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Facility Management Challenges of Public Educational Facilities in Nigeria

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Abstract

This study investigates the inconsistencies between the construction stage and the uptake of the facility management phase of constructed public educational facilities in developing countries. Maintenance issues arise from this time that may affect the utility expected of the facility which may or may not be connected to the construction phase. A quantitative research approach was utilised for this study. Close-ended questionnaires were distributed to forty four facility managers and construction professionals in maintenance departments of selected public educational institutions in Ekiti, South west Nigeria. Descriptive statistics was utilised in the interpretation of results. Analysed data relate the need to institute comprehensive maintenance management policies and plans for the effective management of higher educational facilities to prolong their utility and lifespan. Introducing standard maintenance contracts and contract conditions for improving the efficiency of built assets in HEIs through policy organs such as TETfund and improving the awareness of facility management practice especially among industry policymakers is recommended. Facility management contracts must be defined to take care of operations and the maintenance phase of buildings and facilities in public educational institutions. If these thoughts are envisaged at the pre-tender stage, they will be easier to implement. The study was based on a purposive sampling of public educational facilities in a specific geographical area. The findings cannot easily be generalized. This study contributes to the literature on Facilities Management globally and in Nigeria and suggests the improvement of facility management awareness in public higher educational institutions and the development of structured facility management contracts.

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Introduction

Facility management involves the optimal control of multiple disciplines to ensure the improved functionality of the built environment by integrating places, processes and technology with the people (IFMA, 2005). These disciplines include gadget installations, repairs and maintenance; custodial and grounds services; space and utilities management; occupational and environmental safety and health; transportation, parking and public security and safety; information technology and communications; and architectural, engineering and construction services.

Facility management as a discipline and post-construction practice in itself is saddled with the responsibility of operating and maintaining a new or newly renovated asset. Facility Management initiates from the end of the defects liability phase to through the operational lifetime of the built asset.

Most public facilities such as government establishments and ministries have an in-house unit that is saddled with the maintenance of its facilities and built assets. When these assets dilapidate and are in need of operational and planned maintenance, the in-house units (consultants) produce maintenance procurement contracts on an inspection, measure, and value contract basis for individual contractors or small-scaled maintenance contractors (Lavy, 2008). However, the absence of formalized contracts and the varying conditions of engagement is seen as a barrier to the full uptake of operational and facility management of public educational facilities especially in Nigeria (Alejo, 2018).

The research questions for this study are; why are observed public educational facilities not maintained adequately after the construction phase? In practice, does the extent of TETFUND funding cover the livelong maintenance of these facilities as enshrined in the TETFUND Act? What strategies can solve the dilapidation of completed projects in public educational facilities?

This paper is arranged in this flow: The present section has introduced the paper and defined the research problem. Facility management practices and challenges within the Nigerian educational sectors are discussed in the next section. In the third section, research methodology of the study is presented while subsequently, respondents were asked to provide a rating of their views on best practice in facilities management for public educational institutions. Procurement issues surrounding the use of maintenance contracts and integrated maintenance systems was also evaluated. In addition, significant strategies needed for improving facility management implementation in educational facilities to enhance the sustainability were also studied. The concluding section is directed towards discussions and making suggestions for appropriate strategies for the management of the facilities in the public tertiary educational system.

Literature Review

Public Educational facilities in Nigeria are mostly built-up with a Federal Government bond otherwise known as Tertiary Education trust fund TETFUND. The TETFUND act 2011 repeals the Education tax fund of 2004 and the education tax fund of 2003 and establishes TETFUND to manage the collection and disbursement of the funds accruing from the educational tax levy. This fund is specifically for the provision and maintenance of physical infrastructure and equipment,

instructional material and equipment, research and publication, academic staff training and development and general quality improvement and maintenance of standards in the public educational institutions. The TETFUND ratio is 2:1:1 for Universities, Polytechnics and Colleges of education spread uniformly across the geo political zones of the country (TETFund, 2011).

Public facilities in Nigerian public educational institutions are in a state of poor maintenance and disrepair. Most facilities constructed five years ago and more are in dire need of use-in preventive maintenance. Although, the number of students being admitted have been on an astronomical increase and this is a factor to consider in the dilapidation of these assets (Udu & Nkwede, 2014), maintenance of the facilities should be on the increase, and however, this is not the case. The need for adequate maintenance plans and processes have been considered a vital factor to consider in reducing this observed unsustainable menace (Chidi *et al*., 2017). This study looks critically at the maintenance needs of these public facilities with a view to understanding the phenomenon and seeking a way out.

Facility management is recently evolving in Nigeria, as this is the case in most developing countries. The development of this branch of built assets management stems partly from the realization that process planning and organization of post construction management and use of facilities are better left to professionals who are trained and seasoned in the operational and maintenance needs of the assets and facilities.

In an environment where the traditional approach to maintenance management is rife and where the maintenance culture is generally low, the paradigm shift from the traditional maintenance methods to more conventional methods such as facilities management and integrated facilities management frameworks need more than mere rhetoric (Wenibowei & Warrant, 2021).

Maintenance Structure for Public Higher Educational Institutions

Angya (2020) contend that poorly constructed and managed buildings dot the landscapes of educational facilities in Nigeria irrespective of the class of education. The lacks of facilities and technological capability on one hand, and the deplorable state of the built facilities on the other hand have been due to neglect over the years (Ajayi, 2018). Built assets in higher educational institutions (HEIs) constitute a part of an institution's heritage and contribute significantly to the ease of learning, experience of learners and the creation of a conducive environment for the facilitation of knowledge (Chidi *et al*., 2017 ; Ofide, *et al*., 2015). With the assistance of various stakeholders within the educational development sector of Nigeria, construction of these facilities has been actualised. However, a good number of these built facilities function below par, are currently in a state of disrepair and poor maintenance without any plan for adequate maintenance thereby depriving the users of the optimal experience, satisfaction and knowledge that can be gained from the use of these facilities (Olowoake and Song, 2017). The maintenance structure for public higher educational institutions in Nigeria are mostly undefined and until there is a breakdown in the functioning of the asset, it is not considered as needing repairs (Alejo, 2018; Ezeali, 2019).

Funding structure

Ofide *et al.,* (2015) note that the mostly used maintenance strategy in higher institutions is the corrective maintenance strategy which is only poised at repairs after dilapidation of assets. Noting that there is no interface between the users and the maintenance units of the sample and that the maintenance of such assets is fully management initiated and controlled. Wenibowei and Warrant, (2021) further attribute this lack of administrative effectiveness on the paucity of funds provided for maintenance related services of built facilities in higher educational institutions. While it is noted by Faremi *et al*., (2017) that soft maintenance and facility management services such as cleaning are easily outsourced to third parties, immediate repairs and prompt maintenance requiring specialised skills are often neglected till they become bottlenecks hampering the functionality of the built assets.

Soft maintenance and facility management services are generally outsourced to third parties. These generally include security outfits and cleaning agencies in day to day service provision. In other climes, however, technology has taken over some of these services especially security with close circuit monitoring systems and access control facilities such as card readers and internet of things (IoT) / biometric access controls have been incorporated into the built facility system. These can also control the access and usage of available facilities such as lecture rooms, offices, libraries, laboratories, computer rooms and other facilities housed within the higher educational institution facility. This promotes the utility of these facilities against damage and theft as it provides undue access restriction to sensitive areas after active work hours.

Maintenance cycle

The maintenance cycle of most public HEIs is not defined and this ought not to be so as it provides room for non optimal performance and service delivery of these facilities. The upgrade of the existing corrective maintenance strategy to a preventive maintenance strategy has been advocated by several authors such as (Chidi *et al*., 2017; Faremi *et al*., 2017). There is an urgent need to aggregate all concerns on HEI facilities and assess end user's satisfaction with these facilities to assist in planning better facilities for the future use. Facility management and Maintenance contracts also promote the longevity of the HEI built assets as this contract tends to treat the built assets as a functioning system that needs adequate and optimal management to deliver in its functionality to the users of the facility and improve the safety and comfort of the users as well.

Analysis of the Activities of TETFund in Nigeria based on the key responsibilities of the TETFund, there are basically three key areas in which the agency functions. They are: Funding, staff training and development and projects facilitation Udu & Nkwede (2014). However, the management of the projects and the eventual strategies to ensure the built assets serve users effectively over a longer period of its useful life has not been prioritised by the management of the various facilities.

Educational assets and facilities of higher educational institutes (HEIs) constitute an essential part of its heritage where in core functions of teaching and learning are facilitated. They largely contribute to the ease of learning for students and if satisfactory, improve their quality of learning and assimilation. Facilities such as lecture halls, amphitheatres and office blocks for staff are not exactly income generating assets for the institution but must be adequately maintained to ensure

improved service delivery in its function.

Maintenance management has in most cases been the function of the administrative management in higher educational institutions with clearly drawn out maintenance frameworks and policies; this has not been the case in most Nigerian institutions. Facilities and built assets in use have not been adequately maintained using improved strategies such as preventive and scheduled maintenance initiatives.

With a growing regular intake of students, substandard materials being used during and a lack of adequate maintenance budgeting, planning, and implementation, there has been infrastructural decay in core facilities and an increasing rate of wear and tear in a lot of public higher institutions Udu & Nkwede (2014). While some studies have identified these as a failure on the part of management and a paucity of funds, the ineffective utilization of available funds has also been mentioned (Ajayi, 2018).

Tetfund provisions have largely focused on the procurement of these constructed assets and staff development while the liability/ function of effective maintenance is often transferred to the management of the institution thereafter. There is a need to actually have a more holistic outlook towards the maintenance and functionality of these assets to deliver the optimal need for users. Research studies such as Ezeali, (2019) and Ogechukwu & Ngozichi, (2020) have recommended that Tetfund as an organ of the government need to have liaison officers in these institutions to probably produce facility management reports on the assets yearly as this will improve HEI management attitudes and decisions towards the maintenance of the built facilities and this will guide in its decision-making and project evaluation strategies.

The need to develop maintenance policies and guidelines for HEIs is alluded to be of importance as the HEI is a functional environment expected to be proactive in the delivery of its obligations (Alejo, 2018). Management by objective (MBO) which is a strategic model towards improving organizational environment, welfare and overall productivity was proposed by Oraka, Ogbodo & Ezejiofor (2017). Stakeholders and users opinions need to be collected and assessed by management to know exactly what is needed and how to prolong the utility of these assets in HEIs.

With soft facility management services being regularly outsourced in some notable HEIs, these institutions have endeavoured to focus on more core objectives however, there has not been enough maintenance strides towards hard maintenance/ facilities management. Formalised FM policies, contracts and maintenance arrangements if adequately looked into by the relevant stakeholders will improve the service delivery of the built facilities in Nigerian Higher Educational institutions.

Methodology

This study took upon a positivist approach which is objective and quantitative, questionnaires were developed and utilised as they provide a quick, simple and economical means to obtain respondents' data. Questionnaires were utilised due to the large and geospatially distributed sample size being approximately 55 facility managers employed within the services of five higher educational institutions (HEIs) in Ekiti state, Nigeria. It was ensured that respondents have a minimum of five

years' experience in facilities management. The questionnaire utilised a 5-point likert scale with response categories of 1, 2, 3, 4 and 5, for "strongly disagree", "disagree", "neutral", "agree", "strongly agree" respectively. The questionnaire began with identifying the likely causes of the poor maintenance of the core built assets of the HEIs as well as drivers of improvement of the current scenario. It further goes on to establish the different approaches and strategies utilisable in improving the facility management challenges observed. Forty four responses were obtained regarding these aspects which was then analysed and interpreted.

Results

Demographics

The data obtained from forty four respondents was analysed using SPSS version 26. Demographics of the respondents are represented on table 1 below. The majority of the sample is male with about 64% while the mean years of experience of respondents is around 11 years.

Table 1. Demographics of Respondents

Higher Educational Institution	**Frequency**	**Percentage**
Federal Polytechnic Ado-Ekiti	15	34.09
Ekiti State University, Ado-Ekiti	11	25.00
Bamidele Olumilua University of Education, Ikere Ekiti	8	18.18
Freelance Facility Managers	5	11.36
Construction Professionals	5	11.36
Total	44	100
Gender		
Male	28	63.64
Female	16	36.36
Total	44	100
Years of experience		
0-5 years	4	9.09
6-10 years	15	34.09
11-15 years	13	29.55
Above 15 years	12	27.27
Total	44	100
Mean years of experience	**11.25** years	

Cronbach's alpha (α) was used to determine the reliability of the sectioned questionnaire. Section B and C had 0.815 and 0.785 respectively indicating that the threshold for internal reliability was surpassed (Pallant, 2016). The questionnaire therefore was considered reliable and measuring the intended variables.

Table two indicated that from the 44 respondents, 86.4 % agreed that the maintenance policies of HEIs need revamping, improvements and better implementation strategies in this geographical area while 74.8% of the respondents believe that newer facility management routes such as Develop and maintain projects and facilities have less maintenance issues. 83.2% of the respondents believe that the break of operations and maybe personnel during the construction stage and the maintenance/ facility management phase fosters a lack of synergistic operational and maintenance plan for optimal use of the facility while 81.6 % believe that the lack of a strategic agenda for implementation is evident in higher educational institutions. The quality of construction materials utilised during the building fabrication process also need to be improved as around 78% of respondents (77.8%) believe this is a great challenge to the maintenance phase as it reduces the maintenance cycle of building components. Another challenge noticed by the respondents (Mean 3.74, SD 1.06) is that projects with maintenance clauses rarely have maintenance issues within HEIs as the liability mostly lies with the contractor who also in this case becomes the facility manager after the construction phase. The low awareness of the benefits of facility management among policy makers is also a significant challenge (Mean 3.66, SD 1.12)

Table 2. Challenges of facility management in HEIs

S/n	Challenges of facility management in HEIs	Mean	Std. Deviation	Rank
1	Maintenance policies of educational institutions need review and improved implementation routes	4.32	0.985	1
2	The break of both the construction phase and facility management phase creates a lack of synergy for improved use	4.16	0.896	2
3	The lack of strategic agenda for improved facility management in public educational institutions	4.08	0.787	3
4	Construction stage building materials are not very durable for use	3.89	0.852	4
5	Develop and Maintain Project/facilities do not have maintenance issues	3.74	1.062	5
6	Suboptimal usage of TETFUND provision	3.70	0.765	6
7	Low awareness of facility management benefit among policy makers	3.66	1.122	7
8	Inadequacy of TETFUND provision to cover maintenance phase of facilities	3.62	0.943	8
9	Lack of pre – use & construction stage to effectively plan for rising population	3.59	0.894	9
10	The lack of existing facility management systems to learn from public institutions	3.54	0.884	10

Table 3 discusses strategies to improve facility management practices in higher educational institutions. While a few of the likely improvement mechanisms are directed at TETfund which is a financier of these built assets in some cases, the management of the institutions and the policy makers constitute the rest of the stakeholders in this regard and as such, they are captured in the improvement target for built assets within higher educational institutions. 86% of the respondents assert that policy option for compulsory scheduled maintenance of HEI built facilities must be implemented. Of equal importance is the need for adequate awareness and propagation of facility management among relevant stakeholders as

it shares the same mean figure of 4.30 (86%). The need for improved quality assurance and adequate planning and implementation of the adequate needs to enhance feasibility, constructability and improved utility is relevant with around 85% (84.8%) of the respondents agree. TETfund related modalities for improving the system include the possible development of templates and contract packages for maintenance of these facilities in partnership with these institutions (Mean 4.22, SD 1.02). Also, participants are of the view that ten - twenty years maintenance plans can be drawn out and adequate monitoring in the respective HEIs will ensure better quality in construction and maintenance phases of the building life. Coupled with the utilisation of improved technologies in facility management, HEIs should wear a better look and give better utility to users.

Table 3. Improving FM practice in HEIs

s/n	Improving FM practice in HEIs	Mean	Std Deviation	Rank
1	Policy option for scheduled maintenance of public educational facilities must be implemented.	4.30	1.170	1
2	Awareness of facility management should be propagated by all affected stakeholders	4.30	0.895	1
3	Construction stage and operation stage consideration must be adequately factored in during procurement for public educational facilities. (Management by Objective)	4.24	0.783	3
4	TETFUND should develop templates and separate packages for the maintenance of educational facilities it finances in partnership with the institutions.	4.22	0.945	4
5	TETFUND provisions should include a 10 – years maintenance plan domiciled for improved facility management of public educational facilities.	4.15	1.053	5
6	Novel facilities management initiatives like integrated facility management should be deplored and utilized	4.10	1.120	6
7	Auditing, Monitoring and Due process of executed projects should be done especially for public Higher educational facilities.	4.04	0.850	7
8	For existing buildings, facility management and maintenance contracts should have a life of their own	3.97	0,765	8
9	Demonstration and model projects adequately maintained should be made available for better understanding of improved technology in facilities management.	3.85	0.910	9
10	Outsourcing should be encouraged by proponents of facility management especially in the educational facilities	3.20	0.737	10

Discussion

This study has set out to identify the challenges affecting core built assets in higher educational institutions (HEIs) in Nigeria. Taking into consideration that there are various built assets dotting the landscape of public higher institutions which are in a huge state of disrepair and low maintenance, this study seeks to understudy these challenges with the aim of identifying probable solutions and mitigating strategies to ensure built assets in HEIs are effective and optimal in the delivery of their core functions.

The study identified the need for the implementation of maintenance policies in higher educational institutions in Nigeria and the gap created during the initial take off of the maintenance phase of built assets within the HEIs as the most critical issues that affect these facilities. While the maintenance culture in the HEIs are generally low, there is a need to fashion

out facility management contracts especially by financing bodies such as TETfund and more importantly internally by the management of the HEIs. The need to ensure quality management during the construction stage in the delivery of these facilities is also crucial to bring down the eventual average maintenance costs.

This study has limitations as it is restricted by geographical space. While the situation is not very different in campuses of other HEIs within the country, this study does not report the empirical evidence of those areas. Therefore, further studies should present empirical evidence from other geographical spaces within the country.

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