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Research Paper

Facilities Management and Maintenance of Public Furniture and Cabinetmaking in Post Covid-19 Pandemics

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Abstract: *This study examines the factors that affect the facilities management and furniture and cabinet making in post COVI-19 pandemics. Coronavirus disease (COVID-19) is an infectious disease caused by a newly discovered coronavirus. Facilities management was observed as a profession that encompasses multiple disciplines to ensure functionality of the built environment by integrating people, place, process and technology. Sixty (60) questionnaires were chosen at random for the purpose of achieving the objectives of this facilities management and maintenance of public infrastructure in post COVID-19 pandemics in Nigeria were distributed for collection of data. It shows the factors that is affecting facilities management and maintenance of public infrastructure in post COVID-19 pandemics. Incorrect planning/age of the structure and high cost of labour ranked first with RSI value of 0.643 (64.30%) followed by overcrowding in the infrastructure and poor maintenance culture with RSI value of 0.633 (63.30%) and cost of plants and equipment and government policies with RSI value of 0.623 (62.30%). Insurance cost was ranked least with RSI value of 0.487 (48.70%). Conclusion and recommendation were obtained from the research work.*

Key word: ***COVID-19 pandemics, facilities management, public furniture, cabinet making, maintenance***

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I. INTRODUCTION

Everyone shares the right to a decent standard of living. Essential to the achievement of this standard and therefore to the fulfillment of human life beyond simple survival is the access to adequate housing. Housing fulfills physical needs by providing security and shelter from weather and climate. It fulfills psychological needs by providing sense of personal space and privacy. It fulfills social needs by providing a gathering area and communal space for the human family, the basic unit of society. In many societies, it also fulfills economic needs by functioning as a centre for commercial production. Facility management (FM) is a profession that encompasses multiple disciplines to ensure functionality, comfort, safety and efficiency of the built environment by integrating people, place, process and technology and public Infrastructure can be defined as a country's or state constructions, facilities, systems, concrete and other structures which are owned and maintained by government i.e. either by central government, state government, government company, any other public undertaking or organization whereby such facilities and services are available for use by public at large with/without applicable charges and includes facilities like, roads, water, electricity, telecom etc.

The objective of every facility in parks and garden is to render service(s) in pursuit of money or in fulfilling social obligations. The people, the facilities and the systems interplay in order to achieve this given goal. The facilities are composed of buildings, infrastructure and support services. The system is the inter-link and the web that binds people and facilities together and turns them into a production system.

The roles of basic utilities and facilities, such as electricity, water, and waste disposal system cannot be overemphasised in providing comfort for the households. Hence, there need to pay adequate attention into their provision. The reason is not farfetched, because proper installation of these facilities plays a significant role in prolonging the lifespan of buildings, at the same time enhance sustainable residential building environment.

The installation of facilities within a building starts from materials selection. The reason is that it is one of the contributing factors to building failure. As noted by [1], faults in building design place a heavy burden on the building for rest of its life and there is no compensation for it. In such situations, the responsibility falls on the shoulders of the designer in that they must think carefully with full concentration and consideration towards completion of their design project. Public infrastructures failure and deficiency can be caused by design, construction, materials used, the quality of personnel, soil condition and earth movement. This implies that if good quality materials were used to provide basic facilities into buildings, and were well handled by qualified personnel, these facilities will serve the purpose they meant and prolong the lifespan of the affected building. Poor quality of materials, such as pipe for the supply of water into the building and disposal of wastewater and sewage leads to leakages, which can have significant effect on the building and environmental sustainability. Similarly, poor quality materials add to building maintenance cost and the rate, in which the maintenance is carried out. Frequent replacement of basic facilities within a building has been attributed to poor quality of materials and poor installation, due to involvement of unqualified personnel.

II. LITERATURE REVIEW

Few selected related articles were presented in this paper on factors that was posed on the factors that is affecting the facilities management and public infrastructure in Post COVID-19 pandemics. Facilities management was observed as a profession that encompasses multiple disciplines to ensure functionality of the built environment by integrating people, place, process and technology. [2] noted that; it primarily devoted to the maintenance and care of large commercial or institutional buildings, such as office complexes, university campuses, research labs, convention centers and manufacturing buildings. Also, facilities management is becoming a common strategy for organizations with larger, complex facilities portfolios, many client are concerned about the risk associated with giving broad accountability for facility operations to a third party service provider.

Facilities or equipment means buildings structures, process or production equipment or machinery which forms a permanent part of the new source and which will be used in its operation, provided such facilities or equipment are of such value as to represent as to present a substantial commitment to construct [3].

[4] gives its first definition of the headword facility the plural form facilities. This is used for "buildings, services, equipment, etc. The second definition of the word uses the countable singular form, facility to mean "a special feature of a machine, service, etc [5].

[6] observed factors affecting facility management in buildings to include corruption, insufficient funding, poor maintenance culture, poor handling and misuse, lack of maintenance information manual to users, problem of policy implementation, inadequate facilities usage information, lack of legislative rule on facility management, inadequate facility management personnel skill level, low technical knowhow, insufficient facility management personnel, overcrowding in the building, and age of the building. Building maintenance is a major activity in most countries. Building maintenance is subjects, which have attracted growing interest in recent years.

The definition in [7] indicates that there are two processes in building maintenance, they are to retaining – refers to preventive maintenance works carried out in anticipation of failure and restoring – refers to corrective works carried out after failure.

There is also the concept of acceptable standard. Acceptable standards vary as no absolute standard is acceptable to everyone and acceptable standards do change with time. There are various definitions for maintenance as a combination of any actions carried out to retain an item in, or restore it to, an acceptable condition [7], [8], [9], [10]. The definition above suggests a positive activity, which is controlled and therefore planned so as to achieve a defined end result [11]. The definition also suggests that there is a range of acceptability with upper and lower limits between which the condition of the multi-complex must be maintained. [11] observed that "maintenance is synonymous with controlling the condition of a building soas that its pattern lies within specified regions".This definition recognizes that, subject to a minimum set by the statutory authorities, there is no single standard of condition, which will be equally applicable to all the different types of building and circumstance likely to be met in practice.

Maintenance however, have always been inextricably associated with buildings, from the earliest times when men sheltered from the elements in primitive wattle-and-daub huts up to the present day, when civilized man can erect skyscrapers and glass palaces using modern building materials such as concrete, steel, glass and synthetics. Man has always been confronted with the question of upkeep [11].

The purpose of public infrastructure such as buildings and other facilities is to satisfy social and administrative needs as a means to the fulfillment of economic responsibilities for the general public [12]. In spite of this, the proper maintenance of public property has not been given the deserved attention. [13] observed that inadequate infrastructure and the poor maintenance of existing ones are typical characteristics of developing nations. Meanwhile, public infrastructure is essential for sustainable development of a nation hence improving

the quality of state property is an important national decision. [13] explained that although developing countries continue to invest heavily in new infrastructure, the sustainably of existing ones suffer from poor maintenance culture. Maintenance is proactive. It includes activities that were undertaken in order to keep, restore and improve existing infrastructures to be appreciable standards and to sustain utility and value of the facilities over time. Maintenance is an important aspect of projecting quality management. With regard to facility management in particular, Khan [14] regarded this as flexibility management and explained that construction projects require flexible management as these projects are unpredictable and managers need to cope with changes and challenges that sometimes are unexpectedly. Sequel to this, continuous maintenance activities are necessary to maintain or improve project quality. This means that proper maintenance is a good project management practice that contributes to project quality.

[15] identified defects that affect housing maintenance in Nigeria as lack of qualified Professionals, improper design of fire suppression system, causing un-insulated (PVC) pipes to freeze and burst, lack of regular check-up of the facilities, improper management of the facilities such as door lock and louvers, and using of untested or inferior materials such as cement, aggregate and water

[16] made a business case for maintenance indicating that maintenance is one of nine other activities that should be considered in the asset management process. In the asset lifecycle model, Campbell [16] suggested that maintenance should be part of an overarching business strategy with definite indicators.

[17] identified maintenance practices attached to regular check up to prevent breakdown, predictive/condition based maintenance, corrective maintenance to address existing problems, emergency repair to quell eminent danger, breakdown maintenance after equipment failure and on-going improvement to avoid periodic maintenance.

For facilities management and maintenance of public infrastructure in post COVID-19 pandemic repair system to be efficient and effective, a comprehensive policy needs to be formulated which will enable the organization to optimally allocate its limited resources. One of the most essential aspects, which should be incorporated in the policy, is the objective of the maintenance system. Besides preserving the building so that it can effectively serves its function, other significant aspects in the maintenance objective, which should not be neglected.

III. RESEARCH METHODOLOGY

Sixty (60) questionnaires were chosen at random for the purpose of achieving the objectives of this facilities management and maintenance of public infrastructure in post COVID-19 pandemics in Nigeria were distributed for collection of data. Data were obtained from both the primary and secondary sources which include interview, questionnaire, textbooks journal publications and internet facilities. The data was analyzed (i.e the mean and standard deviation), using statistical package for social society (SPSS).The statistical tools used for this study include percentage, mean, and relative significance index RSI (also known as Index of Relative Importance, IRI or Relative Importance Index, RII) to determine which of the stated causes of rivalry is the most prevalent among the professionals in the Nigerian construction industry. The relative significance index ranking (RSI) was used for ranking of the factors studied. These methods had been used in construction research by authors such as [18], [19], [20], [21] and [22] among others.The Likert scale involving rating on interval scale of 5 and 1 developed for application in social sciences and management researches for quantification of qualitative variable were used. It elicited information from the building construction professionals concerning the causes of rivalries among professionals in Nigeria construction industry. The responses of the items on the questionnaire were obtained on a 5-point scale ranging from 1 to 5. ‘‘Very High” were scored 5, ‘‘High’’ were scored 4, ‘‘Average’’ were scored 3, ‘‘Low’’ were scored 2 and ‘‘Very Low’’ were scored 1.

RSI = $\frac{\sum \mu}{AN}$

Where: μ is the weighting given to each factor by respondents;
A is the highest weight (i.e. 5 in this case);
N is the total number of respondents
But for this type of research work where a 5-point scale was used, the RSI shall be calculated via the equation:

$$\text{RSI} = \frac{5a+4b+3c+2d+1e}{jN} \ (0 \leq index)$$

Where: a = number of respondents ‘‘Very High”,
b = number of respondents ‘‘High’’
c = number of respondents ‘‘Average’’,
d = number of respondents ‘‘Low’’
e = number of respondents ‘‘Very Low’’,
N = sample size = 60
j = number of response categories = 5

IV. Data analysis and results

This conference paper work was based on the main factors that are affecting facilities management and maintenance of public infrastructure in post covid-19 pandemics**.** The data were presented using tables for clarification and better interpretation. The analysis tools included both descriptive and inferential statistics

a. Respondents Profile

Table 1: Sex

Sex	Frequency	Percentage
Male	46	76.67
Female	14	23.33
Total	60	100.00

Table 1 showed the gender of the respondents. It showed that ninety two percent (76.67%) are male and eight percent (23.33%) are female. The result shows the representation of genders in the construction industry in the study area.

Table 2: Professional qualification

Educational Qualification	Frequency	Percentage (%)
NIOB	32	53.33
NIQS	10	16.67
NIA	8	13.33
NSE	6	10
Others	4	6.67
Total	**60**	**100**

Table 3 represents the educational qualification obtained by the respondents. 53.33% is registered with NIOB, while 16.67% is registered with NIQS, 13.33% is registered with NIA, 10% with NSE and 6.67% with other professional bodies. The result shows that all respondents possess registration of their various professional bodies in Nigeria and adequate professional training to supply reliable data for the study.

4.2 Facilities Management and Maintenance of Public Infrastructure in Post Covid-19 Pandemics

Table 3: Factors affecting facilities management and maintenance of public infrastructure

S/N	Factors	Mean Score	Ranking
1	**Cost of materials**	0.570	8
2	**Corruption**	0.543	11
3	**High cost of labour**	0.643	1
4	**Cost of plants and equipment**	0.623	3
5	**Transportation cost**	0.577	7
6	**Insurance cost**	0.487	13
7	**Overcrowding in the infrastructure**	0.633	2
8	**Lack of fund**	0.580	6
9	**Waste on site**	0.617	4
10	**Poor maintenance culture**	0.633	2
11	**Inadequate production of raw materials**	0.570	8
12	**poor handling and misuse**	0.557	10
13	**Incorrect planning/Age of the structure**	0.643	1
14	**Government policies**	0.623	3
15	**Political Interference**	0.603	5
16	**Design change/over usage of the infrastructure**	0.54	12
17	**Fraudulent practices and kick backs**	0.567	9

It shows the factors affecting facilities management and maintenance of public infrastructure in post COVID-19 pandemics. Incorrect planning/age of the structure and high cost of labour ranked first with RSI value of 0.643 (64.30%) followed by overcrowding in the infrastructure and poor maintenance culture with RSI value of 0.633 (63.30%) and cost of plants and equipment, and government policies with RSI value of 0.623 (62.30%). Insurance cost was ranked least with RSI value of 0.487 (48.70%).

V. CONCLUSION AND RECOMMENDATION

5.1 CONCLUSION

The performance of any facilities and public infrastructure be of roads, seaports, airports, hospitals, schools, hostels, dams, recreation centres, airports, stadia, railway stations and their components depends to a large degree on continuous and planned periodical maintenance. Historically, in both public and the private sectors, maintenance is seen as an avoidable task which is perceived as adding little to the quality of the working environment, and expending scarce resources which would be better utilized.

In Nigeria, both public and private buildings are in poorand deplorable conditions of structural and decorative disrepairs. In spite of millions of Naira spent to erectall these building, they are left as soon as commissioned to face premature but steady and rapid deterioration and dilapidation.

The financial consequences of neglecting maintenance is often not only seen in terms of reduced asset life and premature replacement but also in increased operating cost and waste of related and natural and financial resources.

Maintenance is related to the background of any project, unfortunately development plan approved recurrent and capital estimates in Nigeria have not be revealed that thought have not be given to maintenance work [15].

5.2 RECOMMENDATION

Maintenance managers and their team should adopt proactive approach to reduce the occurrence of defects which will consequently bring about better physical and functional buildings elements and services.

i. Adequate funds should be set aside to cater for maintenance of buildings.

i. Government should equally make it as a matter of policy for private and public housing that there should be a maintenance policy guiding their maintenance programmes.

ii. Maintenance manager 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 public buildings.

iii. It is also 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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