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**An in-depth analysis of facility management approaches in
Nigeria's ailing healthcare sector**

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An In-depth Analysis of Facility Management Approaches in Nigeria's Ailing Healthcare Sector

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An In-depth Analysis of Facility Management Approaches in Nigeria's Ailing Healthcare Sector

Abstract

Purpose: This study examines facility management practises in the Nigerian healthcare sector, exploring approaches and identifying challenges facing effective healthcare facilities management. The purpose is to contribute to the development of a framework for enhancing healthcare facility management efficiency in Nigeria.

Design/Methodology/Approach: The study employs a sequential in-depth exploratory qualitative research approach. The data collection involved conducting semi-structured interviews with fifteen facility managers from diverse healthcare organisations in Nigeria. The qualitative data collected were analysed using thematic analysis.

Findings: The study reveals scheduled, unscheduled and mixed approaches as the three facility management approaches used in Nigeria. It also substantiates the underdeveloped nature of facility management in Nigeria's healthcare sector, exacerbated by challenges such as socioeconomic, operational, technological, and regulatory challenges.

Practical Implication: The study uncovers systemic issues affecting have attainment of Sustainable Development Goal 3 (Good Health and Well-being) and advocates for a comprehensive approach to enhance healthcare infrastructure, contributing to improved health outcomes and sustainable development.

Originality/Value: This research uniquely uncovers the hidden challenges facing effective healthcare facility management in Nigeria, providing a foundation for stakeholders to formulate solutions and rescue the struggling state of healthcare facilities in the country.

Keywords: Facility Management, Healthcare, Nigeria, SDGs, Thematic Analysis.

Introduction

The World Health Organisation data in 2016 revealed that Nigeria performed below average regarding health output and service coverage (World Health Organisation (WHO), 2016). Since then, Nigeria's healthcare system has yet to undergo any meaningful improvements. Many of the already-existing issues in the health system came to light during the COVID-19 pandemic because they could not handle the pressure of increasing usage. Even though this issue was widespread, Nigeria's situation was exceptional because the health sector was already in decline before the outbreak because of a lack of proper facilities management, among many other issues. A study by Innocent et. al (2014) to assess the challenges and prospects of the Nigerian healthcare system concluded that the reality of Nigeria's healthcare system is that it needs to be fixed. Similarly, Olateju (2017) argued that Nigeria's public healthcare system could not meet the demands of its expanding populace due to inadequate facilities, a lack of health professionals, an inadequate budget, corruption, and unstable political leadership. Innocent et. al (2014) also noted that the public healthcare system in Nigeria appears to need more development, despite possessing some of the top medical specialists in the world.

Meanwhile, one of the critical issues that are affecting the healthcare system in Nigeria and generally in Africa is poor facilities management and this is supported by the findings of Oleribe et. al (2019). Despite this pronouncement, there are lack of sufficient studies that address the specific facility management methods that can improve the efficiency of the Nigeria healthcare sector. Facility Management (FM) in the healthcare sector broadly involves overseeing a spectrum of essential services to ensure patients receive optimal care and comfort during their hospital stay (National Health Service (NHS), 2023). This includes managing catering, cleaning, building maintenance, environmental services, security, and reception. However, the scope of FM in this study is limited to building, equipment, and environmental management within the healthcare sector. The International Facility Management Association (IFMA) (2023) categorised facility management approaches into corrective (reactive), preventive, and predictive maintenance approaches (Dahanayake and Sumanarathna, 2022; Hao et. al, 2012; Carvalho et. al, 2109). The corrective (reactive) maintenance approach's basic principle is that parts should only be replaced when they are no longer functional (Hao et. al, 2012). Meanwhile, preventive /

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3 time-based/ scheduled maintenance is executed regularly in time or through process iterations
4 to anticipate process/equipment failure (Carvalho et. al, 2109). Predictive (Condition-based)
5 maintenance needs knowledge of how worn it is now, how long it has left to live or how quickly
6 its function degrades, and how long the monitored item will continue to serve its original purpose
7 (Katipamula et. al, 2017).
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13 The knowledge of which of these approaches is most used and suited for effective management
14 of healthcare facilities in Nigeria is largely insufficient because studies have always been
15 concentrated on the general healthcare system in Nigeria with little focus on the facilities.
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17 Although there have been several research about the facility management approaches being
18 used in private and public health facilities, but none of these studies address specific factors that
19 hinder the effective management of healthcare facilities. Therefore, this study will address the
20 gap by focusing on evaluating the various facility management approaches used in the healthcare
21 sector in Nigeria. The study aim will be achieved through two enabling objectives which are (i) to
22 evaluate the various facility management approaches used in the healthcare sector in Nigeria
23 and (ii) to assess the challenges in managing public and private healthcare facilities in Nigeria.
24 The main outcome of this study will facilitate the effective management of healthcare facilities
25 in Nigeria.
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36 Literature Review

37 Facility is generally referred to as a physical/tangible asset that supports an organisation's
38 operations (IFMA, 2023; Atkin and Brooks, 2021; Adebayo et. al, 2023). They are essential to the
39 delivery of healthcare services to the population through various institutions, including hospitals
40 or community health centres (Heng and Loosemore, 2013). Thus, buildings and tangible assets
41 utilised to provide healthcare services can be referred to as healthcare facilities. The success of
42 every healthcare organisation depends on effective Facilities Management (FM) because it
43 integrates resources and operations to create a productive and safe working environment (Lai
44 et. al, 2022). The origins of FM may be traced to the United States railway corporations in the
45 1800s, which offered facility-related services rather than actual structures (Atkin, 2003). FM
46 became a profession in the 1980s because managing buildings became more complex, and the
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3 required knowledge became more challenging and crucial to organisations' functions (Leaman,
4 1992).

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7 FM processes include analytical and systematic methods used to ascertain and provide the
8 agreed levels of service activities needed to manage, operate, maintain, and support facilities
9 (buildings and infrastructures) in a quality environment at a reasonable cost to satisfy the needs
10 of the business (IFMA, 2023; Ogungbile and Oke, 2015). These descriptions accentuate that FM
11 is a consolidated discipline that encompasses the physical building, the organisation within,
12 organisational goals, objectives and activities that foster a better work environment. Several
13 authors have described FM over the years, and most of these definitions have three things in
14 common: people, place, and process. In terms of people, facility managers in different sectors
15 have different educational backgrounds and are not mostly graduates of FM programs which
16 contributes to the uncertainty encountered in FM (Mewomo et. al, 2022). FM in the context of
17 healthcare facilities comprises various approaches to ensure the operations and maintenance of
18 the facility to support the organisational goals and well-being of the people using the facilities.
19 Maintenance is the most evident purpose of facility management in a building, which makes it
20 one of the primary contributions to any organisation (Ogungbile and Oke, 2015).

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34 There are three major approaches to FM, especially in the context of maintenance. These are
35 preventive (scheduled), corrective (unscheduled) and Mixed (combination of preventive and
36 corrective) forms of facility management. Zonta et. al (2020) identified corrective, preventive,
37 predictive, and prescriptive facility management approaches but noted that corrective and
38 preventive forms are commonly used. A preventative management approach is arranged and
39 completed in line with a set schedule and is implemented to minimise the likelihood of failure, it
40 is a successful strategy for preventing failures (Carvalho et. al, 2019). Therefore, this approach is
41 ideal for use in healthcare facilities because it caters for people with ailments and severe health
42 challenges. Hence, it is pertinent to prevent the frequency of unplanned breakdowns and
43 minimise the need for additional costs for repairs.

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53 On the other hand, corrective (unscheduled) management approach is a quick response to a
54 facility breakdown, which frequently entails a repair that will return the structure, plant, or
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3 system to a functionally acceptable state (Katipamula et. al, 2017; Carvalho et. al, 2019). Fraser
4 (2014) noted that a corrective approach impacts the maintenance life of any structure
5 significantly and should be used minimally except when there is no other option. Contrary to this,
6 Iwarere and Lawal (2011) noted that a reactive approach can be beneficial if the maintenance
7 personnel in charge of repairs have adequate training in fault-finding, enough diagnostic tools,
8 and the process is coordinated centrally to enable greater personnel utilisation and
9 development. However, this is hardly the case in Nigerian healthcare facilities, as observed by
10 Oleribe et. al (2019) and Olateju (2017), which identified inadequate resources and poor facilities
11 management as challenges in Nigeria's healthcare sector. As such Oleribe et. al (2019) concluded
12 that a reactive approach in the healthcare facility should be an adjunct to preventive measures
13 because equipment breakdown needs to be avoided as much as possible to avoid casualties.

23
24 Facilities managers are responsible for facilitating and promoting change towards the plan and
25 delivery mechanisms for support services to optimise organisational performance (Ismail, 2022).
26 In the healthcare sector, their roles often include customer (patient) service, effectiveness,
27 efficiency, comfort and productivity at work, and health and safety, amongst other requirements
28 (Hodges and Sekula, 2013). As such, it is necessary to ensure these roles are handled
29 appropriately in healthcare facilities as they are core aspects that determine the perception and
30 performance of the facility. This essential means the facility management gives value to the
31 hospital by achieving zero flaws in the physical infrastructure, particularly in sensitive areas
32 where minute errors can have massive and disastrous implications, possibly resulting in life and
33 death (Ikediashi and Ekanem, 2015).

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35 Although numerous studies have been carried out to evaluate the quality of healthcare provided
36 through hospital processes primarily based on the opinions of the patients, Mosadeghrad (2014)
37 argued that finding more ways to effective healthcare facility management is necessary to have
38 sustainable healthcare facilities. Hodges and Sekula (2013) observed that a sustainable facility
39 would result in a healthier environment when greater attention is devoted to the continuous
40 development of its operations and upkeep of such facilities. However, real-time information is
41 crucial for enabling efficient and successful facility maintenance that will in turn improve the day-
42 to-day operations of the organisation (Pärn et. al, 2017). This makes managing facilities to achieve

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3 sustainability and efficiency a tough task that requires much effort, information and
4 proactiveness. In order to achieve this, Hodges and Sekula (2013) suggest that the method and
5 facilities management plan must coincide with the broader organisational goals and strategy.
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7 However, the general perception is that this is not the case with facility management within
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9 Nigeria's healthcare sector.
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13 The significant problems affecting healthcare facilities in developing countries such as Nigeria
14 include inadequate leadership and management, lack of political will, healthcare system fraud,
15 poor resource management, and insufficient integration of healthcare programmes (Oleribe et.
16 al, 2019). Olateju (2017) also highlighted insufficient infrastructure, a shortage of medical
17 experts, a lack of funding, corruption, and ineffective political leadership as part of the bigger
18 bottlenecks hindering effective healthcare facilities management. Mohammed and Song (2013)
19 had earlier noted similar challenges in managing Higher Education Institution facilities, an
20 indication that there is generally a poor facilities management culture in the Country. Low total
21 maintenance budget, delays in releasing maintenance funds, low level of adoption and
22 implementation of asset condition assessments and curative maintenance procedures, and a
23 scarcity of in-house technical employees significantly influence the maintenance of facilities in
24 Nigeria (Mohammed and Song, 2013). However, the issue of poor facility management within
25 the healthcare sector is far worse because of the ripple effect it has on personnel (Mosadeghrad,
26 2014). Amos et. al (2021) asserted that healthcare facility management has continued to be a
27 problem in many developing nations, significantly hampering the ability to provide healthcare to
28 the population. They suggested that a good and permanent funding source is necessary for an
29 effective healthcare system. Thus, governments and other organisations globally must develop
30 innovative ways to manage healthcare facilities effectively.
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34 Facilities are an enormous expenditure and often an organisation's second largest and most
35 expensive asset, whereas their personnel are their most valuable and expensive asset (Hodges
36 and Sekula, 2013). However, they noted that facility management does not generate money,
37 making top management overlook it until expenditures are reduced. Therefore, facilities must
38 generate a form of value for these organisations. Poor facility management might lead to
39 insufficient facilities, which in turn makes it challenging to sustain the functions of the facilities.
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3 It also leads to excess facilities that do not support the organisation's goal, inefficient costs,
4 insufficient facilities, and facilities that are not available for future demands (Lavy et. al, 2010).
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6 According to the trip metaphor, facilities represent the patrons of the amenities, just as the
7 drivers represent the facility managers (Hodges and Sekula, 2013). Thus, organisational facilities
8 should be handled effectively and adequately to enable business units to meet strategic
9 objectives. The challenges highlighted, albeit numerous, must be considered and overcome to
10 solve the problems plaguing the Nigerian healthcare system. Therefore, this study will enhance
11 healthcare facility management in Nigeria by examining challenges, evaluating approaches, and
12 identifying barriers to effective management of facilities within the Nigeria healthcare sector.
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21 **Research Methodology**

22 This study uses a sequential in-depth exploratory qualitative research approach to investigate
23 the facility management approaches and challenges facing their implementation in the
24 management of healthcare facilities in Nigeria. The study chooses exploratory research because
25 it is a valuable tool for posing open questions in a bid to learn more and build an understanding
26 of a particular subject of interest (Saunders et. al, 2019). The study employed a semi-structured
27 interview (open-ended) qualitative methodology instead of a quantitative one because it allows
28 the study to collect data that offers a detailed understanding that is impossible to grasp via only
29 quantitative data (Kandel, 2020; Dauda et.al, 2023).
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38 This study used primary research to gather direct data by conducting interviews with facility
39 managers of healthcare organisations in Nigeria. The interview questions provided as
40 supplementary data consist of open-ended questions to allow the participant to describe their
41 job roles in hospital facility management, the use of subcontractors in the facility management
42 process and their maintenance approaches. Furthermore, questions were asked about the
43 reason for the choice of approach, the challenges experienced with the selected approach, their
44 perception of its effectiveness, and their likes or dislikes about the approach. The methodology
45 is in two main categories which are data collection and data analysis. These were further divided
46 into several key steps as adapted from Shaw et. al (2023) and modified by the Authors as shown
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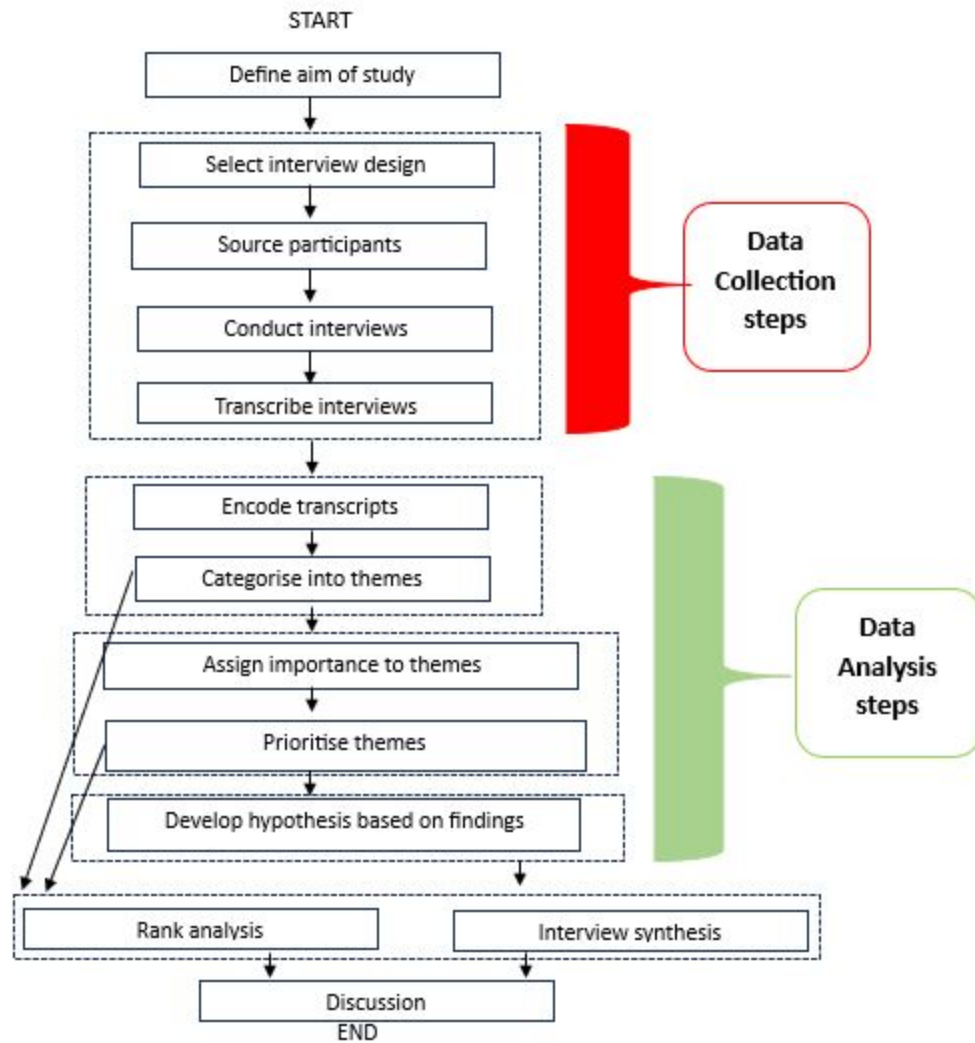


Figure 1. Research Data Collection and Analysis Processes (Source: Authors)

Data Collection

This study used purposive sampling to select respondents who work as facility managers in healthcare facilities in Nigeria. This is in line with the assertion of Kelly et. al (2010) that purposive sampling is used to pick respondents who are most likely to produce suitable and meaningful information. Purposive sampling is based on the idea that information-rich samples should be chosen to gain a comprehensive understanding of the phenomenon. It is a method of discovering and selecting instances that will use limited research resources efficiently (Kelly et. al, 2010). The primary data for this study are the interview transcripts. This study's primary empirical data was gathered through fifteen interviews with representatives from fifteen healthcare facilities in

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3 Nigeria. The quality of respondents was prioritised over the number because this study
4 significantly depends on the input of practitioners (Shaw et. al, 2023). As such, the study ensures
5 that the interviewees are the main Facility Managers within their organisation. The key steps
6 from the data collection to analysis stages are illustrated in the first part of Figure 1 (data
7 collection steps).

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13 The interview approach started with the authors contacting the healthcare facilities via emails,
14 phone calls and messages, briefly discussing the research topic and requesting an interview as
15 well as the appropriate contact inside the facility to interview regarding the study interest. Some
16 facility managers refused to participate due to their unavailability / busy schedules and
17 unwillingness to share insight into their practises which is one of the key issues with facilities
18 management in Nigeria. The respondents were high-level managers and medical directors, and
19 the primary selection criteria were their thorough understanding of facility management and
20 their current role in handling the facility management in their organisation. The identities of the
21 healthcare facilities are not published to maintain confidentiality. The method of data collection
22 utilised in this research was a semi-structured interview. The researcher creates an outline for
23 the subjects addressed in a semi-structured interview, but the respondent's reply decides how
24 the discussion is directed. A total of fifteen facility managers were interviewed. Each interview
25 lasted 20 - 45 minutes. Semi-structured interview questions were used to understand the facility
26 management approaches utilised by the various organisations. The interview questions consisted
27 of a series of 10 major questions. Some of the responses required further probing to get the
28 context with which the responses were given. The interviews were recorded and then transcribed
29 using the transcription tool on Microsoft Word.

44 45 **Data Analysis**

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47 The first stage of the analysis involves demographic data analysis to provide an overview of the
48 distribution of the interviewees as shown in **Table 1**. It is important to clarify that all the 15
49 interviewees assume the role of facility manager within their respective organisations, in addition
50 to their primary roles given in the third column of Table 1.
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Table 1. Demographical data of the respondents

Interview ID	Highest Qualification	Job Role	Private/Public Healthcare Facility	Years of experience
IT -1	Masters in Public Health and Business Administration	Clinical director	Private	>12 years
IT -2	Bachelor of Science	Practice manager	Private	10 years
IT -3	Bachelor of Dental Surgery	Clinical director	Private	>2 years
IT -4	Bachelor of Dental Surgery	Clinical director	Private	5 – 6 years
IT -5	Masters in Health Economics	Officer in charge, Dental department	Public	5 years
IT -6	Bachelor of Dental Surgery	Hospital Administrative officer	Public	6 years
IT -7	Bachelor of Medicine and Bachelor of Surgery	Medical director	Private	5 years
IT -8	Bachelor of Dental Surgery	Practice manager	Private	9 months
IT -9	Bachelor of Science	Accountant/Manager	Private	8 years
IT -10	Bachelor of Dental Surgery	Clinical director	Private	3 years
IT -11	Bachelor of Engineering	Head of engineering and maintenance department	Public	8 years
IT -12	Bachelor of Dental Surgery	Practice manager	Private	3 years
IT -13	Bachelor of Medicine and Bachelor of Surgery.	Medical director	Private	35 years
IT -14	Fellow, West African Postgraduate Medical College	Medical director	Private	23 years
IT -15	Masters in Public Health	Medical director	Private	35 years

After the demographic data revealed a good spread of the participants based on the year of experience, thematic analysis was done to analyse the interview's qualitative data and create a list of codes based on similar responses. Thematic analysis was conducted in six steps shown in Figure 2 adapted from an earlier study by Dauda et. al (2023). In the first step, the transcripts of the interviews were thoroughly reviewed to understand and become familiar with the data collected. This critical step helps to lay a good foundation for the next steps. In step 2, similarities, discrepancies, and trends noticed in the data were classified into codes. The codes give an overview of the main points and common meanings that recur throughout the data. Patterns were identified among the codes and codes with similar patterns were grouped to develop potential themes in step 3. In step 4, identified themes were further re-evaluated against data obtained from the transcripts to ensure accurate representation. In this step, some themes were broken down into minor themes, some were combined, additional themes were created, and some themes were discarded. Following step 4, a final list of themes was identified, named, and given proper definitions in step 5. The final step involved writing up the analysis of the data.

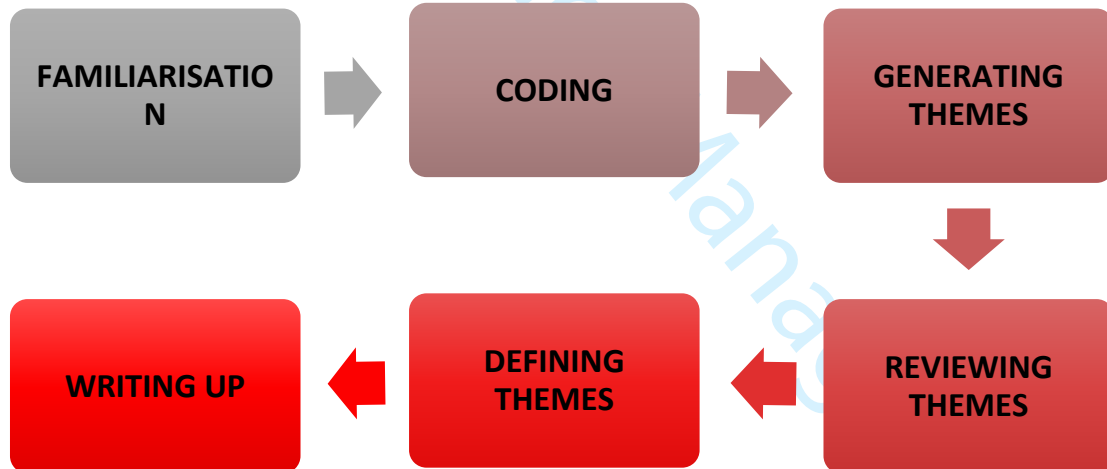


Figure 2. Steps in thematic analysis adapted from Dauda et. al (2023)

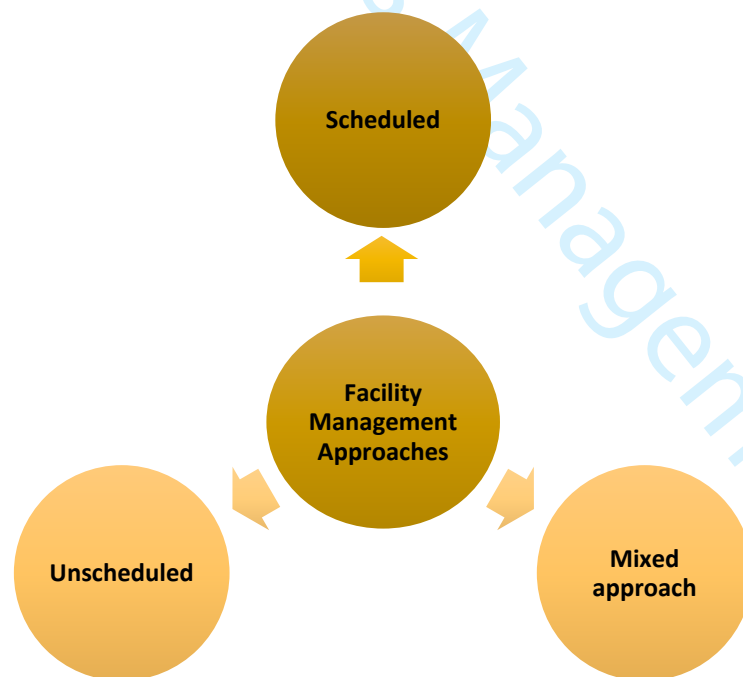
Results and Discussions

Following the analysis and coding of data, several factors emerged and were grouped under primary themes. The objectives of this study served as a guide when developing the themes. The responses related to the identified codes were assigned and coded appropriately. For example, responses regarding the description of job roles performed by the interviewee were coded as job

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3 descriptions. For responses to the question 'What do you do and how?', these were coded as
4 scheduled, unscheduled, or mixed approaches (in cases where both approaches are utilised) for
5 objective 1. The challenges associated with their selected approach were also coded into various
6 groups for objective 2 as presented in the subsequent sections.
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11 **Objective 1: Various facility management approaches used in the healthcare sector in Nigeria.**

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14 Three (3) themes emerged under this objective from the thematic analysis of the interview data
15 and are illustrated in Figure 3. These themes were based on the types of **approaches** currently
16 being used which are basically either scheduled or unscheduled or even a mixture of both often
17 referred to as Mixed approaches. The outcome of the survey indicated that a mixed method is
18 been used by all the participants although with different rates of using scheduled and
19 unscheduled approaches as shown in *Table 2*. **The extent of utilisation of the Facility**
20 **Management (FM) approach was assessed through participant responses, wherein they were**
21 **queried regarding the frequency of usage for each specified approach. Subsequently, these**
22 **responses were classified into three categories: mostly used, sometimes used, and equally used**
23 **as outlined in Table 2.**
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54 Figure 3. Facility management approaches emerged from the study (Source: Authors).
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Table 2. Facility Management Approach according to the Interviewee

Interview number	Sector	Years of experience	Scheduled	Unscheduled
IT -1	Private	>12 years	Equally used	Mostly used
IT -2	Private	10 years	Equally used	Mostly used
IT -3	Private	>2 years	Mostly used	Equally used
IT -4	Private	5 – 6 years	Mostly used	Equally used
IT -5	Public	5 years	Equally used	Mostly used
IT -6	Public	6 years	Sometimes used	Sometimes used
IT -7	Private	5 years	Mostly used	Equally used
IT -8	Private	9 months	Mostly used	Equally used
IT -9	Private	8 years	Mostly used	Equally used
IT -10	Private	3 years	Mostly used	Equally used
IT -11	Public	8 years	Equally used	Mostly used
IT -12	Private	3 years	Mostly used	Equally used
IT -13	Private	35 years	Equally used	Mostly used
IT -14	Private	23 years	Equally used	Mostly used
IT -15	Private	35 years	Equally used	Mostly used

Legend

Mostly used 

Equally used 

Sometimes used 

Theme 1 - Scheduled Approach: This scheduled approach is essentially made up of preventive approaches utilised by facility managers. It involves planned measures by facility managers to ensure the smooth running of their facilities and prevent unforeseen equipment breakdown (Hao et. al, 2012). These measures include the use of routine checklists daily, regular servicing of machines, use of logbooks or software for servicing equipment and other activities done regularly

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3 to prevent any problems with the facility management. The inference from *Table 2* shows that
4 scheduled maintenance is often preferred by less experienced facility managers. In fact, from the
5 survey, all facility managers with less than 8 years of experience indicated that they mostly used
6 scheduled maintenance except for IT-5 and IT-6 which work in public healthcare facilities.
7 Realistically, the facility manager in the public sector also has a daily routine check schedule but
8 the maintenance is often unscheduled because of approval bureaucracy and managerial
9 perception (Scupola, 2012). IT-6 claimed that it is always very difficult to get approval for
10 maintenance without the breakdown of equipment or facility. Most respondents cited that the
11 maintenance of fire extinguishers, dental chairs, x-ray machines, water systems, air conditioners,
12 electrical components and the building is done regularly and noted that their clinics have laid
13 down rules on the maintenance of these facilities. The use of routine checklists was a way to
14 alleviate safety issues and also make the maintenance cost less (Carvalho et. al, 2019). This is
15 evidenced in this study by this excerpt from IT-10 *"We run an in-house routine checklist with the*
16 *things we do every day. The next morning, we will come in and repeat the same thing. We check*
17 *and turn on all the machines first. So, we always do this 30 minutes before the clinic starts"*. A
18 similar excerpt was taken from IT-6 *"In fact, there is a checklist for most of the facilities. There*
19 *are things that we check weekly, there are things that we check daily like that"*.
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35 Another notable scheduled approach is the use of logbooks to identify equipment that has been
36 serviced previously and distinguish them from those that require servicing (Hao et. al, 2012). This
37 is mostly reported in this study too as supported by an excerpt from IT-8 *"what we have done is*
38 *that we have a logbook for services. So, if they serviced it a month ago, maybe in the next two*
39 *months, they are coming back to service it. So, when they come, they service, and they sign that*
40 *this particular equipment has been serviced"*. In addition, the facility manager also noted that the
41 interval for equipment servicing is based on the manufacturer's prescription for the equipment.
42 Similarly, IT-7 stated that *"We have a software where people can just put in any issues that they*
43 *have in their department"*. It is pertinent to note that the use of scheduled maintenance is not
44 limited to only equipment but entire facilities within their respective organisation. IT-12
45 mentioned the need to renew the indemnity insurance every year and maintain the software of
46 the EMR (electronic medical records) as other things covered by their scheduled maintenance
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3 approach. Most importantly, all features of theme 1 - schedule approach indicated a preventive
4 approach which has been described as an effective facility management approach to aid the early
5 detection of abnormalities, limit the effect of operational disruptions, avert costly failures, and
6 dramatically cut maintenance costs (Hao et. al, 2012; Katipamula et. al, 2017 and Ebekozi et.
7 al, 2022).

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13 **Theme 2 - Unscheduled Approach:** An unscheduled approach consists of reactive approaches
14 utilised by facility managers, and this is also reported by all the participants in this study although
15 with different adoption rates as previously stated in Table 2. It involves corrective measures to
16 repair equipment or amendment of faulty equipment and also entails last-minute solutions or
17 quick fixes to restore equipment to function (Fraser, 2014). This approach is mostly utilised by
18 experienced facility managers who from their experience believe that when things happen, they
19 are confident of fixing them in a matter of few hours or maximum a day. Although, a reactive
20 approach in the healthcare facility should be used as an adjunct to preventive measures because
21 equipment breakdown needs to be avoided as much as possible to avoid casualties (Oleribe et.
22 al, 2019). However, resource limitation often necessitates using more of an unscheduled
23 approach as confirmed by the response from IT-1 "Where you know that nothing has happened,
24 you channel your resources to something else hoping that it will not happen and when it happens,
25 we deal with it". A further inquiry revealed that the choice of approach was greatly influenced by
26 a lack of resources as earlier claimed by Olateju (2017).

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39 Another respondent, IT-5 stated that the facility has some personnel who are a phone call away
40 and usually show up within two or three minutes when they are required to fix an electrical issue,
41 whereas they have to wait for a day to get more technical issues fixed because they do not have
42 trained personnel for such technical issues. A further inquiry revealed that this approach was
43 chosen because the management has built a high level of trust in the partners they work with.
44 This unscheduled approach is not ideal for the effective management of healthcare facilities
45 because it causes delays in plans. IT-3 indicated that they previously used an unscheduled
46 approach but stopped because it was not effective for them, and it did not show efficiency. This
47 finding is in line with the earlier assertion of Oleribe et. al (2019).

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3 **Theme 3 - Mixed Approach:** A mixed approach involves the use of both scheduled and
4 unscheduled facility management approaches. Although, in some cases, one approach may be
5 more predominantly used than another. All the respondents are using a mixed approach
6 compared to a single approach with more respondents mostly using the scheduled approach
7 compared to the unscheduled approach.
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13 One of the respondents (IT-6) stated that *“For some, you have to wait; for some that you can*
14 *afford to, make sure you they are regularly checked and maintained. You know that is mixed. It is*
15 *a mixed bag of approaches”*. IT-8 supported this by stating that one cannot predict when some
16 equipment will go wrong, so the facility has decided to use both scheduled and unscheduled
17 approaches. One of the respondents (IT-11) stated that they use a predominantly scheduled
18 preventive approach but only use the unscheduled corrective approach when they notice a fault
19 in a piece of equipment. Furthermore, they noted that the facility ensures that old equipment is
20 replaced with the latest equipment. Two other responses were similar; IT-14 and 15 stated that
21 the subcontractor *comes in regularly to service some of the equipment like incubators, and*
22 *operating tables on schedules while others are done when required due to breakdown on fault.*
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24 **The indication from this study is that the mixed method is the most common and appropriate**
25 **facility management approach in Nigeria's healthcare sector.**
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36 **Objective 2: Challenges in managing public and private healthcare facilities in Nigeria**

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38 **The interview responses were coded into nineteen (19) factors, these factors were summary of**
39 **the responses, for example, when IT-1 reported inadequate cashflow and IT-9 reported difficulty**
40 **in approval for money-related issues as challenges, these and other responses related to cost and**
41 **money were coded as ‘Lack of Finance’.** This step was repeated for all the responses and thus led
42 to the emergence of the nineteen factors. The third and fourth steps of the thematic analysis
43 involved grouping these factors into themes with similar patterns, for example, the socio-
44 economic theme comprises all factors that point towards economic resources or social
45 infrastructure. Figure 4 shows the heatmaps of the factors that make up the themes which are
46 socio-economic, operational, technological and regulatory challenges. **The heatmap is a visual**
47 **representation of how many respondents contributed to a factor. Factors coding ‘Red - most**
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pressing' are those to which 10 or more responses have contributed. 'Intermediate – Amber coloured' factors are those in which the respondents are between the range of 7 to 9 while 'Green - least pressing' are associated with 5 responses or fewer.

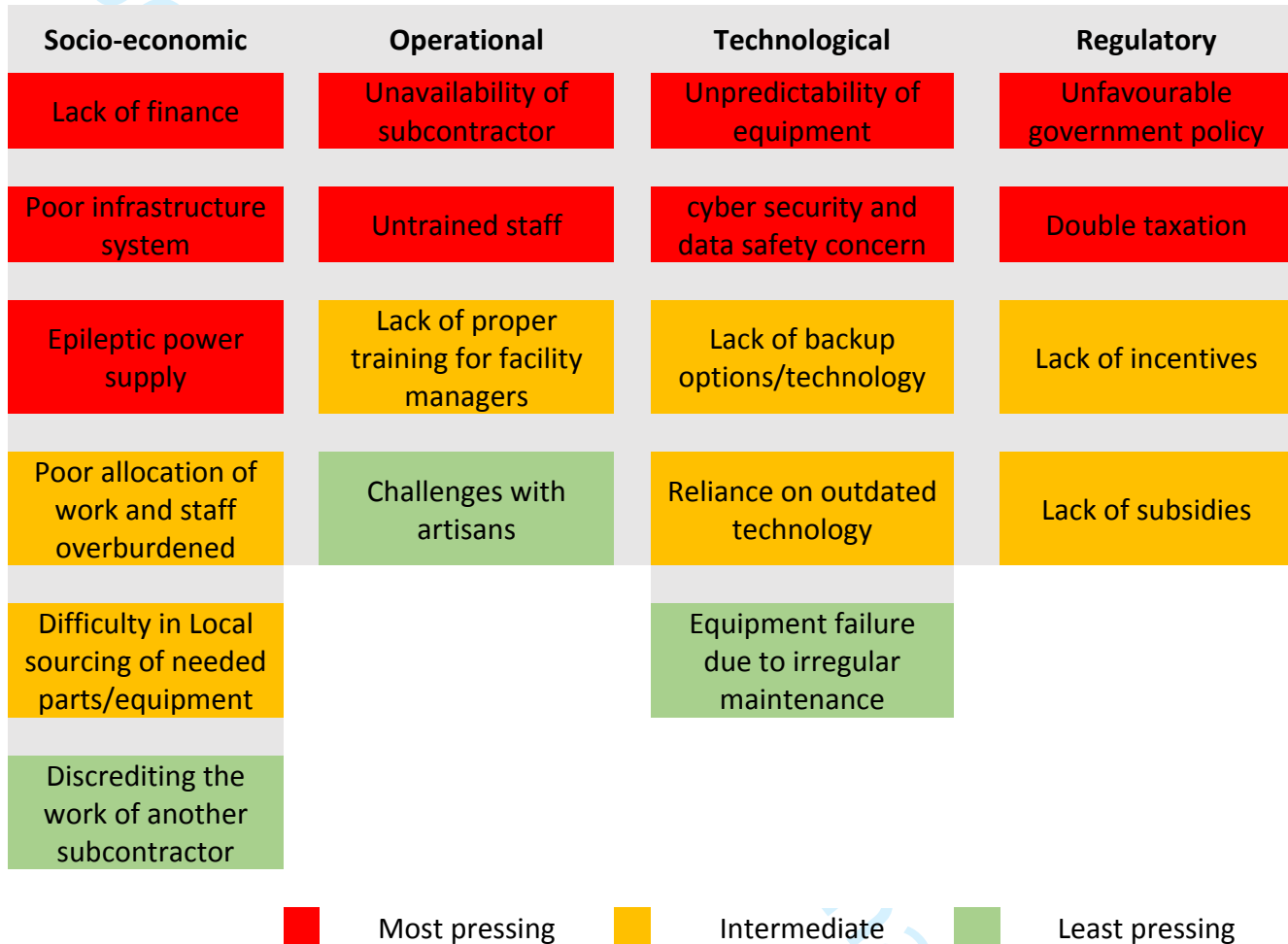


Figure 4. Heatmap of challenges facing healthcare facilities management (Source: Authors).

Theme 4 - Socio-economic challenges

Socio-economic challenges encompass obstacles stemming from the interplay of social behaviour (Ajayi et.al, 2022) and economic complexity, including insufficient resources, earning management, inequality, lack of access and/or poor allocation of resources (Ahmadi et. al, 2023).

In this study, six (6) factors emerged under this theme from the analysis, as illustrated in *Figure 4*. Two of the factors associated with challenges with the infrastructure systems and amenities provided by the Nigerian Government, while others were related to inadequate resources and finances. Poor infrastructure systems and epileptic power supply have been major challenges

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3 that are familiar to facility management in Nigeria (Mohammed and Song, 2013). Hence, it is not
4 surprising that these challenges were mentioned by the study participants. Nigeria is a country
5 where the epileptic power supply has bedeviled it for as long as one can remember. Businesses
6 are saddled with the responsibility of providing alternative sources of power and water supply
7 and some of the respondents mentioned these as factors that hinder the management of their
8 facilities. IT-1 revealed that the facility manager had to get at least two power-generating sets
9 and, private water supply to serve as backup within the facility.
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17 Another factor mentioned by interviewees was the lack of finances to maintain the facility
18 effectively. It was observed that this problem was cited by facility managers who had to get
19 approval from a medical director before any maintenance or repair could be done. The
20 approaches of multi-level approval are good for checks and balances but cause unnecessary
21 hinderance in the management of the facilities (Mewomo et. al, 2022). It was noted that facility
22 managers often encounter difficulty when funds are needed for routine maintenance or repair,
23 and the funds are not released on time, this leads to further delays in the facility or equipment
24 being maintained. This is evidenced by this response from IT-9 "Getting the management
25 approval for money-related issues when you need to do repairs or maintenance has been
26 challenging too," and IT-11 "The problems that we actually experience is just the paperwork and
27 paper trail to request repairs and the delay of payments."
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37 The other aspect of socioeconomic challenges is difficulty in local sourcing of needed equipment
38 or parts, which has made equipment purchases or part maintenance expensive since they are
39 imported from other countries. In addition to this, the cultural dilemma of unnecessary
40 competition within the Nigerian industries which makes subcontractors or artisans discrediting
41 one another work is a serious challenge that is hampering facilities management in Nigeria.
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47 **Theme 5 - Operational Challenges**

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49 Operational challenges are obstacles faced in maintenance and daily organisational functioning
50 (Che-Ghani et. al, 2023). This encompasses issues with processes, resources, communication,
51 logistics, and management, hindering efficiency and goal achievement. The thematic analysis of
52 the responses produced four (4) factors under this theme. Most of the facility managers
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3 interviewed in this study cited the unavailability of subcontractors as a challenge they have
4 encountered, which hampers their work. Specifically, facility managers contact subcontractors
5 and have an agreement for them to come in at a certain period to repair or maintain equipment,
6 but they eventually do not show up even after several follow-ups and reminders. For example,
7 IT-6 stated that *"the challenge is the artisans, getting them to come down as at when due, you*
8 *have to do a lot of follow-ups. So, most times, if you even say six months, if you are not careful,*
9 *they do not come in until after 7 – 8 months."* Another facility manager who said he was facing
10 the same challenge explained how this negatively affects the clinic financially because the clinic
11 loses money when broken-down equipment is not quickly fixed and made readily available for
12 use.
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22 Another challenge this study noticed is the lack of proper training for facility managers in Nigeria.
23 During the review of transcripts and data analysis, it was observed that only one (IT-11) out of
24 the 15 participants had a background qualification and job role specific to facility managers. Most
25 respondents were clinic owners/managers who doubled as facility managers, among other
26 responsibilities. Although some respondents delegate tasks to other staff and subcontractors, a
27 majority of them take on the role by themselves. For example, the IT-12 said, *"Because it is a*
28 *small facility, I do most of it myself,"* while IT-14 said, *"No, I do not have subcontractors; I do it*
29 *myself"*. Facility management is an important job that if not done correctly, can result in the
30 failure of the healthcare facility to serve patients, which can lead to detrimental effects on
31 communities and the country (Mosadeghrad, 2014). In terms of education, most of the study
32 participants adopted a learn-on-the-job approach evidenced by a statement made in interview
33 14, *"Well, I do not have any objective training in administration, except for things I picked along*
34 *the line, but I have been running the hospital for about 23 years and the IVF clinic for seven years"*.
35 Most clinic managers are wary of training personnel and staff due to the high staff turnover. They
36 perceive finances spent on training staff in facility management to be wasted once the person
37 leaves and would rather spend the money in other business areas. The lack of adequate training
38 programs in Nigeria was similar to the results obtained from a study by Oseni et. al (2018).
39 Another study carried out by Oladejo et. al (2015) while assessing the challenges of healthcare
40 facilities maintenance in tertiary hospitals in southeast Nigeria found that the staff of the
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3 maintenance department in the hospital were not professionally competent and qualified to
4 handle all aspects of maintenance, although the staff of the department thought otherwise.
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7 **Theme 6 – Technological Challenges**

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10 The fast pace at which technology is moving has been a major challenge for the Nigeria industrial
11 sector and the healthcare facilities management sector is no different. **Technology challenges**
12 **encompass difficulties arising from the use, implementation, or adaptation of technological**
13 **solutions (Dauda and Ajayi, 2022).** The study substantiated the findings of **Dahanayake and**
14 **Nipuni (2022)** that the lack of enough **technological skills to analyse** the existing equipment and
15 predict any potential breakdown in real-time is a major challenge to facility management. These
16 technological challenges pointed out in this study include a lack of backup options/technologies,
17 reliance on outdated technologies and equipment failure due to irregular maintenance. One of
18 the aims of facility management is to anticipate and **prevent unexpected breakdowns** of tools
19 and equipment utilised, having technological capabilities to diagnose and predict this before
20 failure will be key to achieving this and this is not always available in Nigeria's healthcare sector.
21 Some of the respondents said that some equipment fails even when properly managed and the
22 resulting downtime these breakdowns cause can be frustrating, especially in cases where such
23 equipment has undergone regular maintenance. IT-3 expressed the concerns by stating that "*the*
24 *fact that you cannot predict some of the equipment failures, even with best intentions.*
25 *Sometimes, even when we do everything right, some of the equipment still fails*".
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40 Finally, under these challenges is cybersecurity and this poses a critical challenge for facilities
41 management due to the immense sensitivity of patient data. Security concerns encompass
42 potential data breaches, risking patient confidentiality and data integrity. Compliance with strict
43 regulations is imperative, and breaches can result in legal consequences and financial penalties.
44 The fare of robust cybersecurity measures often hampers facilities managers in exploring options
45 for external collaboration that could have **enabled** effective management of their facilities.
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51 **Theme 7- Regulatory Challenges**

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54 Favourable policies and support from the government are essential to the success and survival
55 of any innovations or approaches within organisations in any country **(Dauda and Ajayi, 2022).**
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3 **Regulatory challenges pertain to difficulties arising from compliance with these policies and**
4 **standards governing the sector.** In this study, participants cited double taxation, lack of
5 incentives and lack of subsidies to ease the purchase of equipment as factors that have caused
6 setbacks in the effective management of their facilities. This is evidenced by this excerpt from
7 interview 1 *“For government agencies, you pay for various levies which affect the finances set*
8 *aside for maintenance of the facility, and there is no incentive from the government, no subsidy*
9 *even after these payments”.*

17 **Implication of Findings**

18 The outcomes of this study **shed light** on the critical aspects of facility management in healthcare
19 facilities in Nigeria, uncovering challenges that hinder effective management. The implications of
20 these findings extend beyond the immediate context and have broader ramifications for the
21 Sustainable Development Goals (SDGs), particularly Goal 3 (Good Health and Well-being) and
22 Goal 9 (Industry, Innovation, and Infrastructure). The key **implication is to raise awareness of the**
23 **underdeveloped nature of facility management in Nigeria's healthcare sector, as reiterated in the**
24 **findings of this study.** The underfunding of the healthcare sector places an additional burden on
25 facility managers, who are forced to navigate financial constraints and manage available
26 resources efficiently. This aligns with the broader issue of raising awareness of inadequate
27 healthcare funding in Nigeria, a challenge that impedes progress toward achieving universal
28 health coverage (UHC) outlined in SDG 3.

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31 Moreover, the study's impact is also to uncover the socio-economic, operational, technological,
32 and regulatory challenges facing healthcare facilities management in Nigeria. This underscores
33 the need for a multi-stakeholder approach to address systemic issues in the management of
34 healthcare facilities in Nigeria. Collaborative efforts involving researchers, policymakers, and
35 healthcare professionals are essential to understanding the complexities of facility management
36 fully and formulating comprehensive solutions. Addressing the challenges identified in this study
37 will be the practical implication of this study. This will enable relevant stakeholders to contribute
38 to the advancement of healthcare infrastructure in Nigeria, ultimately contributing to the
39 broader global agenda of sustainable development and **improved healthcare outcomes.**

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Conclusion

This study presents a qualitative analysis to explore the facility management approaches used in managing healthcare facilities in Nigeria and to understand the challenges that **are hindering effective facility management in the Nigerian healthcare sector**. Fifteen (15) interviews were conducted, and the data collected was subjected to thematic analysis. The general deduction from the study is that facility management is still underdeveloped and not taken as seriously as it should be in Nigeria's healthcare sector. It has been established that the healthcare sector in Nigeria is underfunded, so healthcare facility managers end up managing funds they can access. **As a result, managers and medical directors take up facility management as a second role to their main role instead of setting up a department solely for the management of the facility and employing personnel whose focus should mainly be on facility management.**

The exploratory study revealed that scheduled (preventive), unscheduled (reactive) and mixed methods are the available facility management approaches currently being used in managing healthcare facilities in Nigeria. The outcome of the study revealed that the mixed method with more priority for the scheduled approach is currently the most adopted facility management approach in Nigeria's healthcare sector, especially with private facilities and less experienced managers. It was observed that most private and public health facility managers do more of a preventive approach because it is convenient to use, and potential problems were identified very early to ensure the facility's smooth running. On the other hand, public healthcare facility managers adopted the approach they used based on policy guidelines they met in place and most of the time have more reactive (unscheduled) than preventive (scheduled).

In terms of the challenges that hindered effective facility management of healthcare facilities in Nigeria, the study revealed nineteen (19) factors, which are further grouped into four (4) themes that emerged from the thematic analysis. The themes are socio-economic, operational, technological, and regulatory challenges. The theme with the most factors is the socio-economic challenge which is a combination of the challenges emanating from the poor economic situation of Nigeria and the bad attitude of the professionals working within the facility management sector in Nigeria. Operational and technological challenges **which culminated** from the slow pace of technological advancement of the facility management sector have also been identified as key

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3 challenges that make it difficult to deal with most of the new innovative approaches that could
4 **have seamlessly aided** effective facility management. Finally, the unfavourable government
5 policies and regulations challenges are hindrances to the duties of facility managers and thus
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7 impeding the effective management of healthcare facilities in Nigeria.
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11 It is important to note that the limitations of this study include the relatively small sample size
12 and the homogeneity of the study participants. Another limitation was that although a purposive
13 sampling method was used, facility managers in the public sector were not adequately
14 represented and most importantly, the suggestions for countering most of these challenges were
15 not included in this study. Irrespective of these limitations, the key contribution of this study has
16 been in uncovering the hidden challenges facing effective **healthcare facility management in**
17 **Nigeria. This will make it easy for the stakeholders to proffer solutions to the problems and thus**
18 **rescue the dying situation in which Nigeria's Healthcare facilities are.** It thus recommended that
19 further study involving large samples and multiple methods should be carried out to substantiate
20 these identified challenges **and find practical solutions that will enhance the** attainment of
21 effective facility management in Nigeria.
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An In-depth Analysis of Facility Management Approaches in Nigeria's Ailing Healthcare Sector

INTERVIEW QUESTIONS

The purpose of this interview is to seek the opinion of respondents on the facility management approaches being used by healthcare facility managers in Nigeria. The interview will consist of 10 questions and take about 15 - 30 minutes to complete. All responses will be kept anonymous, and nobody will be identifiable by the research.

Section A: Socio-demographic details

1. What is your educational background/ qualification?
2. What is your current job role?
3. Are you currently managing a private or public health facility?
4. How much experience have you had in facility management?

Section B: Main questions

1. Can you please describe your role in managing the facilities in your hospital?
2. Do you do this by yourself and/or do you employ any sub-contractors?
3. What exactly do you do and how? Kindly provide context as to all the things you do every day, briefly.
4. Why did you take this approach? Was it due to policy guidelines, safety concerns, or other reasons?
5. Is this management approach working for your facility? Could you please explain this in detail?
6. What do you like and dislike about your adopted approach?
7. What challenges have you experienced with this approach?
8. What strategies can be employed to tackle these challenges and enhance the current approach?
9. What role did technology, digitalisation and/or automation play in this process?
10. Do you have anything else to add?

Thank you very much for your responses.

Response to Reviewers' comments:

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The authors would like to thank the editor-in-chief and anonymous reviewers for their helpful and constructive comments. We have greatly benefitted from their comments, and we believe that the quality of the paper has improved as a result. As requested, we have revised the manuscript based on the reviewer's comments. In addition, the whole manuscript has also been proofread again to ensure that the sentence structure, grammar, spelling, and references are consistent.

Below are our responses to the reviewers' specific comments. All relevant sections have also been tracked with red ink in the revised manuscript.

Comments: To the benefits and understandings of reader, the author may consider to elaborate the followings:

-the list of questionnaires applied during the interview;

Response: Thanks for suggesting this, we have now provided the interview questions as a supplementary file because of word limit constraints in the manuscript. This allows interested readers to access the interview question details without cluttering the main manuscript. However, we have provided sufficient information that describes the key components of the interview question in the manuscript under the research methodology section on page 7. This reads as *"The interview questions provided as supplementary data consist of open-ended questions to allow the participant to describe their job roles in hospital facility management, the use of subcontractors in the facility management process and their maintenance approaches. Furthermore, questions were asked about the reason for the choice of approach, the challenges experienced with the selected approach, their perception of its effectiveness, and their likes or dislikes about the approach"*.

-the definition and scope of "Facility Management" applied by the case hospitals;

Response: Thanks, we agreed that this will provide more clarity to our study, and we have now added the information to the second paragraph under the introduction section.

-how the author justified the level of the use of FM approach;

Response: We appreciate the reviewer's thorough assessment of the manuscript again by picking out these silent issues that we believed that has improved the clarity of our work. The level of use of the FM approach was reported by the responses by asking them how often they use each of the mentioned approaches. We have categorised their responses into three; mostly used, sometimes used and equally used as shown in Table 2. We have now explained this properly on page 11 before inserting Table 2.

-how the 19 factors mentioned in the analysis were identified and mapped into 4 themes.

Response: A full explanation of how the factors and the themes emerged have now been added to the manuscript under Objective 2 on page 15 -16

Comments: In the data analysis section, the author decided to exhibit a table showing qualification, job role, type of organisation and experience of the interviewees that do not show how these people

1
2
3 associate to FM works in their healthcare facilities. Perhaps, it might be more useful to additionally
4 exhibit their roles and responsibilities in handling FM works in the table.
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7 **Response:** Thanks, the information has already been provided by including a statement that
8 says that participants are responsible for the facility management in their workplace in the
9 data collection section. However, we have now reiterated that under data analysis by adding
10 this sentence, *"It is important to clarify that all the 15 interviewees assume the role of facility*
11 *manager within their respective organisations, in addition to their primary roles given in the*
12 *third column of Table 1"* before table 1.
13

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15 **Comments:** Also, the author should provide and include:

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17 -a summary table of key results or findings from the interviews and data collections.
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20 **Response:** Table 2 already includes the summary of findings for objective 1 and we have added
21 a statement *"The indication from this study is that mixed method is the most common*
22 *and appropriate facility management approach in Nigeria's healthcare sector"* to
23 iterate the finding. For objective 2, Figure 4 again already summarises the challenges
24 facing FM in Nigeria using the heatmap approach. Again, we have included a text that
25 refers to that for clarity. Thanks
26

27
28 -the definitions of technical terms used in the paper and-the definition of each thematic challenge.
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31 **Response:** Thanks, these have now been added to the manuscript in relevant sections and
32 have been properly tracked in the revised manuscript

33
34 **Comments:** In addition, the author should well re-check and edit the typos and references. For
35 instance, the reference at line 24, page 2 cannot be located or found in References. There also seem
36 to be discrepancies in the references.

37
38 **Response:** Done, all references have been checked and consistent throughout the manuscript,
39 We have also proofread the entire manuscript.
40

41 We greatly appreciate the contribution of the reviewers. Thanks
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