State of physical facilities in Nigerian tertiary educational institutions: Case study of The Federal University of Technology, Minna, Niger State Nigeria

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ABSTRACT

This paper examined the state of physical facilities in Nigerian tertiary institutions in comparison with cost of facilities management in the institutions. This was achieved by determining the availability of physical facilities in the institution, assessment of the various facilities managers in the institution, and determining if the cost expended on facilities management in the institution, reflects the current state of the physical structures. The data collected were analyzed using mean method and simple regression analysis. The result of the analysis revealed that availability of physical facilities in the institution had a mean value of 2.226, performance of the various facilities managers in the institution had a mean value of 2.760, and the simple regression analysis showed that cost expended on facilities management in the institution, reflects the current state of the physical structures with R^2 value of 87%. The findings show that, the physical facilities in the universities were inadequate, cost of maintenance expended in the institution has a great impact on the state of the structures and performance of various facilities managers in the institution is just above average. Based on the findings, it was recommended that the government should provide adequate funds to the universities in its annual budgetary allocation. Besides, adequate provision of facilities should be provided while students should be well-educated on how to maintain available facilities in Nigerian universities.

INTRODUCTION

Physical facilities are known to be the largest single class of assets on the balance sheet of a nation or an institution (Hamer,1988; Ameh and Oko, 2002). Facilities management is a distinct management function and, as such, involves a well defined and consistent set of responsibilities. Simply stated, it is management of a vital asset – the organization's facilities. Facility management combines proven management with current technical knowledge to provide humane and effective work environments. It is the business practice of planning, providing and managing productive work environments (International Facility Management Association).

Maintenance, on the other hand can be defined as a combination of any actions carried out to retain an item in or restore it to an acceptable condition (Lee, 1981; ICE, 1983; Davis, 1986, Lee; 1987). Maintenance, be it periodic, preventive or routine serves the primary purpose of preventing the premature failure of the facility and restoring it to its initial status or at least to a level comparable to its initial condition. (Bokinni, 2006). It is however appreciated that a gap continues to emerge throughout the life of the facility due to some legally or environmentally imposed factors. The merits of well maintained facilities are innumerable, majorly among these are, as

Doherty (2009) opined; (a) the creation of right impression, (b) improvement in employee efficiency and (c) reduction in operational costs. Maintenance management can be regarded as the main thrust of facility management as adopted in the Nigerian context (Opaluwa, 2002).

In Nigeria, 6.1% (N249.08bn) of the 2010 annual budgetary allocation was devoted to education (Ministry of Finance). The cost of building, running, cleaning, and maintaining schools approaches one fifth of that amount (Programme on Educational Building P.E.B.). The maintenance of the school building is a daily activity of the institution and its personnel. It is an important factor in the delivery of education.

As it is understood that tertiary education is an important wheel for the development and progress of a nation so the importance of educational facilities which play host to a large number of users with various needs as characterized by tertiary education facilities cannot be overemphasized (Hassanain and Mudhei, 2006). This study focuses on the facilities management in the Federal University of Technology, Minna in comparison with the state of the physical structures in the University.

Out of the 25 Federal Universities, 18 (representing 72%) were said to have

overenrolled while 13 of the 19 State Universities (68.4%) also overenrolled. Only one of the seven private universities then, (14%) was reported to have overenrolled (N.U.C, 2002). Top ten overcrowded universities included five each of Federal and State universities. With this scenario, there is no doubt that facilities may be overstretched. Many countries, regions and communities are becoming extremely concerned about issues such as the maintenance of ageing stock, vandalism, the reuse and adaptation of buildings, up- to- date furniture and equipment, the use of premises for more than one purpose and the reduction of premises, as well as related expenditure.

Earthman (2002), in his studies established a relationship between student achievement, behavior and the condition of the built environment. He reveals some of the most important factors that influence learning and living are those that relate to control of the thermal environment, proper illumination, adequate space and furnishings. If, as studies and experience strongly indicate, achievement (*i.e.* student test scores) is greater in above-standard schools than in substandard buildings, it is the obligation of the responsible authorities to improve the facilities. The quality and duration of a building are affected by how it is looked after, the ways in which servicing and repairs are carried out, and the rate at which needs and requirements change. Therefore it is necessary to develop strategies for managing educational facilities.

It remains a puzzling research problem that planning and design of educational facilities for schools, colleges and universities has impact on education outcomes. This outcome is usually hard to quantify and management cost of the facilities are substantial on the public education expenditure. With the remarkable increase in both number of universities and the present trend of placement of students, resulting in over crowdedness and over stretched carrying capacity, one wonders if this tremendous increase in placement corresponds with the state of available and physical facilities. This research is set to examine the position of physical resources in relation with the cost expended on maintaining the school facilities.

REVIEW OF RELATED WORKS

The primary purpose of the teaching and learning process is to bring about desirable change in the learner's behaviour through critical thinking. This process does not take place in a vacuum but rather in an environment structures to facilitate learning. Olaleye (2011) observed that for proper teaching and learning to take place, there must be adequate infrastructure. However casual observation reveals that in many public tertiary institutions in Nigeria, the lecture halls are overcrowded and many of the students stay outside because of inadequate accommodation. Several studies have shown that a close relationship exists between the physical environment and the academic performance of students. Ajayi and Ayodele (2001), jn their study proved that adequate supply of instructional resources has significant effects on students' performance and enhances the effectiveness of instructional delivery and supervision, such instructional facilities include lecture rooms, office accommodation, laboratories, workshops, sporting facilities, equipment in libraries, and so on.

The school facilities consist of all types of buildings for academic and non-academic activities, equipment for academic and non-academic activities, areas for sports and games, landscape, farms and gardens including trees, roads and paths. Others include furniture and toilet facilities, lighting, acoustics, storage facilities and packing lot, security, transportation, ICT, cleaning materials, food services, and special facilities for the physically challenged persons. These facilities play pivotal role in the actualization of the educational goals and objectives by satisfying the physical and emotional needs of the staff and students of the school.

METHODOLOGY

Atsar (2008) opined that research design is not only concerned with what is being sought but the best way of getting it done. The essence of this study is to determine the state of physical facilities in comparison with cost of facilities management in tertiary institutions in Nigeria. Primary source of data collection was

employed in the course of this research work. One questionnaire was administered to each of the twelve (12) selected head of department, totaling 12 questionnaires. The reason for seeking this information is to know the availability of physical facilities in the institution. Also, fifty (50) questionnaires were administered to students in the institution, to assess the performance of the facilities managers in the institution.

All data collected were collated; organized and relevant answers were adopted in order to ensure a meaningful presentation and analysis of data collected. Secondary data was used as supplements. Theoretical concepts obtained interviews were used to interpret and compare the findings. Analytical tools were basically the descriptive statistical, which includes percentage, tables and charts, Mean; chi-square; Pearson product moment correlation coefficient; and regression analysis method.

DATA ANALYSIS AND DISCUSSION

Table 1 showed the descriptive analysis result of availability of physical facilities, which comprised of the mean value, standard deviation as well as skewness and kurtosis results. Finney and Distefano (2006) suggested that data could be said to be in excellent condition if skewness ranges is fewer than 2 and kurtosis ranges fewer than 7. The results of the analysis affirmed the assertion of the authors, thus the result is good enough for the research. The results shown that there are no adequate classrooms and was ranked highest with mean value of 2.580, followed by inadequacy of hostel was ranked second with mean value of 1.180. It was shown that the library is not well equipped and was ranked third having mean value of 2.511, medical services is also inadequate and was ranked fourth having mean value of 2.841. Also shown is the transports facilities inadequacy which was ranked fifth and with mean value of 1.362 and finally the provision of public convenience which was ranked sixth, with mean value of 2.880.

Table 1: Availability of Physical Facilities

S/No	Availability	Means	Rank	SE	SD	Skewness	Kursis
1	Adequate Classroom,	2580	1	0.149	1.051	-0.816	-0.274
2	Transport facilities	1.362	5	0.193	1.367	-0.593	-0.915
3	Adequate hostel	1.180	2	0.195	1.380	0.321	-1.150
4	Well equipped library	2.511	3	0.195	1.210	0.221	-0.930
5	Standard medical services	2.811	3	0.195	1.270	0.121	-0.141
6	There are provisions for public conveniences	2.880	6	0.195	1.380	0.510	-1.110

Source: Researcher's analysis (2011) , SE=Standard Error of mean, SD=Standard Deviation

Table 2 showed the descriptive analysis result performance of various facilities in the institution. The table showed the mean value, standard deviation as well as skewness and kurtosis results of the data. In the works done by Finney and Distefano (2006) who opined that data for any analysis could be said to be in excellent condition if skewness range is fewer than 2 and kurtosis range fewer than 7. The results from the table affirmed the assertion of the authors, thus the result is good enough for adequate research. From the table, it was shown that the environment is kept clean regularly to create a conducive learning environment, and was ranked the highest having mean value of 4.610. It was shown that the sporting facilities are functional to provide sound health in body, having mean value of 3.980; public address system in the lecture theatres was also shown not working with mean value 1.560. The question that the hostel is cleaned regularly was also found to be of low performance with mean value of 2.371.

Table 2: Performance of Various Facilities in the Institution

S/N	Performance	MEAN	Rank	SE	SD	SKEWNESS	KURTOSIS
1	The environment is kept clean regularly to create a conducive learning environment.	4.610	1	0.156	1.107	-0.728	0.548
2	The hostel is cleaned regularly	2.371	2	0.126	0.889	0.137	-1.088
3	The public address systems in the lecture theatres are functional	1.560	3	0.186	1.312	-0.827	-0.102
4	The public conveniences are regularly maintained and kept clean.	1.280	4	0.131	0.927	-0.279	0.435
5	The sporting facilities are functional to provide sound health in body.	3.980	5	0.000	0.000	0.190	0.350

Source: Researchers Analysis (2011). Dependent variable – Y = facilities , Independent variable – X = Cost of maintenance

Table 3 showed regression analysis conducted to know whether cost expended on facilities management reflects on the current state structure. It was shown in the table that the R-squared value for the linear regression is 87%, and P-value of 0.001 which is less than 0.005. This shows that the result is statistically significant and thus, the current state of the facilities really depend on the cost of maintenance. It was shown in the quadratic row that if the cost of maintenance is increased the state of the structure will be better as the level of significance increased.

Table 3: Regression Analysis

Variables	Regression equations	R sq(%)	F-value	Sig-value
Linear	$Y = 351.339 - 0.315X$	87	51.001	0.001
Quadratic	$Y = 497.220 - 4.189X^2 - 0.116X$	89	59.091	0.000

Source: Researchers Analysis (2011).

DISCUSSION OF FINDINGS

A total of three experiments have been carried out (by the study); two were conducted using mean method, while one utilized simple regression analysis. The descriptive analysis result of availability of physical facilities revealed that basic physical facilities such as classrooms, transport facilities, hostels, well equipped library, medical centres and public conveniences are inadequate. This is in line with the N.U.Cs report that out of the 25 Federal Universities (18), representing 72% were overenrolled while 13 out of the 19 state universities (representing 68.4%) also overenrolled (Nigerian Universities Commission 2002). The descriptive analysis result of the methods of the performance of these physical facilities reveals that it was shown that the environment is kept clean regularly to create a conducive learning environment. It was shown that the sporting facilities are functional to provide sound health in body, and that public address system in the lecture theatres was shown not to work. The question that the hostel is cleaned regularly was also found to be of low performance.

However, results gathered from the HODs and the students, show that the provision of physical facilities is below average but the maintenance is within the range of average. The results of the regression analysis reveal that cost expended on maintenance of physical facilities in the institution was significant, meaning that cost of maintenance has a great impact on the state of the structures. This is because of the high R^2 values obtained. These results are in agreement with the results of some other researchers in the field of facilities management, where Adeogun (2001) found a positive relationship between institutional resources and state of physical facilities in tertiary institutions.

CONCLUSION AND RECOMMENDATION

The study has revealed that the availability of physical facilities of tertiary institutions in Nigeria was found to be below average. The analysis discloses that tertiary institutions in Nigeria are in a mere state of existence in terms of the physical facilities that constitute these institutions. For better performance, a proactive rather than reactive approach should be adopted in terms of funding for effective provision of physical facilities. As for the performance of the various facilities managers in the institution, it can be said that their performance is just above average. However, the study also reveals that the current state of the facilities really depend on the cost of maintenance.

Public school buildings are places of learning as such more has to be done by both the maintenance management staff and the users to improve the operation state (physical-functional condition) above the average state as revealed by this research. Facilities managers and their team should adopt proactive approach to reduce the occurrence of defects, which will consequently bring about better physical and functional facilities in the institutions' elements and services. Government should provide adequate fund for the running of tertiary institutions and private individuals and organizations should endeavors to assist government education related issues. Government should equally make it as a matter of policy for private and public institutions that there should be a maintenance policy guiding their maintenance programmes.

Maintenance managers should equally give the narrow managerial span of control a trial in use as this may likely bring about a more effective organizational structure leading to better maintenance management of school buildings. Finally, it is important that maintenance management work together with

top administration management so as to secure sufficient funds for maintenance works as well as ensure that such funds is judiciously utilized.

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