering services, labour, building materials, environments, management and administration, budget and finance,

and building users. Ali et al. (2010) also found that factors such as building materials, building services, building age, the expectation of tenants, failure to execute maintenance at the right time, maintenance factors, political, outstanding maintenance charges, over budgeting and other factors contribute immensely to the high cost of maintenance. The study was focused on the financial implication of hospital maintenance, and not the approaches to the effective maintenance of hospital buildings.

This study will fill in the various gaps by identifying and examining the importance of maintenance on public buildings in the study area. Another importance of this research is that it will add to the existing body of knowledge on good maintenance practice in public hospital's staff quarters. It will help investigate the maintenance culture in the study area and how to improve the maintenance style adopted for the public building. The study will provide information that will help the management team and authorities responsible for the administration of public buildings such as the University of Benin teaching hospital (UBTH) to be aware of the state of the institution's facilities and its impact of health and safety hazards on users of the facilities.

1.6 Scope of Study

The scope of this study is limited to the management appraisal of University of Benin teaching Hospital (UBTH) staff quarters Benin city, Nigeria. The study will investigate the maintenance approaches adopted in the management of the public building, the challenges involved in the maintenance of the property, and explore users' satisfaction with how the facility is being maintained.

1.7 Limitation of Study

There were several difficulties encountered in the process of undertaking this research work. Meeting with my supervisor who is also the dean of the faculty was quite Difficult due to his busy schedules. Apathy on the part of the estate officers and residents of the staff quarters in filling and answering the questionnaires that were administered to them. Lastly, finance was a major constraint to the successful delivery of this research work.

1.8 Study Area

The study area is in Benin City, the capital of Edo State of Nigeria. Benin City is the capital and the largest city in Edo state in Southern Nigeria. The city comprises three Local Government Areas: Oredo, Egor, and Ikpoba Okha. But at present, sub-urbanization has stretched the city towards Oluku in Ovia South West and Egba in Uhumwunde Local Government Areas. Geographically, Benin City lies within Latitude $6^{\circ}20'$ and $6^{\circ}31'$ North of the equator and Longitude $5^{\circ}32'$ and $5^{\circ}41'$ East. It has a landmass of 112.5 square kilometres (Ministry of Lands and Survey, 2005). Benin City is a historical town. It was also the capital of Benin Kingdom, which flourished from the 14th through the 17th century. Then, the Oba exercised great influence in secular (traditional) affairs and civil administration. The population of Benin City was put at 53,753 in 1952 census and 100,693 by 1963 census. However, the city in the 1991 census was put at 780,976 persons (National Population Commission, 1991). The National Population Commission (2006) census recorded the population of the city to be 1,346,703. This population growth, no doubt reflects a dynamic urban centre with lots of pressure on land and housing provisions.

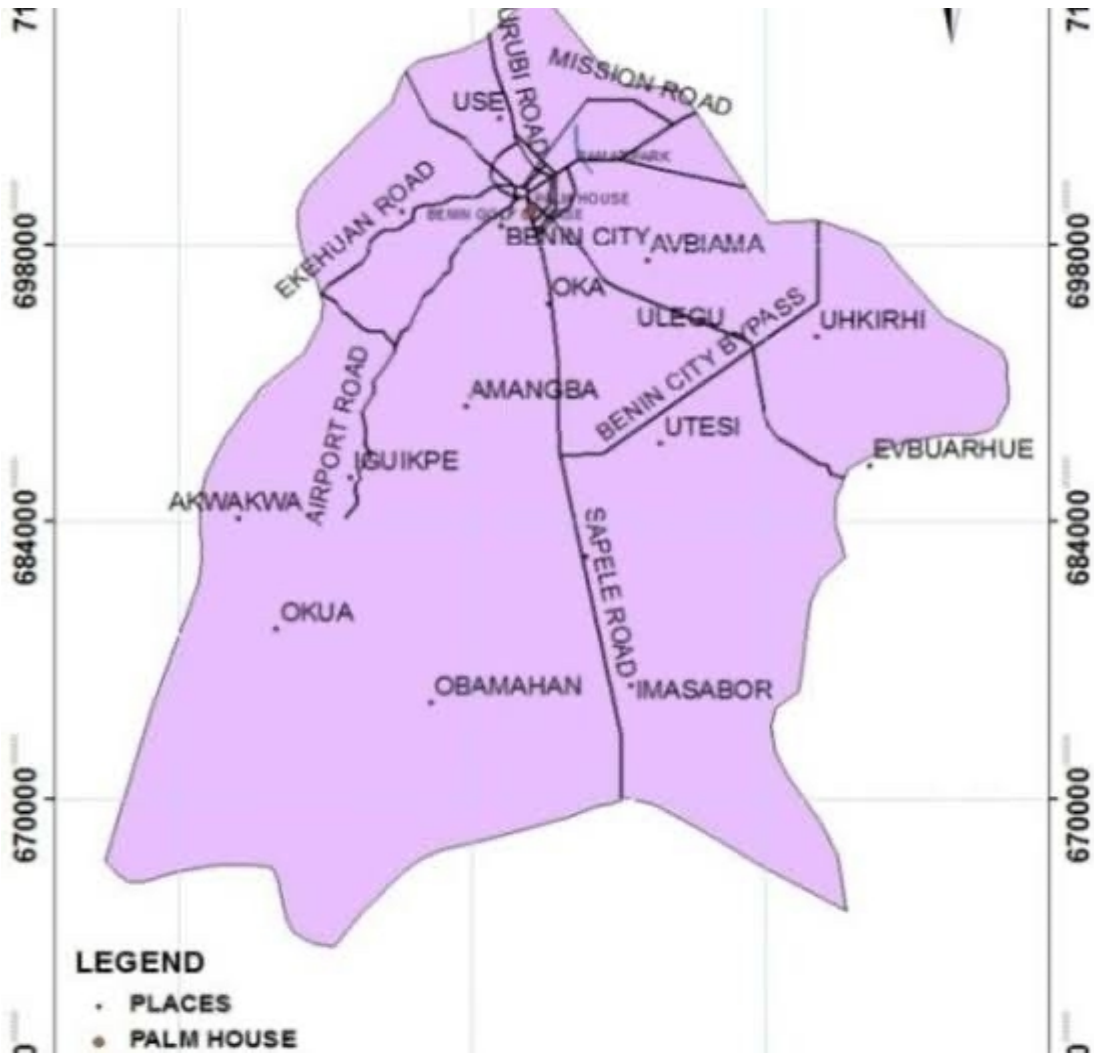


Figure 1.1: Map of Benin City

Source: Edo State Ministry of Lands and Survey, Benin city.

1.9 Definition of Terms

The following terms are explained herein to facilitate easy understanding of this research work;

1. **Management:** Management is a process of planning, decision making, organizing, leading, controlling the Human Resources, financial, physical and information resources of an organization to reach its goals efficiently and effectively.

2. **Maintenance:** Maintenance is a set of organized activities that are carried out in order to keep an item in its best operational condition with minimum cost acquired.

3. **Public Buildings:** Public buildings are any type of building that are accessible to the public and is funded from public sources.

4. **Staff Quarters:** Staff quarters are residential buildings constructed by the management of an organization to accommodate the staff of the organization.

5. **Maintenance Management:** Building maintenance management can be defined as the action which involves interacting or blend of technical, social, legal and economic elements that governs and manages the use of buildings.

CHAPTER TWO

LITERATURE REVIEW

2.0 INTRODUCTION

This chapter will review the existing literature on issues relating to the management of public buildings and the challenges associated in the management. It also focuses on relevant materials related to the conceptual issues as well as definition, and challenges of maintenance especially in public buildings.

2.1 An Overview on Public Buildings

Public buildings are any type of building that are accessible to the public and is funded from public sources. Typically, public buildings are funded through tax money by the Federal government or state or local governments. All types of governmental offices are considered public buildings. Public buildings generally serve the purpose of providing a service to the public. Many of these services are provided free to residents. This list includes public schools, libraries, courthouses and post offices.

Libraries: Public libraries are a type of building that is accessible to the public. Libraries are funded from the government through tax dollars. Libraries offer services to residents in the local county. They are an essential part of communities and offer many types of services. People visit libraries for many purposes including checking out books, magazines, publications, music and movies. The public can also visit a library to access the Internet, make photocopies and to join different types of programs. Libraries often offer programs such as children's reading programs, book reviews and crocheting clubs.

Schools: Schools are another type of public buildings. Public schools exist in nearly every town in this country. Many public schools are divided by grades where elementary grades are held in a different building than junior high and high school. Public schools are also funded through the government. Children are required to attend schools and the public schools offer free education to all students.

Courthouses: Courthouses are a common public building found in nearly every county in the country. A county, which can be made up of several towns, typically has one courthouse for the entire county. The courthouse is a public building that is also funded through the government. The public utilize a courthouse for many different purposes. Trials are held at courthouses; important documents are retrieved and most health departments are located within a courthouse.

Post Offices: A post office is a government owned public building. A post office is a non profit organization that is open to the public. The post office performs many different mail functions including receiving it, handling it and delivering it. The public can also rent post office boxes, obtain passport applications and purchase money orders there.

Hospitals: Hospitals are the most complex of building types. Each hospital is comprised of a wide range of services and functional units. These include diagnostic and treatment functions, such as clinical laboratories, imaging, emergency rooms, and surgery; hospitality functions, such as food service and housekeeping; and the fundamental inpatient care or bed-related function. This diversity is reflected in the breadth and specificity of regulations, codes, and oversight that govern hospital construction and operations. Each of the wide-ranging and constantly evolving functions of a hospital, including highly complicated mechanical, electrical, and telecommunications systems, requires specialized knowledge and expertise. No one person can reasonably have complete knowledge, which is why specialized consultants play an important

role in hospital planning and design. The functional units within the hospital can have competing needs and priorities. Idealized scenarios and strongly-held individual preferences must be balanced against mandatory requirements, actual functional needs (internal traffic and relationship to other departments), and the financial status of the organization.

In addition to the wide range of services that must be accommodated, hospitals must serve and support many different users and stakeholders. Ideally, the design process incorporates direct input from the owner and from key hospital staff early on in the process. The designer also has to be an advocate for the patients, visitors, support staff, volunteers, and suppliers who do not generally have direct input into the design. Good hospital design integrates functional requirements with the human needs of its varied users.

Staff quarters: A public hospital staff quarters is a building attached or detached from the main unit for the sole purpose of housing the hospital staff. Such as the resident doctors, nurses, copers, interns etc. The staff quarters is a government owned public building and it is funded through the government.

2.2 Concept of Management

Management is a process of planning, decision making, organizing, leading, controlling the Human Resources, financial, physical and information resources of an organization to reach its goals efficiently and effectively. Management means to forecast and to plan, to organize, to command, to coordinate and to control. Management is also the act of getting people together to accomplish desired goals and objectives using available resources efficiently and effectively. Since an organization can be viewed as systems, management can also be defined as human actions including design to facilitate the production of useful outcomes from a system.

Aluko(2012) described management as the process of getting things done through people and other resources.

2.3 Property Management

Property Management is defined by Thorncroft (1965) as the direction and supervision of an interest in landed property with the aim of securing an optimum return, this return need not always be financial but may be in terms of social benefits, status, prestige, political power or some other goal or group of goals. This definition elaborates the various perceptions of aims of holding interest in real estate. While that of private ownership is likely to be fitted toward profit maximization that of public holding is majorly on providing the social needs of people. Property management was also defined by Macey (1982) as the application of skill in caring for the property, its surroundings and amenities and in developing a sound relationship between landlord and tenant and between tenants themselves in order that the estate, as well as the individual houses, may give the fullest value to both the landlord and the tenants. The main aim and objectives of property management is seeing maximum economic return from available resources having regard to present and future social requirements. The type of property management techniques to be adopted would be related to the nature of estate being managed e.g. such estate may be large or small, concentrated or scattered, vacant land with or without buildings, freehold leasehold, residential, commercial, industrial, recreational special etc. public or private.

Property management of public buildings particularly, poses unique form of problems ranging from over inflation of invoices, corruption, nepotism, and awarding of contract works to contractors not knowledgeable about the jobs to be carried out.

2.4 Concept of Maintenance

Maintenance is a set of organised activities that are carried out in order to keep an item in its best operational condition with minimum cost acquired. Activities of the maintenance function could be either repair or replacement activities, which are necessary for an item to reach its acceptable productivity condition or these activities, should be carried out with a minimum possible cost (Abed 2010). Maintenance of an item is an important part in all management processes because it can affect the value, effectiveness and lifespan of the item.

According to Oladejo (2015), the main goal of maintenance is to minimise related operating costs. An all-encompassing maintenance builds in the performance of the buildings, maximises personnel safety, minimises operational costs, environmental threat and the risk of material damage. Oladejo also stated that, maintenance is one of the main domains of knowledge with which facility or property management is faced.

Building maintenance plays a vital role in building operation.

2.5 Definition of Maintenance

British Standard Glossary of terms (3811:1993) defined maintenance as the combination of all technical and administrative actions, including supervision actions, intended to retain an item in, or restore it to, a state in which it can perform a required function.

According to BS 3811(1964) building maintenance can be defined as work done to keep a building or restore it to its initial state or a currently accepted standard.

Francis et al. (2001) also defined building maintenance as an action which involves interacting or blend of technical, social, legal and economic elements that governs and manages the use of

buildings. Francis further explained building maintenance as the combination of technical and administrative action to ensure the items and elements of a building is in an acceptable standard to perform its required function. As a study by Abed (2010) shows that, maintenance is the combination of both technical and administrative actions to keep a property in a good shape.

Mallam (2013) also defined building maintenance as works done in order to keep, restore or improve every facility. That is, every part of building, its services and surrounds, to a currently accepted standard and to sustain the utility and value of the facility.

2.6 Purpose of Maintenance

According to Mydin (2015) and Al-Zubaidi (1997) the main purpose of building maintenance is to keep the building in its original condition as long as possible, so as to serve its desired purpose effectively, to minimize production cost, to reduce maintenance time and cost, and to enhance the building's condition. Owolabi and Amusan(2014) stated that the aim of maintenance is to keep all facilities and machines in a condition that makes them operate effectively and at their maximum profit making capacity. Enshassi et al. (2015) also stated that the main aim of maintenance is to protect the building in its original state, so it can serve its purpose efficiently. A major purpose of building maintenance is to keep all equipments in a good working situation in order to meet the expectations of the users. The aim of building maintenance is to ensure that buildings' services are in a safe condition, to manage and protect the quality of the building, and lastly to preserve the value of physical assets.

2.7 Classification of Maintenance

According to Adolfo (2007), maintenance could be grouped into two main types. They are; preventive maintenance and corrective maintenance.

1. Preventive Maintenance

Preventive maintenance is defined as maintenance carried out at predetermined intervals or according to prescribed criteria and intended to reduce the probability of failure or the degradation of the functioning of the equipment. Preventive maintenance can be predetermined or condition based.

- Predetermined maintenance. Preventive maintenance carried out in accordance with established intervals of time or number of units of use (i.e. scheduled maintenance) but without previous item condition investigation;

- Condition based maintenance. Preventive maintenance based on performance and/or parameter monitoring and the subsequent actions. Performance and parameter monitoring may be scheduled, on-request or continuous. Within the condition based maintenance we include the predictive maintenance that can be defined as follows:

- Predictive maintenance. Condition based maintenance carried out following a forecast derived from the analysis and evaluation of the significant parameters of the degradation of the equipment.

2. Corrective Maintenance

Corrective maintenance is maintenance carried out after fault recognition and intended to put the equipment into a state in which it can perform a required function.

Corrective maintenance can be immediate or deferred:

- Immediate maintenance. Maintenance which is carried out without delay after a fault has been detected to avoid unacceptable consequences;

- Deferred maintenance. Corrective maintenance which is not immediately carried out after a fault detection but is delayed according to given maintenance rules.

Furthermore, the University of California (2018) also classified maintenance as planned, preventive, unplanned/reactive, and emergency.

1. Planned Maintenance

Planned maintenance, also referred to as "programmed" or "scheduled" maintenance, is the upkeep of property, machinery, and facilities, including buildings, utility systems, roads, and grounds. Planned maintenance is often characterized by its routine or recurring nature.

2. Preventive Maintenance

Preventive maintenance is that portion of the overall maintenance program that provides the periodic inspection, adjustment, minor repair, lubrication, reporting, and data recording necessary to minimize building equipment and utility system breakdown and maximize system and equipment efficiency.

Preventive maintenance:

- Utilizes planned services, inspections, adjustments, and replacements designed to ensure maximum utilization of equipment at minimum cost.

- Is a program in which wear, tear, and change are anticipated, and continuous corrective action is taken to ensure peak efficiency and minimum deterioration. - Includes cleaning, adjustment, lubrication, minor repair, and parts replacement.

All are performed on scheduled frequencies in accordance with written maintenance instructions.

Preventive Maintenance Program procedures are designed to fulfill the needs of the Facility. The purpose of the program is to produce cost savings by:

- Reducing the downtime of critical systems and equipment. - Extending the life of facilities and equipment.
- Improving equipment reliability.
- Ensuring proper equipment operation.
- Improving the overall appearance of facilities.

3. Unplanned or Reactive Maintenance

Unplanned/reactive maintenance is the unplanned response to maintenance requests which do not have emergency status. In general a facilities organization should plan and schedule as much of its maintenance activities as possible. Work that is scheduled and planned is done much more efficiently than that done by reactive maintenance.

4. Emergency Maintenance

This defines emergency maintenance as the repair or replacement of facility components and equipment requiring immediate attention because the functioning of a critical system is impaired or because health, safety, or security of life is endangered. Emergency maintenance supersedes all other categories of maintenance.

2.8 Maintenance Management

Maintenance management is defined as the process of maintaining a company's assets and resources while controlling time and costs, ensuring maximum efficiency of the manufacturing

process. Maintenance management has gone from a rather archaic, tedious, handwritten process to a computerized maintenance management system.

Francis et al., (2001), defines building maintenance management as an action which involves interacting or blend of technical, social, legal and economic elements that governs and manages the use of buildings; Francis further explained building maintenance as said to have been the combination of technical and administrative action to ensure the items and elements of a building is in an acceptable standard to perform its required function. Francis however concurs to a study done by Seeley as maintenance management been a blend of technical nature carried out to ensure that resources are used efficiently and in acceptable standards. Furthermore, Francis also looked maintenance management from another angle in terms of blending social, legal, economic and administrative elements that governs and manages the use of building.

Adolfo (2007) also described maintenance management the process of leading and directing the maintenance organization. Adolfo further indicated that, further definitions consider maintenance management as the management of all assets owned by a company, based on maximizing the return on investment in the asset. Another approach indicates how a maintenance system can be seen as a simple input-output system. The inputs are the manpower, management, tools, equipment, and among others, and the output is the equipment configured well and working reliably to reach the planned plant operation. Herbert (2010) also reiterated that, critical infrastructure and industrial facility owners and operators have adopted the term “asset or maintenance management” to describe their core role in life that is caring for and obtaining a satisfactory level of service from the physical plant, infrastructure, and associated facilities. Their concept is that, since facilities represent significant capital assets, they must be protected

through well- planned and appropriately funded programmed maintenance. Herbert agreed with Adolfo in the way of managing facilities or properties through the maintenance of them to enhance their use and obtain the maximum use of the facilities to help achieve their returns of investment and the organisational goals as a whole. Moreover, Herbert further indicated that, since facilities or properties are capital asset they need to be protected by a well-planned and appropriately funded programmed maintenance so that it may not be a challenge to be maintained. By so doing, their investment can be protected.

2.9 Maintenance Policy

A maintenance policy is one of the most important elements of effective maintenance management. BS 3811 (1992), defines maintenance policies as a strategy within which decisions on maintenance are taken.

A maintenance policy is essential for continuity of operations and a clear understanding of the maintenance management program, regardless of the size of a maintenance organization. Although, most maintenance organizations have manuals containing items such as policies, programs, objectives, responsibilities, and authorities for all levels of supervision, useful methods and techniques, and performance measurement indices.

Aldofo (2007), defines maintenance policy as the interrelationship between its maintenance echelons or lines, the items indenture levels and the maintenance levels to be applied for the maintenance of an item. Aldofo stated that, maintenance policy develops the maintenance concept within the organization and sets up solid foundations for the excellence in maintenance management.

Anon (2018) also defines maintenance policy as a written statement, developed by the organization's leadership team, articulating the target maintenance standard and formal commitment by the owners to that standard. The purpose of the maintenance policy is for commitment, guidance, and vision or direction.

2.10 Maintenance of Public Buildings

Looking at the deplorable state of public buildings across the country for decades, a large chunk of the country's resources has been channeled towards Transportation Infrastructure, Government administrative Buildings for ministries and Parastatals, Colleges of Education, Universities, Primary and Secondary Schools. All are geared toward repositioning the underdeveloped economy. However, one remarkable action according to needed to ensure sustainability of these varieties of infrastructure has not been given the right and sufficient attention in terms of how to carry out its maintenance operations. Adenuga and Iyagba, (2005) submitted that public buildings are in very poor and deplorable conditions of structural and decorative disrepairs. In spite of millions of Naira spent to erect all these buildings, they are left, as soon as commissioned to face premature but steady and rapid deterioration, decay and dilapidation (Adenuga, 2012). Public building maintenance is referred to a way to preserve or keep the economic and societal value of building. BS3811 (1984) defines maintenance as “the construction of all technical and associated administrative actions intended to retain an item in or restore it to a state in which it can perform its required function”. Public buildings are required to provide a conducive and safe environment for various human activities. This, essentially, is the question of function. The extent to which the buildings provide the required environment for the required activity is measure of the functionality of the building.

Today's government – operated public hospital is confronted by unique challenges that threaten its very existence (Stolzenberg, 2004). The characteristics and the structure of the public hospital, by their nature lack the capacity to compete in a market – driven economy. This deficiency is further found to originate in the institution's inherent government structure. This structure promotes inefficiencies and inflexibility, the imposition of bureaucratic impediments to operational effectiveness. According to Shohet, (2003), the performance of hospital buildings and their components depends to a large degree on continuous and planned periodical maintenance.

Historically, in both public and the private sectors, maintenance is seen as an avoidable task which is perceived as adding little to the quality of the working environment, and expending scarce resources which would be better utilized. In Nigeria, according to Iyagba and Adenuga, (2005), public buildings are in poor and deplorable conditions of structural and decorative disrepairs. In spite of millions of Naira spent to erect all these buildings, they are left as soon as commissioned to face premature but steady and rapid deterioration, decay and dilapidation. The Built environment expresses in physical form the complex, social and economic factors, which give structure and life to a community (Lee, 1995). According to Banful (2010) the financial consequences of neglecting maintenance is often not only seen in terms of reduced asset life and premature replacement but also in increased operating cost and waste of related and natural and financial resources. Maintenance is related to the background of any project, unfortunately development plans and approved recurrent and capital estimates in public hospitals in Nigeria have revealed that thought have not be given to maintenance work (Onifade, 2003).

2.11 Importance of maintenance of public buildings

Public building maintenance is as important as the efforts put into the building. It is costly to put a structure and leave it to deteriorate and fail. It is colossal loss of investment and will eventually have a resultant effect on the development of the area, community or state it is meant for. For example, a well-built hospital requires proper maintenance to remain relevant and be in a good working condition so as to continue to serve people in the community for which it is built. However, until, (Seely 1985) indicated that recently building maintenance has been a neglected field of technology. (Anderson 1967) said that the prime aim of maintenance is to preserve a building in its initial state, as far as practicable, so that it effectively serves its purpose and sees the main purpose of maintenance of building.

Public building maintenance is very necessary for the following reasons:

- a. Retaining value for which it is built
- b. Maintaining building in good condition which will continue to serve or fulfill its functional requirements, that is, physically, economically, and up-dated functionally.

c. Presenting good appearance in order to preserve and beautify the built up-environment.

According to (Seely 1985) the standard of maintenance achieved has an important influence on the quality of the built environment that they find themselves. There seems a little doubt that society will continue to expect higher standard in new existing buildings. (Anderson 1965) said the amount of necessary building maintenance work produce could improve by improving methods of designs specification and construction. In addition, effective maintenance management embraces many skills. On the other hand, (Seely 1985) said that maintenance will remain a significant and important part of the work of construction in the industry for many years

to come. (Seely, 1985) explain that building maintenance has great significance to the nation's economy not only because of the scale of expenditure involved, but also because it was important to ensure that the nation's stock of buildings both as a factor of production and of accommodation was used effectively as possible. If the value and ancient of the nation's building stock is to be kept at present levels then acceptable maintenance standards needs to be maintained throughout the economic life of the nation.

2.12 Challenges of Maintenance Of public buildings

As identified by Derek and Paul(1967), there are serval factors that hinder or delay maintenance on buildings and they are;

i. Lack of adequate finance: inadequate finance is a major constraint on effective property management, this is because maintenance budgets are the easiest to cut when money is scarce. According to Derek and Paul (1987), maintenance expenditure can be absorbed more easily in commercial and industrial organizations where it may account for as little as 0.5% of turnover, but even in these cases maintenance is taken for granted except when it threatens production or profitability. However, the situation is more serious in the public sector where damaging effects of poor maintenance are less immediately obvious. For housing estates, it is common for organizations to emphasize the provision of new houses, with little funding provided for maintaining existing stock. Day-to-day repairs are neglected and efforts at improvements and rehabilitation are considered lower priority than new construction. This problem of lack of adequate finance indeed results in rapid deterioration of existing structures resulting in increase in the demand for new houses because poorly maintained houses are not only unpopular; but they soon reach the stage where the structure itself deteriorates and rebuilding has to be considered.

ii. Bad management: This is one of the major factors that hinders management and maintenance of public buildings. Majority of the maintenance personnel's are bad and corrupt. Some embezzle the funds allocated for the maintenance of these public buildings.

Also, there is laziness and lack of zeal to work on the part of the maintenance personnel's as there do not follow up the maintenance process to ensure that the work is properly done.

iii. Poor building design- it is not uncommon to find that buildings are inherently expensive to maintain because of inappropriate priorities applied during the design phase. Poor detailing and the specification of unsuitable components and materials are common complaints. In addition, construction errors arising from inadequate drawings and specifications, coupled with poor workmanship because of contracts awarded to incompetent contractors are frequent causes of rapid physical deterioration in buildings. Good design should allow accessibility and adequate working space for essential maintenance such as cleaning, and minor repairs to pipes, ducts and cables.

CHAPTER THREE

RESEARCH METHODOLOGY

3.0 Preamble

To aid in meeting the aim and objectives of the research, this chapter assesses research methods with the view of looking out for the suitable method to respond to the research questions stated.

It presents the type of methodology adopted, the methods of data collection

3.1 Research Approach and Design

This research adopts the survey research design. In order to respond to the research questions and to achieve the objectives of the study, the case study method of qualitative and quantitative research was used to collect the research data. This was achieved through the combination of existing literature on management of public buildings and gathering data through questionnaire and structured interview.

3.2 Target Population

For the purpose of the research, the target population include the estate officers in the estate unit of university of Benin teaching hospital, Benin city and the tenants of the Staff Quarters of the hospital.

3.3 Data Requirements

All the data required for this study are systematically linked with each objective. The first objective deals with the condition and state of the Case Study. This involves the habitability of the buildings, inspection by the estate officer to ascertain maintenance need, major areas in need of maintenance and how the building can be improved. On the second objective which has to do with maintenance strategies adopted in the management of the public building, the data required

are availability of maintenance policy, the developer of such policy if any, the occurrences that usually prompt maintenance activities, the maintenance strategies in practice and the maintenance strategies that are perceived to be more effective.

The third objective gears towards challenges associated with the maintenance and management of the public building and the required data are the challenges as well as the factors responsible for the current state of the buildings. The last objective entails the users' satisfaction with the maintenance of the public facility. This connotes the period within which complaints are responded to, effect of current state of the building on occupiers' livelihood, level of satisfaction in the building as well as the ways its maintained and managed.

3.4 Sampling Frame

The sampling Frame comprises of the total number of Estate officers in the Estate Unit of university of Benin teaching hospital(UBTH) and the tenants/residents of the university of Benin teaching hospital staff quarters. There are five (5) estate officers in the estate unit and two hundred and seventy-one (271) tenants/ residents of the staff quarters according to the database presented at the Estate office.

3.5 Sampling Size

Sample Size is regarded as a specific proportion of sample frame from which the required data will be collected. It is meticulous processes of selecting from the sample frame, a set of representative units that will adequately reflect the characteristics of the target population. In this regards, the total enumeration was adopted for Estate Officer due to their very small population size (5) while the sample size for Residents/Tenant was determined through Taro Yamane model.

The formula of Taro Yamane Model is as thus: $n = \frac{N}{(1+N(e)^2)}$

Where;

n= sample size

N= known population size (which is 271)

e= margin of error, usually 5% (which is 0.05)

$$\text{Therefore: } n = \frac{271}{(1+271(0.05)^2)}$$

$$n = \frac{271}{(1+0.6775)}$$

Sample Size (n)=161

Given the above expression, the summation of the sample size for the Estate officer (5) and Resident/Tenant (161) was One hundred and Sixty-six (166). Meanwhile, in order to have more coverage beyond the sample size arrived at, the sample size for Residents/tenants was increased to One hundred and Seventy-five (175). Eventually, the total sample size was One hundred and Eighty (180) which entails Estate officer (5) and Residents/Tenants (175).

Practically, this arrangement is deemed tenable so far the sample size was rather increased instead of being decreased. As such, the study was able to achieve more coverage.

3.6 Sampling Technique

For the purpose of this research both the probability sampling and non- probability sampling were adopted. Under the non- probability sampling method, the purposive sampling was used. While for the probability sampling the Stratified Random Sampling was used. For the selection of tenants of the university of Benin teaching hospital (UBTH's) residential properties the Stratified Random sampling was adopted because it involves dividing the sample into strata.

The systematic random sampling approach was adopted for the purpose of the study, because the Hospital has different apartments or blocks. UBTH has a total number of two hundred and seventy-one (271) tenants according to the database of their Estate office, and for the purpose of this study one hundred and eighty (180) questionnaires was adopted out of 276 in the Hospital. For the estate officers of UBTH, the purposive sampling method was used. The purposive sampling method was adopted with the aim of selecting only professionals that have the capacity to answer the research questions.

3.7 Survey Instrument

The survey instrument used for this study was a well-structured questionnaire. The questionnaire was prepared and administered to the estate officers and the tenants/ residents of the University of Benin staff quarters. This survey Instrument helped project the views and opinions of the respondents.

3.8 Validity and reliability of the Research Instrument

The questionnaire used, upon its formulation by the researcher according to the objectives of the study, was subjected to scrutiny and correction for face and content validity by the researcher's project supervisor. The validators' criticism, advice and suggestions guided the structuring of the instrument before administration to respondents.

3.9 Method of data Collection

There are several data collection instruments. Under this research, questionnaires were prepared and self-administered. The open and close ended questionnaires as well as the Likert scale were adopted and was distributed to respondents. The questionnaires were administered to estate officers and tenants.

3.10 Method of Data Analysis

The overall data gathered during the field survey were analyzed with the aid of Statistical tools and the results were presented descriptively in forms of Frequency distribution table, charts, Arithmetic mean, standard deviation and Severity index.

Severity Index (SI) is a technique used in analyzing the rate of severity of several variables in order to draw a reasonable inference. The formula for severity index is written as:

$$\text{Severity Index} = \frac{\sum W}{A \times N}$$

Where w = weighting given to each factor by the respondents and ranges from 1 to 5 where '1' is 'not significant' and '5' is 'extremely significant',

A = highest weight (i.e. 5 in this case), and N = total number of respondents.

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION AND INTERPRETATION OF RESULTS

4.0 Introduction

The aim of this chapter is to analyze, present and interpret the data collected from field survey through questionnaire administration University of Benin Teaching Hospital (UBTH) Staff Quarters. The questionnaires were in two forms: The one for the Staff/Residents and the other one for the Estate Officers. The results of the data presented assisted in having a clearer picture of various circumstances in the study area in respect to the research questions under study.

Data presentation and analysis is embarked upon with a view to describing, classifying and finding out the existing relationship between the variables of study in order to draw a logical conclusion. In this chapter, attention was paid to the orderly presentation and analysis of data through the various ways in which data was collected via the administration of questionnaire.

In this chapter, the presentation of data is systematically linked to the format of the self-developed questionnaires attached in the appendix and this is done after obtaining required data in respect the condition and state of the public building, the maintenance strategies adopted in the management of the public building, challenges associated with the maintenance management and the users' satisfaction with the maintenance of the public facility.

4.1 Analysis of the Questionnaires.

The table 4.1 below presents the target respondents for the study and their corresponding number. The estate officers sampled were five (5) in number while a total number of One-hundred and seventy-five staff/residents were equally sampled. This makes a total number of one-hundred and eighty respondents for this study.

Table 4.1: Target Respondents

S/n Target Respondents	Number
1 Estate Officer	5
2 Staff/Residents	175
Total	180

Source: Researcher's Field Survey, 2021

4.2 RESPONDENTS PROFILE (ESTATE OFFICERS)

This section presents the profile of the Estate Officers at the University of Benin teaching hospital staff quarters that were sampled. The profile involves their position in the estate office, status, number of years spent and highest educational qualification.

4.1.1 Position in the Estate Office

The table 4.2 below shows the position of the respondent in the estate office. 20% were maintenance engineer while the remaining 80% were property managers. This shows that the majority of the respondents were property managers who supposedly have more knowledge about the management of the apartments in the study area.

Table 4.2 Position in the Estate Office

Position	Frequency	Percentage (%)
Maintenance Engineer	1	20.0
Property Manager	4	80.0
Head Estates	0	0.0
Others	0	0.0
Total	5	100

Source: Researcher's Field Survey, 2021

4.1.2 Status in the Estate Office

The table 4.3 below presents the status of the respondents in the Estate Office in the study area. estate officers were 80% while the remaining 20% falls among other unlisted category (others). None of the respondent was principal or senior officers which might be due to their schedules. However, based on the focus of the study, the estate officers that responded are suffice.

Table 4.3 Status in the Estate Office

Status	Frequency	Percentage (%)
Principal	0	0.0
Senior	0	0.0
Estate Officer	4	80.0
Others (please specify)	1	20.0
Total	5	100

Source: Researcher's Field Survey, 2021

4.1.3 Estate Office Section

The table 4.4 below presents the estate office section where the respondents work. 20% were working at maintenance section while the remaining 80% works at premises and property section. This shows that the respondents belong to sections that are related to the focus of the study.

Table 4.4 Estate Office Section

Estate Office Section	Frequency	Percentage (%)
Maintenance	1	20
Projects	0	0
Facilities	0	0
Premises and property	4	80
Others	0	0
Total	5	100

Source: Researcher's Field Survey, 2021

4.1.4 Number of years in Department

In the table 4.5 below, the number of years which the respondents have spent at their respective department in the study area. 60% of the respondents have spent up to 1 to 3 years while the remaining 40% have spent between 3 to 7 years. This indicates that the years spent by the respondents are enough to have sufficient knowledge about the case study.

Table 4.5 Number of years in Department

Number of years in Department	Frequency	Percentage (%)
Less than 1 year	0	0
1-3years	3	60
3- 7 years	2	40
Total	5	100

Source: Researcher's Field Survey, 2021

4.1.5 Educational Qualification of the Respondents

The table 4.6 below presents the educational qualifications of the respondents. As such, 80% of the respondents were university graduates with Bsc./Mtech while 20% were Higher diploma certificate holder. This shows that the respondents are of good educational background.

Table 4.6 Educational Qualification of the Respondents

Educational Qualification	Frequency	Percentage (%)
PhD	0	0
MSc/Mtech	0	0.0
BSc/Btech	4	80
HND	1	20
Others	0	0
Total	5	100

Source: Researcher's Field Survey, 2021

4.2 Respondents Profile (Staff/Residents)

This section presents the profile of the staff/residents in the University of Benin Teaching Hospital Staff Quarters. The profile involves the Position/job Description, Sex of respondent, what building or block the respondents belong to and their Number of years in Hospital's accommodation.

4.2.1 Position/Job Description

The table 4.7 shows the position/job description of the staff/residents at the study area. the doctors were 33.7%, 24% were Nurse while Non-Medical Staff, Intern and Corpers were 22.3%, 17.7% and 2.35 respectively. This shows that majority of the respondents were core staff of UBTH.

Table 4.7 Position/Job Description of the Respondents

Position/job Description	Frequency	Percentage (%)
Doctor	59	33.7
Nurse	42	24.0
Non-medical staff	39	22.3
Intern	31	17.7
Corper	4	2.3
Total	175	100

Source: Researcher's Field Survey, 2021

4.2.2 Sex of Respondent

The sex of the respondents is shown in the table 4.8 below. The male among the respondents were 60% while the female accounted for 40%. This shows that male staff/residents were more accessible in the case study than female counterpart.

Table 4.8 Sex of Respondent

Sex	Frequency	Percentage (%)
Male	105	60.0
Female	70	40.0
Total	175	100

Source: Researcher's Field Survey, 2021

4.2.3 Building or Block of the Respondents

The table 4.9 below presents the building/block where the respondents in the case study live. 36% were living at resident doctor's block. This is followed by those living at residential bungalows, Corper/interns lodge and residential duplex who were 29.7%, 20% and 10.3% respectively. However, the those living at Guest house accounted for only 4% of all the

respondents. This shows that the majority of the respondents were staying at the prominent apartment in the case study thereby creating a good impression on data reliability.

Table 4.9 Building or Block of the Respondents

What building or block do you occupy?	Frequency	Percentage (%)
Resident doctors block	63	36.0
Corpors/interns lodge	35	20.0
Guest house	7	4.0
Residential Duplex	18	10.3
Residential Bungalows	52	29.7
Others	0	0.0
Total	175	100

Source: Researcher’s Field Survey, 2021

4.2.4 Duration of Stay in the Hospital Accommodation

The duration of stay of the staff/residents in the UBTH is shown in the table 4.10 below. 39.4% have lived for more than 5years in the apartments followed by those that have lived for about 3 to 5 years who were 30.9%. Also, those that have spent about 1 to 2 years, and less than 1 years were 21.1% and 8.6% respectively. This indicates that the majority of respondents have stayed in the apartment for long and as such, they would be equipped with a lot of information about the case study.

Table 4.10 Duration of Stay in the Hospital accommodation

Duration of Stay in the Hospital's accommodation	Frequency	Percentage (%)
Less than 1 years	15	8.6
1-2years	37	21.1
3 – 5years	54	30.9
More than 5 years	69	39.4
Total	175	100

Source: Researcher's Field Survey, 2021

4.3 The condition of the Buildings

This section presents the first objective which sought to examine the condition and state of the public building. This involves the examination of habitability, inspection on maintenance needs, major areas in need of maintenance and the perception of the residents on the ways by which the condition of the buildings can be enhanced.

4.3.1 Habitability of the Building

Table 4.11 below presents the responses of the residents on the habitability of the building where they live. 54.9% affirmed that the building is habitable while the remaining 45.1% posited otherwise. This shows that there is a degree of habitability across the building however not to a great extent.

Table 4.11 Habitability of the Building

Is the building habitable?	Frequency	Percentage (%)
Yes	30	17.1
No	145	82.9
Total	175	100

Source: Researcher's Field Survey, 2021

4.3.2 Inspection of the buildings regularly by the Estate officers to determine its maintenance needs

In the table 4.12 below, the residents were asked if the estate officers do inspect the building Regularly to determine its maintenance need. 41.7% affirmed that they do normally inspect while 58.3% said otherwise. This indicates that the estate officers are not really responsive to maintenance of the building to a commendable extent.

Table 4.11 Inspection of the buildings regularly by the Estate officers to determine its maintenance needs

Do the estate officers inspect the buildings regularly to determine its maintenance needs?	Frequency	Percentage (%)
Yes	73	41.7
No	102	58.3
Total	175	100

Source: Researcher's Field Survey, 2021

4.3.3 Major Areas in Need of Maintenance

Table 4.12 below presents the major areas in need of maintenance in the buildings. Out of the 10 various areas highlighted, water supply was ranked 1st with mean of 4.48 and standard deviation of 0.90. this followed by waste disposal, painting and plumbing which were ranked second, third and fourth respectively. Other areas in their degree of necessity were cleaning, lightning, windows and door which were ranked 5th, 6th, 7th and 8th respectively. However, both telecommunication and fire protection were ranked lowest, 9th and 10th respectively as the areas which do not require much attention. This generally indicates that residents were not comfortable with the services in respect to water supply, waste disposal, painting and plumbing among others areas.

Table 4.12 Major areas in need of maintenance

S/N	Major areas in need of maintenance	N	Mean	Standard Deviation	Ranking
1	Cleaning	175	4.13	0.83	5 th
2	Fire Protection	175	3.03	0.61	10 th
3	Water Supply	175	4.48	0.90	1 st
4	Telecommunications	175	3.19	0.64	9 th
5	Waste Disposal	175	4.46	0.89	2 nd
6	Plumbing	175	4.15	0.83	4 th
7	Lighting	175	3.97	0.79	6 th
8	Windows	175	3.61	0.72	7 th
9	Door	175	3.33	0.67	8 th
10	Painting	175	4.34	0.87	3 rd

Source: Researcher's Field Survey, 2021

4.3.4 Ways to Improve the Condition of the Buildings

Following the responses on the areas that needs maintenance attention across the buildings in the case study, the residents were further inquired on the ways by which the condition of the buildings can be improved. Table 4.13 shows that 48.6% of the respondents wanted good maintenance approach while those that supported replacement of worn-out parts and repainting were 31.1% and 20.3% respectively. This indicates that majority of the residents are after good maintenance approach by the management

Table 4.13 Ways to improve the condition of the buildings

Ways to improve the condition of the buildings	Frequency	Percentage (%)
Repainting	36	20.3
Replacement of worn-out parts	55	31.1
Good maintenance Approach	86	48.6
Total	177	100

Source: Researcher's Field Survey, 2021

4.4 Investigate the maintenance strategies adopted in the management of the public building.

This section presents the second objective which deals with the maintenance strategies adopted in the management of the case study. This entails the availability of maintenance policy, the developer of the policy, the action that necessitates maintenance actions, Mode of maintenance management and the perception of the estate officers on the best maintenance strategy that could be more effective.

4.4.1 Maintenance policy

Table 4.14 below shows the responses from the Estate Officers in respect to the availability of the maintenance policy in the staff quarters of UBTH. Out rightly, all of them affirmed that there is maintenance policy. Apparently, this indicates that the management of the Staff quarters of UBTH has a maintenance policy.

Table 4.14 Availability of Maintenance Policy

Does the hospital have a maintenance policy?	Frequency	Percentage (%)
Yes	5	100
No	0	0
Total	5	100

Source: Researcher's Field Survey, 2021

4.4.2 Developer of the Maintenance policy

Following the responses on the availability of maintenance policy in the case study, the estate officers were further inquired about the department who are vested with the policy formulation.

Table 4.15 below shows that the policy is formulated only by the top management of UBTH staff

quarters as the response amounted to 100% for Top management. This is deemed reasonable in the sense of hierarchical status.

Table 4.15 The Developer of the Maintenance Policy

Who Developed the Policy?	Frequency	Percentage (%)
Estate Department	0	0
Top management	5	100
Other	0	0
Total	5	100

Source: Researcher’s Field Survey, 2021

4.4.3 Instances that Usually Necessitate Maintenance

In respect to the instances that usually necessitate maintenance work-done in the case study, table 4.16 shows that the affirmation of the respondents that maintenance work is often prompted upon inspection to the facilities, request by the residents as well as when the new resident moves into the apartment. This shows a proper responsive approach towards maintenance work in the case study.

Table 4.16 Instances that Usually Necessitate Maintenance

What Necessitates the carrying out of maintenance on the buildings	Frequency	Percentage (%)
Upon inspection	0	0
Upon request	0	0
Upon occupancy of new tenant	0	0
All	5	100
Total	5	100

Source: Researcher’s Field Survey, 2021

4.4.4 Mode of Maintenance Management Strategy in the Case Study

In respect to Maintenance Management Strategy in the case study, the respondents' responses, in the table 4.17 below showed that corrective maintenance is the most practiced strategy ranked 1st with mean and standard deviation of 2.041 and 0.811 respectively. This is followed by routine maintenance and planned maintenance which were ranked 2nd and 3rd with mean and standard deviation of (2.02, 0.773) and (2.051, 0.791) respectively. The least ranked maintenance strategies in practice were Emergency maintenance and Preventive maintenance with 4th and 5th rank respectively. This indicates that the most practiced maintenance strategies are corrective maintenance, routine maintenance and planned maintenance.

Table 4.17 Mode of maintenance management in the case study

Mode of maintenance S/N management in the case study	Mean	Standard Deviation	Rank
1 Planned maintenance	2.05	0.791	3 rd
2 Preventive maintenance	2.09	0.774	5 th
3 Corrective maintenance	2.04	0.811	1 st
4 Emergency maintenance	2.08	0.713	4 th
5 Routine maintenance	2.02	0.773	2 nd

Source: Researcher's Field Survey, 2021

4.4.5 Maintenance Management Strategy that would be most Effective

In the table 4.18 below, the responses in respect of the perceived most effective maintenance strategy by the estate officers are shown. Planned maintenance is ranked first with mean and standard deviation of 2.041 and 0.811. this is followed by preventive maintenance (mean=2.02, SD=0.773) and Routine maintenance (mean=2.051, SD=0.791) which were ranked second and third respectively. The least ranked strategies were corrective maintenance and emergency

maintenance which were of 4th and 5th ranks. This indicates that the strategies that are perceived to be of high importance as far as the case study is concerned are planned, preventive and routine maintenance.

Table 4.18 Type of maintenance management strategy that would be most effective

S/N	Maintenance Management Strategy	Mean	Standard Deviation	Rank
1	Planned maintenance	2.041	0.811	1 st
2	Preventive maintenance	2.02	0.773	2 nd
3	Corrective maintenance	2.082	0.713	4 th
4	Emergency maintenance	2.092	0.774	5 th
5	Routine maintenance	2.051	0.791	3 rd

Source: Researcher’s Field Survey, 2021

4.5 Evaluate the challenges associated with the maintenance and management of the public building;

This section presents the third objective which entails the challenges associated with the maintenance and management of the case study. The challenges highlighted were Inadequate finance, lack of maintenance culture, issue of Bureaucracy, Lack of prompt and quick response to complaints by occupants, poor construction work and design of the buildings poor contractor performance /skilled manpower and Bad management practice

Table 4.19 Challenges associated with the maintenance and management

S/N Challenges	N	Total weighted value	Severity Index	Rank
1 Inadequate finance	175	226	0.79	5 th
2 lack of maintenance culture	175	230	0.81	4 th
3 issue of Bureaucracy	175	238	0.84	2 nd
4 Lack of prompt and quick response to complaints by occupants	175	233	0.82	3 rd
5 poor construction work and design of the buildings	175	216	0.72	7 th
6 poor contractor performance /skilled manpower	175	220	0.77	6 th
7 Bad management practice	175	244	0.86	1 st

Source: Researcher’s Field Survey, 2021

in the table 4.19 above, bad management practice is ranked 1st with severity index of 0.86 among the challenges highlighted. This is followed by the issue of Bureaucracy and Lack of prompt and quick response to complaints by occupants which were ranked 2nd and 3rd with severity index 0.84 and 0.82 respectively. Other challenges in their order of severity are lack of maintenance culture and inadequate finance with rank 4th and 5th respectively. The least ranked challenges which were portrayed to be less severe were poor contractor performance /skilled manpower and poor construction work and design of the buildings as they occupied 6th and 7th ranking with severity index of 0.77 and 0.72. this generally indicates that bad management practice as well as issue of bureaucracy and irresponsiveness of the management to the tenant’s complaints are the integral challenges facing the UBTH staff quarters. These seem to be evident in the physical appearance of most of the blocks there.

4.5.1 Factors responsible for the present state of the building.

In furtherance to the challenges associated with the ineffective maintenance and management of the case study, the factors responsible for the present condition of the building were equally examined. The factors highlighted were poor workmanship, poor maintenance culture, bad usage, weather condition, use of inferior materials and natural decay/ageing.

4.20 Factors Responsible for the state of the Building

S/N	Factors	N	Total Weighted Value	Severity Index	Rank
1	Poor workmanship	175	190	0.67	5 th
2	Poor maintenance culture	175	216	0.76	1 st
3	Bad usage	175	213	0.75	2 nd
4	Weather condition	175	197	0.69	4 th
5	Natural decay/ageing	175	187	0.66	6 th
6	Use of inferior materials	175	204	0.72	3 rd

Source: Researcher's Field Survey, 2021

Table 4.20 above shows that poor maintenance culture, which is ranked 1st with severity index 0.76 among the other factors is the leading reason for the current state of the buildings in the study area. this is followed by bad usage by the residents and Use of inferior materials which were ranked 2nd and 3rd respectively. Weather condition and poor workmanship were ranked 4th and 5th with severity index 0.69 and 0.67 while the natural decay/ageing of the building due to passage of time

Was ranked as the least factor contributing to the current state of the building. In essence, it is evident through the data elicited that the current state of the buildings were owing to the poor maintenance approach of the management, bad usage by the tenants and also the use of inferior materials in some parts of the buildings.

4.6 Assess the users' satisfaction with the maintenance of the public facility;

This section presents the last objective which sought to examine the user's satisfaction with the maintenance of the public facility in the case study. This involves the responsiveness of the management to the tenants' complaints, the relationship between the state of the building and the stay/life of the residents, their level of satisfaction in term of their livelihood and the way the facility is being managed.

4.6.1 Period of Response to Complaints.

In the table 4.21 below, the analysis showed that the complaints of the tenants were usually responded to within the period of 1 to 3 month by accounting for 58.9%. those who affirmed that their complaints were responded to in less than a month were 32.0% whilst 9.1% posited that theirs were responded to between 4 to 6 month of filling the complaints. Although none of the tenants posited to have been responded in more than 6 months of filling their complaints. This shows relatively that the response rate is not encouraging as period of 1 to 3 months is enough to get any tenant frustrated especially if the complaints is life-threatening or the ones that could make their living not to be tenantable.

Table 4.21 Period of Response to Complaints

How long does it take for complaints to be responded to?	Frequency	Percentage (%)
less than a month	56	32.0
1-3 months	103	58.9
4-6 months	16	9.1
above 6 months	0	0.0
Total	175	100

Source: Researcher's Field Survey, 2021

4.6.2 Relationship between the state of the building and the tenants' stay

Table 4.22 below showed if the current state of the building affects the tenants' stay positively. 86.35 of the responded claimed to have been affected negatively by the current state of the building while only 13.7% posited otherwise. This shows that majority of the tenants have been affected badly by the current state of the building they reside.

Table 4.22 Relationship between the state of the building and the tenants' stay

Does the current state of your building affect your stay positively?	Frequency	Percentage (%)
Yes	24	13.7
No	151	86.3
Total	175	100

Source: Researcher's Field Survey, 2021

4.6.3 Tenants' Level of Satisfaction in the Building

In the table 4.23 below, the level of satisfaction of tenants of UBTH staff quarter were examined in respect to likert scale which ranges between 'Extremely satisfied' to 'Not satisfied'. 47.4% claimed to be slightly satisfied in the building. This is followed by 27.4% and 13.7% who were somewhat satisfied and Not satisfied at all respectively. 8.6% were very satisfied while only 2.9% claimed to be extremely satisfied with the state of the building. This indicates that majority of the tenants were not satisfied with the state of the building where they reside in.

Table 4.23 Tenants' Level of Satisfaction of Tenants in the Building

Level of satisfaction in the building	Frequency	Percentage (%)
Extremely satisfied	5	2.9
Very Satisfied	15	8.6
Somewhat satisfied	48	27.4
Slightly satisfied	83	47.4
Not satisfied	24	13.7
Total	175	100

Source: Researcher's Field Survey, 2021

4.6.4 Satisfaction with the Way the Building is being Managed and Maintained

On the level of satisfaction of tenants, a further question was also asked to ascertain whether the tenants were satisfied with the way the buildings are managed and maintained. Table 4.24 below showed that 88.6% of the responded claimed to be dissatisfied with the manner of management and maintenance of the buildings while only 11.4% posited otherwise. This shows that majority of the tenants were not satisfied with the way the buildings are managed and maintained.

Table 4.24 Satisfaction with the Way the Building is being Managed and Maintained

Are you satisfied with the way the building is being managed and maintained?	Frequency	Percentage (%)
Yes	20	11.4
No	155	88.6
Total	175	100

Source: Researcher's Field Survey, 2021

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATION

5.1 Summary of Findings

This study has appraised the management practice adopted in public buildings in Benin City using University of Benin teaching hospital (UBTH) as a case study. This is with a view to providing information that can enhance the management of public buildings and improve their standard for effective service delivery. The objectives were to examine the condition and state of the public building; investigate the management and maintenance strategies implemented in the management of the public building; Evaluate the challenges associated with the management and maintenance of the public building and assess the users' satisfaction with the management and maintenance of the public facility;

Having satisfied with the profile of the respondents (Estate Officers and Tenants/Residents) as to the reliability of the data that were derived from them, then the summary of all the findings elicited from the preceding chapter are hereunder expressed in line with each objective previously highlighted for better representation.

The condition of the Case Study

On the condition and state of the buildings, the responses showed that most of the buildings are not habitable and that estate/maintenance officers do not usually inspect the buildings to ascertain the maintenance need. Equally, it was found that some services in the building are not adequate. Most especially in the areas of water supply, waste disposal, painting and plumbing. Hence, the most sought after means by which the buildings could be tenantable was found to be good

maintenance approach by the management followed by replacement of worn-out parts and repainting.

Maintenance Strategies Adopted in the Management of the Public Building

in the aspect of maintenance strategies adopted by the management of UBTH staff quarters, it was found that there is maintenance policy which was developed by the top management as the mode of operation for the maintenance of the facilities. The maintenance activities were found to be usually carried out whenever the officers inspect the property for defects as well as when the tenants request and when new tenant moves into any apartment. The study found that corrective, routine and planned maintenance are the core strategies employed by the management in tending to maintenance needs even though the estate officers sampled were majorly of the position that planned, preventive and routine maintenance should have been more prioritized.

Challenges Associated with The Maintenance and Management of the Public Building

Out of seven fundamental challenges that were perceived to be militating against a smooth running of management and maintenance of the case study, the study found that bad management practice is the leading one. This is followed by the issue of bureaucracy in term of chain of orders that is usually considered before the approval of maintenance order and also, lack of prompt and quick response to complaints by occupants of the facilities. however, poor construction work and design of the building were considered negligible in this order. More so, in respect to the factors responsible for the current state of the buildings, poor maintenance culture was found to be the leading factor, accompanied by bad usage by the occupants and the use of inferior materials during the maintenance activities.

Users' Satisfaction with The Maintenance of the Public Facility

In the assessment of user's satisfaction in respect of UBTH staff quarters, the study revealed that it usually takes between 1 to 3 months before their maintenance request is given attention and as such, the state of the building is of ripple effect on the livelihood of the occupants. Most importantly in this regard, there was a clear indication of dissatisfaction in the State of the buildings as well as the maintenance and management of the staff quarter.

5.2 Conclusion

Overtime, management and maintenance of public buildings in Nigeria especially the housing or accommodation provided for staff have been realized to command little attention. This is evident in the physical appearances and the level of functionality therein in the wake of this, this study has appraised the management practice adopted in public buildings in Benin City using University of Benin teaching hospital (UBTH) as a case study. This is with a view to providing information that can guide the useful life of these classes of properties and improve their standard for effective service delivery. In this wise, the condition and state of the buildings were found to be less tenable owing to the physical deterioration and inadequacy in essential services such as water supply, waste disposal and plumbing. Meanwhile, planned, preventive and routine maintenance strategies were more prioritized in contrast to corrective, routine and planned strategies in place initially. This was in line to mitigate the challenges facing the management and maintenance of the buildings such as bad management practice, bureaucracy issues and irresponsiveness to occupants' complaints as well as factors like bad maintenance culture, bad usage and usage of inferior materials. To this end, it was evident that the occupants were not satisfied with both the state of the buildings and the way the building are maintained and managed.

5.3 Recommendations

Consequent to the findings of this study, some peculiar information on the management of the UBTH staff quarters have been revealed. In this regard, some areas of possible improvement in the management practice of this property have been equally highlighted. However, in order to achieve a seamless and enhanced functionality, the following recommendations are hereby put forward.

1. The management should form a direct communication chain that would afford the occupants easy access whenever the need arises. This could be effectively practiced by forming a separate department that would be swift in responding to the complaints of occupants while equally reducing the bureaucracy issues which cause delay.
2. There should be a review of maintenance strategies in order to reshape the focus on the strategies that are more effective and result-oriented. This will keep the management abreast of any slight change in the state of affairs across the building.
3. There should be a comprehensive maintenance action on the dilapidated and less functioning facilities in UBTH staff quarters. This should connote the overhauling of essential services such as water supply, plumbing and waste disposal. This will enhance both the physical appearances and functionalities of the buildings to a great extent
4. The occupants should be educated on proper and sustainable use of the building and subsisting services in order to mitigate the effect of bad usage on the state of the buildings.

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APPENDIX 1

PHOTOGRAPHS OF MAINTENANCE CHALLENGES OF UBTH STAFF QUARTERS

A. Dirty and Old walls in need of repainting



B. Bad/Damaged roofs







C. Broken/Damaged Pipes



APPENDIX 2

RESEARCH QUESTIONNAIRE

QUESTIONNAIRE (ESTATE OFFICERS)

Dear sir/ma,

I kindly request your participation and support to this research on the management of public buildings, using University of Benin teaching hospital (UBTH) staff quarters as a case study, by responding to this questionnaire. Any information you can provide would be greatly appreciated and will be treated with the strictest confidence and it will only be used for the purpose of this research.

SECTION A

BACKGROUND INFORMATION

Please kindly respond to the following questions by ticking (√) the appropriate box(es).

RESPONDENT'S PROFILE

1. Position in the Estate office, Kindly indicate your status in the estate office:

a) *Principal* [] b) *Senior* [] c) *Estate Officer* []

Others (please specify).....

2. What section in the estate office are you involved in:

a) *Maintenance* [] b) *Projects* [] c) *Facilities* [] d) *Premises and property* []

e) *Others (please specify)*.....

3. Number of years in department.

a) *Less than 1 year* b) *1-3years* c) *4- 7 years* Others..... (Please specify)

4. Highest qualification

- a) PhD b) MSc/Mtech c) BSc/Btech d) HND

Others..... (Please specify)

SECTION B

5) Does the hospital have a maintenance policy?

- a) YES [] b) NO []

6) If yes, who developed the policy?

- a) Estate Department b) Top management c) Please if any specify.....

7. What necessitates the carrying out of maintenance on the buildings?

- a) Upon inspection [] b) Upon request [] c) Upon occupancy of new tenant []

d) All of the above [] Others, please specify:

8. Please kindly indicate mode of maintenance management that is normally used in the hospital?

- a) Planned maintenance [] b) Preventive maintenance c) Corrective maintenance

d) Emergency maintenance [] e) Routine maintenance []

9. Please indicate the type of maintenance management strategy that you personally believe is most effective for the hospital .

- a) Planned maintenance [] b) Preventive maintenance c) Corrective maintenance

d) Emergency maintenance [] e) Routine maintenance []

Questionnaire (STAFF/RESIDENTS)

Dear sir/ma,

I kindly request your participation and support to this research on the management of public buildings, using University of Benin teaching hospital (UBTH) staff quarters as a case study, by responding to this questionnaire. Any information you can provide would be greatly appreciated and will be treated with the strictest confidence and it will only be used for the purpose of this research.

SECTION A

BACKGROUND INFORMATION

Please kindly respond to the following questions by ticking (√) the appropriate box(es) for each item and provide answers in the provided space where applicable.

To be answered by occupants or tenants of UBTH staff quarters:

RESPONDENT'S PROFILE

1. What is your position/job description

a) Doctor[] b) Nurse[] c) Non-medical staff[] d) Intern[] e) Corper[]

Others.....(please specify)

2. Sex of respondent.

a) Male [] b) Female []

3. What building or block do you belong to.

- a) Resident doctors block [] b) corporers and interns lodge [] c) Guest house []
 d) residential duplex [] e) residential bungalows []
 f) Others (please specify).....

4. Number of years in Hospital's accommodation.

- a) Less than 1 years b) 1-2years c) 2 – 5years d) More than 5 years

SECTION B

5. In your opinion, is the building habitable? (a) Yes(b) No

6. Do the estate officers inspect the buildings regularly to determine its maintenance needs

- A)Yes b) No.

7. Based on your observations what are the major areas in need of maintenance? Please tick as many as apply

- Cleaning [] Fire Protection [] Water Supply [] Telecommunications[]
 Plumbing [] Waste Disposal [] Lighting [] windows[] door [] painting []

8. In your opinion what do you think can be done to improve the condition of the buildings?

- (a) Repainting [] (b) Replacement of worn-out parts [] (c) Good maintenance
 (d) Approach [] (d) Others:.....

9) These factors highlighted below have been identified as major causes of hinderances and challenges to the achievement of effective maintenance and management of public Buildings .

From your experience and observations indicate the extent to which these factors prevents effective and efficient management of the hospital buildings. Please rank in order of importance

by ticking as: 1 = strongly disagree 2= disagree, 3= agree, 4= strongly agree

S/N	CHALLENGES OF MANAGEMENT OF PUBLIC HOSPITAL BUILDINGS	SA (4)	A (3)	D (2)	SD (1)
1	Inadequate finance				
2	lack of maintenance culture				
3	issue of Bureaucracy				
4	Lack of prompt and quick response to complaints by occupants				
5	poor construction work and design of the buildings				
6	poor contractor performance /skilled manpower				
7	Bad management				

Others, please specify:.....

10. please indicate in line with rank 1-5 below, your opinion on the factors responsible for the present state of your building.

s/n	Factors	1	2	3	4	5
1	Poor workmanship					
2	Poor maintenance culture					
3	Bad usage					
4	Weather condition					
5	Use of inferior materials					
6	Natural decay/ageing					

Others :

11. How long does it take for complaints to be responded to?

a) less than a month [] b) 1-3 months c) 4-6 months [] d) Above 6 months []

12. Does the current state of your building affect your stay/life positively?

(a) Yes (b) No

13. kindly rate your level of satisfaction in this building.

(a) Extremely satisfied [] (b) Very satisfied [] (c) Somewhat satisfied [] (d)

slightly satisfied [] (e) Not Satisfied [].

14. In your opinion are you satisfied with the way the building is being managed and maintained?

(a) Yes [] (b) No []

Thank you.