



Examination of the effectiveness of facilities management system in tertiary institutions: A case study of the Federal University of Technology, Minna, Nigeria

Emmanuel B. Gana^a, Sekinat Abdulkareem^b, Maimuna L. Ahmed^c

^{ab}Federal University of Technology, Minna,

^cFederal polytechnic, Bida

emmanuelbabakuchigana@gmail.com, sekinatabdulkareem@futminna.edu.ng, ahmadmaimuna3.ma@gmail.com

Abstract

Facilities management is crucial in maintaining effective educational environments, particularly in tertiary institutions. This study evaluates the effectiveness of the Facilities Management system at the Federal University of Technology Minna, Nigeria, with a focus on identifying current practices and their impact on institutional performance. Utilizing a mixed-method approach, data were collected through questionnaires distributed to 110 Facilities management personnel, yielding a 60% response rate. The study assessed various Facility Management system, including reactive, reliability-centred, predictive, preventive, corrective, and proactive/planned systems. Results indicate a predominance of a reactive approach, with a mean score of 3.95, while proactive and planned approaches scored the lowest. The findings reveal that, despite a well-qualified and experienced Facilities Management staff, the institution's facilities management remains largely reactive and underutilizes proactive system. This study underscores the need for Nigerian tertiary institutions, including Federal University of Technology Minna, to adopt more proactive and strategic Facilities Management practices to enhance the effectiveness and sustainability of their facilities management systems. The implications of these findings suggest that addressing challenges such as inadequate funding and outdated infrastructure is essential for improving Facilities Management practices in Nigerian educational institutions.

Keywords: Facility management, facility management system, reactive and proactive approach, tertiary institution

1. Introduction

Facilities management which includes the organization, running, and upkeep of tangible assets, is a vital role in educational institutions (Miles, 2023). A favourable atmosphere for research, teaching, and learning is guaranteed by effective Facilities Management. In addition to serving as educational citadels, tertiary institutions enable countries to easily integrate into the emerging global knowledge system in any setting where efficient facilities management techniques are in place (Marmolejo, 2021). Poor facilities will seriously jeopardize the fulfilment of this goal, as Price (2013) said, as the learning environment is a crucial component in determining effective teaching and learning. Sustainable infrastructure management in Nigerian tertiary institutions, such as the Federal University of Technology Minna, depends on an awareness of the efficacy of Facilities Management systems.

Managing support services is Facilities management main responsibility in order to provide for the organization's fundamental operations, staff, and basic necessities (Chitopanich, 2014). According to udechukwu, (2022) a well-organized facilities management system can enhance a building's external look and functionality as well as increase end-user satisfaction and boost the effectiveness of building facility maintenance and operation. Even with Facilities management's significance, effective facility management still faces difficulties. These difficulties include a lack of finance, antiquated infrastructure, and a slow uptake of contemporary technologies. In this study, we specifically examine the issue of how successful federal university of technology Minna's facilities management system is with a particular emphasis on the Federal University of Technology Minna.

Anifowose and Lawal (2013) investigated the condition of physical infrastructures in Nigerian postsecondary institutions. The study evaluated the effectiveness of facilities managers, the accessibility of physical facilities, and the effect of maintenance expenses on the condition of physical structures. The results showed that the physical facilities were insufficient, and that the state of the structures was greatly impacted by the expense of upkeep. The characteristics of facilities management procedures in Nigerian public tertiary institutions were investigated by Gidanmana (2020). The report emphasized the difficulties, including limited technological proficiency, shoddy

policy execution, and insufficient finance. In order to raise the standard of instruction and learning, it was advised to outsource technical knowledge and take a proactive approach to facilities management.

Ogbeifun (2011) used the University of the Witwatersrand as a case study to examine facilities management in a multi-campus environment. The facilities management unit's performance evaluation, service procurement, and organizational structure were the main topics of the study. The research emphasized the significance of capacity building and strategic planning in augmenting the efficacy of facilities management. Therefore, this study draws insights from other Nigerian tertiary institutions to provide a broader context. This study aims to assess the nature of facilities management system and the effectiveness of facilities management system at the Federal University of Technology Minna, Niger state.

2. Literature review

The International Facility Management Association (IFMA) and the British Institute of Facility Management (BIFM) two of the top Facilities Management organizations in the world, have both published definitions of Facilities Management. According to BIFM (2010) Facilities Management is the integration of organizational processes to sustain and grow the agreed-upon services that support and enhance the efficacy of the organization's core activities. IFMA (2012) defines Facilities Management as the process of integrating an organization's work and personnel with its physical workspace, incorporating behavioral and engineering services, architecture, and business administration principles.

The value of facilities management to an organization has recently gained recognition among academics and practitioners (Heng *et al.*, 2005; Alexander and Price, 2012). This is because, in addition to saving operating costs and optimizing usable space, Facilities Management supports and enhances both non-core and core business activities within an organization, necessitating strong support and approval from upper management (Tranfield and Akhlagi, 1995; Noor and Pitt, 2009; Barrett and Finch, 2014). Facilities Management thus acts as a means by which an organization provides and maintains its buildings, systems, and support facilities to meet strategic requirements in a supportive environment.

Although there is a dearth of research on the application of facilities management in higher education, Asiabaka (2008) in his study of the effects of Facilities Management in Nigerian schools, emphasized the significance of effective Facilities Management. He noted that effective Facilities Management involves the provision, maximum use, and optimal oversight of facilities, which is central to achieving the objectives of education due to the vital role they play in fulfilling educational aims and objectives.

Ogbeifun (2011) further explored Facilities Management in a multi-campus setting using the University of the Witwatersrand as a case study. The study focused on the facilities management unit's organizational structure, service procurement, and performance assessment. It highlighted the significance of capacity building and strategic planning in enhancing the effectiveness of facilities management. The study concluded that implementing FM strategies could significantly impact a school's overall performance, but for FM to be successful, there must be direct communication between the academic and Facilities Management departments.

These studies collectively highlight the critical role of facilities management in educational institutions. Effective Facilities Management ensures the provision, maintenance, and optimal use of physical resources, which in turn supports the core educational activities. Despite the recognized importance, challenges such as inadequate funding, outdated infrastructure, and slow adoption of modern technologies persist, particularly in Nigerian tertiary institutions. This review sets the stage for a detailed examination of the effectiveness of the Facilities Management system at the Federal University of Technology Minna, aiming to identify specific challenges and propose solutions for improvement.

3. Research Methodology

The establishment of the Federal University of Technology, Minna took place on the 1st of February in the year 1983. This institution stands as one of the specialized technological universities in Nigeria, with a primary objective of promoting self-sufficiency in the fields of science, engineering, and technology. Its inception was driven by the need to bolster Nigeria's pursuit of progress in technology and creativity. Federal university of technology Minna functions across two principal sites: Bosso and Gidan Kwano. The Bosso campus accommodates a limited number of departments and administrative facilities, while the Gidan Kwano campus sprawls across 10,650 hectares, housing essential amenities like sports facilities, staff residences, academic buildings, administrative offices, faculty areas, classrooms, a research centre, and a library.

The methodology employed for data collection involved the distribution of questionnaires to personnel responsible for Facilities Management (FM) within these academic institutions. The survey targeted individuals occupying roles in departments or units associated with Facilities Management duties, such as quantity surveyors, architects, engineers, builders, estate surveyors, valuers, among others. Their daily tasks involve engagement in the works and

maintenance department, physical planning and development department/unit, and power section. A random sampling approach was utilized to determine the sample size required to gather feedback from respondents regarding the research inquiries. A total of 110 questionnaires were dispersed, out of which 66 were retrieved, resulting in a response rate of 60%, deemed sufficient for subsequent data analysis. The adequacy of the data collected was supported by the prompt and comprehensive responses provided by the participants, facilitating the swift return of the questionnaires for analysis purposes. Questionnaire was developed from the literature reviewed; broken in two sections accompanied by a covering letter introducing the focus of research and instructions to be followed by the respondents.

4. Discussion of findings

The first section contained demographic information about the respondents. Table 1 presents the demographic data of participants, who are employees at the federal university of technology in Minna, Nigeria. The data provided includes their job positions, academic qualifications, and years of experience within the university.

Table 1 illustrates that 40.9% of the participants work as technical officers, while 31.8% hold managerial positions in facilities. This indicates a higher number of technical staff compared to managerial staff in the institution. Moreover, within the managerial group, 21.2% are principal FM officers, 36.4% are senior facilities managers, and 30.3% are facilities officers. Among the technical officers, 16.7% are chief technical officers, 18.2% are assistant chief technical officers, 22.7% are principal technical officers, and 39.4% are senior technical officers. This suggests a greater presence of experienced technical staff in facilities management at the university.

Table 1 also explores the job titles of the participants, revealing that 33.3% are engineers, 15.2% are architects, 12.1% are estate surveyors and valuers, 10.6% are Quantity surveyors, and 6.1% are builders. Additionally, 22.7% have other professional roles within the maintenance and works departments at federal university of technology Minna. The table further discloses the participants' highest educational attainments, with 12.1% holding Masters of Technology, 36.4% having Bachelor of Science/Technology degrees, 39.4% possessing Higher National Diploma/Post Graduate Diploma qualifications, and 12.1% holding National Diploma certificates. The academic background of the participants indicates the reliability of their data for research purposes.

Finally, the study examines the work experience of the participants, revealing that 12.1% have over 30 years of field experience, while 30.3%, 42.4%, and 15.2% have work experiences ranging from 20 to 30 years, 10 to 20 years, and 10 years, respectively.

Table 1. Demographic information of respondents

Demographic information	Respondent	Frequency	Percentage %
Functional category	Facilities Managerial officer	21	31.8
	Technical officer	27	40.9
	Users	18	27.3
	Total	66	100.00
Position of FM officer	Chief FM officer	2	3.0
	Assistant FM officer	6	9.1
	Principal FM officer	14	21.2
	Senior FM officer	24	36.4
	FM officer	20	30.3
	Total	66	100.00
Position of Tech officer	Chief Tech officer	11	16.7
	Assistant Tech officer	12	18.2
	Principal Tech officer	15	22.7
	Senior Tech officer	26	39.4
	Facilities Tech officer	2	3.0
	Total	66	100.0
Appellation of FM/Tech officer	Engineer	22	33.3
	Architect	10	15.2
	Estate surveyor and valuer	8	12.1

	Quantity surveyor	7	10.6
	Builder	4	6.1
	Other professionals	15	22.7
	Total	66	100.00
Academic Qualification of FM/Tech officer			
	Msc	8	12.1
	Bsc	24	36.4
	HND/PGD	26	39.4
	National Diploma	8	12.1
	Total	66	100.0
Years of work experience of FM/Tech officer			
	Above 30years	8	12.1
	20-30years	20	30.3
	10-20years	28	42.4
	Below 10years	10	15.2
	Total	66	100.0

Source: Field survey 2024

The facilities management system implemented at the Federal University of Technology has been evaluated over time. According to the results presented in Table II, the Facilities Management system at Federal University of Technology Minna was found to prioritize a 'reactive' approach, with a mean score of 3.95. Following closely was the 'reliability-centered' system, scoring 3.80 on average, while the 'predictive' and 'preventive' systems ranked third and fourth with mean scores of 3.42 and 3.39, respectively. Both the 'corrective' and 'proactive/planned' methods scored lower, with mean scores of 3.27 and 3.23. Regrettably, the longstanding FM system at Federal University of Technology Minna lacks a proactive or result-oriented nature. Similar to many other tertiary institutions in the country, actions are typically taken only after facilities have malfunctioned. This observation is underpinned by the dominance of the 'Reactive' approach, as indicated in Table II. This outcome contradicts the notion put forward by Price and Pitt (2011) that organizations have shifted from traditional to more proactive facilities management systems. This deficiency aligns with Lavy's (2008) assertion that businesses and institutions have yet to fully leverage facility management for enhanced performance and success. Despite the potential benefits of a proactive Facilities Management system, the Federal University of Technology Minna has not embraced this innovative facet of facilities management.

Table 11. Effectiveness of facilities management system in the study area

FM system	Mean score	SD	F	Significance	Ranking
Reactive	3.95	2.345667	5.704	0.001	1
Reliability centred	3.80	2.21117	5.601	0.002	2
Predictive	3.42	1.87759	4.738	0.004	3
Preventive	3.39	2.35486	3.760	0.0014	4
Corrective	3.27	1.98736	6.893	0.003	5
Proactive/planned	3.23	1.89768	2.609	0.012	6

Source: Field survey 2024

5. Conclusion and Recommendations

The exploration of facilities management system at Federal University of Technology Minna reveals that there is a higher proportion of technical staff compared to managerial staff in possession of the necessary skills, knowledge, and experience in the field of facilities management. It was observed that the individuals responsible for facilities management at the institution possess suitable academic qualifications. A majority of these technical and managerial staff members have accumulated more than a decade of work experience. The predominant facilities management approach at Federal University of Technology Minna was found to be 'Reactive', regardless of the age of the facility. Regrettably, the proactive facilities management strategy, which is more outcome-focused, is underutilized at the institution.

Drawing upon the findings from existing literature, this study posits that the facilities management system at Federal University of Technology Minna remains rudimentary, lacking in proactive and preventative measures as deemed necessary. Maintenance efforts are predominantly reactive, initiated only after facilities have malfunctioned

and require repairs. Tertiary institutions' facilities management systems encounter significant obstacles such as insufficient funding and inadequate policy enforcement by the governing bodies. Overall, the approach to facilities management in tertiary institutions tends to be haphazard.

Based on the findings, it recommends Federal University of Technology Minna should adopt a proactive and preventive measures deemed necessary. Maintenance efforts should be fixed on schedule base not predominantly reactive. Adequate funding should be allocated to proactive maintenance in order to curb breakdown of facilities before action is taken.

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