A Study of Universal Design Strategies in Selected Public Buildings in Lagos State

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Abstract- ***Designing buildings and its environment to accommodate the various needs of their intended users is a laudable. However, the requirement that all people's needs, wants, and objectives has to be met without isolating any group of people has always been a challenge to those in charge of the construction of public structures, such as architects and other allied built environment professionals. This has therefore brought about the entrance of universal design concept into the design fields. The targets of universal designs are accessibility, usability and enlarging the categories of users to include everyone. The study surveyed 3 different public buildings in various areas of Lagos metropolis. 60 respondents were served, equally among the 3 surveyed buildings. A total of 54 responses from the survey were considered as valid while 6 responses were considered invalid due to various degree of ambiguities. Findings from the study revealed that accessibility as a core feature of universal design is being poorly managed in most of the facilities surveyed, with a slight majority of respondents also agreeing that most facilities surveyed conforms to universal design principles to an extent. Furthermore, majority of the users affirms that on the average, the integration of universal design features within the facilities surveyed seems flexible and seamless while averagely also the universal design features are efficient and effective. However, majority of the respondents rate low, the adequacy of universal design features in terms of provision in most of the surveyed facilities. The study averred that since users and designers are now more conversant with the principles of universal designs, users consider most of the universal design provisions of the surveyed buildings averagely effective in meeting their needs. Thereafter the study concludes that universal design propositions are important in the design of public buildings, as this minimizes danger in terms of use. Thus, the study recommends that there is a need to be proactive in the adoption and implementation of universal design principles in public buildings. Thus, finally the study recommends that since universal design principles are of great importance in a public building hence its adoption should be encouraged.***

Indexed Terms- ***Accessibility; Architectural Design; Built Environment; Participatory Limitation; Public Building; Usability; Universal Design Principles***

I. INTRODUCTION

Designing structures and their surroundings to accommodate the various needs of their intended users is a good idea (Burgstahler, 2018). However, those in charge of the construction of public structures, such as architects, engineers, and planners, have always found this to be a struggle. The requirement that all people's needs, wants, and objectives has to be met without isolating any group of people or posing any other access restrictions, has therefore brought about the entrance of universal design concept into the design fields. The targets of universal designs are accessibility, usability and enlarging the categories of users to include everyone or as many persons as possible. The universal designs ideology involves how to deal with planning and development of environments that demonstrates empathy for every single social group and does not believe in planning and building for an average user, as researchers have argued that such user does not exist (Ibem, et al., 2017) The development of universal design in the domains of architecture and design did not take place in a vacuum. According to Story, et al. (2018), the idea first emerged throughout the 20th century as a result of demographic, governmental, economic, and social developments affecting older persons and people with disabilities. The Center for Excellence in Universal Design (2018) further pointed out that universal design evolved from slightly earlier barrier-free notions, the

larger accessibility movement, adaptive and assistive technologies, and also tries to integrate aesthetics into these fundamental issues. The center defined universal design as making an environment as accessible, understandable, and usable as possible for everyone, regardless of age, size, aptitude or disability. Therefore, the goal of universal design is to develop theories, principles, and solutions to enable everyone to use the same physical solutions to the maximum extent feasible, whether they be buildings, outdoor places, communication tools, or home items.

Conversely, Sholanke, et al., (2018) specifically noted that some public buildings in Nigeria, are not easily accessible to all classes of users. The author argued that such situation is a violation of the fundamental human right of persons. Furthermore, Soyingbe, et al (2017) found out that in Nigeria, that main facilities needed were not provided in majority of public buildings. The authors advanced that the none availability of some key facilities for the easy use in several of the buildings reviewed, constitutes a participatory limitation for the various classes of users in the society. In addition to the society being deprived of the talent and abilities of these users, such scenario also constitutes a barrier in developing people's capabilities. This is why every environment, especially public buildings, should be designed to be accessible and usable to the highest degree possible by everyone, irrespective of people's abilities or disabilities.

Generally, universal designs studies found in Nigeria are mainly objective investigations that centers around the extent to which existing situations conform to universal designs parameters such as the universal designs principles and accessible design standards (Maclean, 2014, Sholanke, et al., 2017, Ibem et al., 2017, Sholanke, et al., 2018 and Sholanke, et al., 2019). However, Sholanke (2019) advanced that since buildings and their environments are used or managed by humans, there is also a need for subjective studies to investigate users' perception of the effectiveness of existing universal design provisions in public environments in meeting their needs. Such studies are necessary to provide empirical data on the effectiveness of existing environments in meeting users' accessibility and usability needs, towards identifying areas for further improvements from the users' perception or point of view. It is based on this premise that this study intends to examine the universal design strategies used in selected public buildings in Lagos metropolis with a view to evaluate how fully well they implements Universal Design Strategies based on users' perspective of such buildings.

II. RESEARCH METHODS

According to Neuman (2017), there are three (3) main methods that are usually utilized when conducting research: quantitative, qualitative, and mixed method. A particular design may depend significantly on assumptions about the nature of information, reality, and how a person determines about reality, as well as the process of learning about reality (Saunders 2018). As a result, this research is classified as qualitative based on the purpose of the study, hence the research philosophy followed was the interpretivist view while the research approach was inductive in nature although the analysis was a mixture of both qualitative and quantitative. This entails a careful documentation, observation and examination of the distinct functions, features and services rendered by each of the case studies and their distinct facilities. Analysis mode used are content and descriptive in nature. Furthermore, this entails the comparisons of functional areas such as architectural style/concept, major facilities, spatial organization and flexibility of spaces, building materials and characteristics, external building form and architectural expression.

The survey used standardized instruments so that the varying perspectives and experiences of respondents could be accommodated by a small number of predetermined response categories, to which numbers were assigned and statistically measured. Research method deals with the means of data collection, analysis and interpretation as stated by the researcher (Cresswell, 2019). Thus basically, the method that was employed for the study includes qualitative research techniques and analysis of case studies and scoped literature. Succinctly put, the study was based on the acquisition and analysis of both primary and secondary data. Government policy documents, reviews papers, architectural journal articles, unpublished projects were sources of secondary data collection while survey questionnaires and interview

were conducted to infer relevant data information as primary sources of data.

For the purposes of the study, both quantitative and qualitative data type were gathered and used in a mixed format, this implies that both primary and secondary sources of data was considered. Questionnaires was used to acquire quantitative data; a well-structured questionnaire was designed to collect information from respondents. Qualitative data was gathered through personal observation and verbal interviews with respondents, while also the review of several relevant literatures and case studies on the areas of discus was carried out according to the study's topic and the demand for a range of viewpoints within the research field. The target group contained a number of core respondents who are pertinent to the study's topic. Most of the stakeholders include users, government regulators, and architects. The respondents were those who could be found and recognized in the study area.

The cases studied documented were the one considered as satisfactory with the aim and objectives of the study. A sample size was determined from the known population using the Kreicie and Morgan table as a guide. A random sample was chosen once the cases were coded. Utilizing questionnaire surveys is one method for obtaining data for research purposes. According to Al-Assaf (2018) and other studies, a questionnaire has the benefit of enhancing data generalization while allowing respondents the flexibility to voice their opinions. Consequently, a questionnaire survey was used to collect the study's data. The measurements of items were framed from existing literatures. The questionnaire is structured in five levels. Majority of the questions are close-ended with few open-ended questions. The open-ended questions were to tease out challenges to universal design options, which may be person specific and particular in nature to the respondents. The close-ended questions are very constrictive asking participants to measure issues of universal design on a five Likert scale.

A mixed method of data analysis was adopted because of the mixed nature of data gathering processes. Case studies of existing buildings was reviewed using qualitatively methods. Furthermore, data analysis relies heavily on content and descriptive analysis methods while the use of statistical tool (SPSS) was adopted. Although there are other programs available for carrying out such research computations, SPSS and Excel were chosen because of their adaptability and suitability for the study. Correlation analysis was carried out using SPSS, and relative importance indices, including the charts created to show the results. The program was used to provide correlation analysis and descriptive statistics.

III. RESULT /FINDINGS

The study surveyed 3 different public buildings in various areas of Lagos metropolis. Respondents that have been previously determined were served with questionnaires. 60 respondents were served, equally among the 3 surveyed buildings, i.e., 20 respondents from each of the surveyed buildings. A total of 54 responses from the survey were considered as valid while 6 responses were considered invalid due to various degree of ambiguities. Findings from the study revealed that accessibility as a core feature of universal design is being poorly managed in most of the facilities surveyed, while a slight majority of respondents also agreed that most facilities surveyed conforms to universal design principles to an extent.

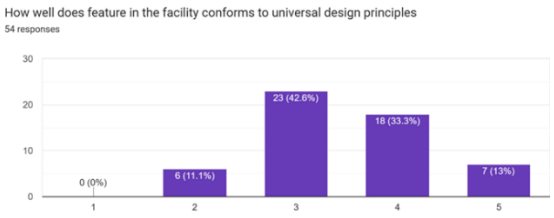

Fig 1: Conformity to Universal Design Principles
Source: Field Survey 2022

Furthermore, majority of the users affirms that on the average, the integration of universal design features within the facilities surveyed seems flexible and seamless while averagely also the universal design features are efficient and effective.

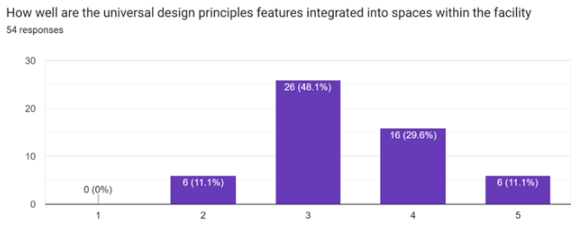

Fig 2: Integration of Universal Design Features
Source: Field Survey 2022

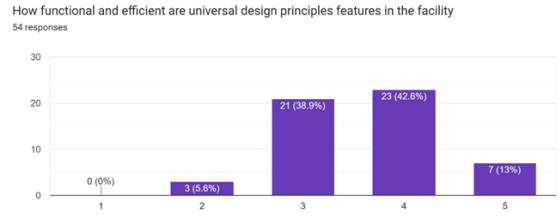

Fig 3: Functionality and Efficiency of Universal Design Features
Source: Field Survey 2022

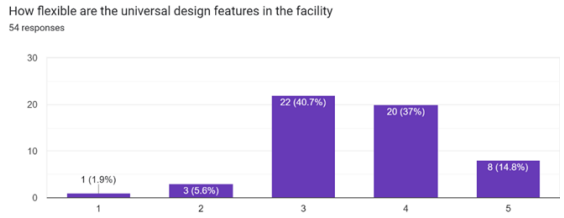

Fig 4: Flexibility of Universal Design Features
Source: Field Survey 2022

Therefore, from the above charts, without an iota of doubt, virtually all the respondents agreed that universal design principles are of great importance in a public building hence its adoption should be encouraged. However, majority of the respondents rate low, the adequacy of universal design features in terms of provision in most of the surveyed facilities. This connotes that there is a need to be proactive in the adoption and implementation of universal design principles in public buildings.

IV. DISCUSSION

Based on the study findings with regards to the study area, facts are that in line with basic universal design provisions public buildings in the study area are to comply with the relevant universal design propositions thus where universal design features were found not to be provided which makes the users to adjudged that they are ineffective in meeting their accessibility needs, should be retrofitted so as to enhance social inclusion of all classes of people. Also, other areas within the building adjudged not effective in meeting the user' needs should be checked and appropriately addressed. The design team, with particular reference to the architects, should pay more attention to ensuring that adequate universal design provisions that are suitable for public buildings based on the proposed use that reflects the needs of all categories of users are not only designed, but developed as designed. Furthermore, architects in their design proposals generally should ensure that appropriate components that can guarantee provision of equal opportunities for all categories of users are not only provided for, but implemented in the process of construction with good maintenance plan put in place. Finally, legislative actions that will compel architects and building professions to make universal design provisions a core requirement in design development approval in the study area should be implemented. It is also necessary to set up a mechanism to ensure that public buildings in the state are designed and developed to comply with requirements.

Consequently, future studies should be carried out to investigate the adequacy of universal design provisions in public building development through regulatory legislation means of encouraging universal design practices in the state. In addition, the focus of this study which was mainly on the users perception of the adopted universal design strategies provisions in selected public buildings, hence future studies can include usability provisions of such facilities. Also, the data collection for the study was restricted to respondents who have been to the selected public buildings, thus further studies should investigate the perception of various users in conjunction with the design team so as to enable a comparative analysis of the topic on a broader perspective. Hopefully, new leads may be discovered in such studies that will be beneficial towards enhancing social inclusion which is the bedrock of universal design prognosis in the development of public environments in the country. This will therefore in essence increase the universal

design standard of facilities in the study area while also allowing it to comply with international approval thus consequence, abolishing discrimination in the use of public buildings in the study area and in Nigeria at large.

CONCLUSION

This study investigated the universal design principles provisions requirements of public buildings in meeting users' needs in selected event centers in Lagos State, Nigeria. The concludes that since users consider most of the universal design provisions of the surveyed buildings averagely effective in meeting their needs. Then, the various universal design features that were adjudged to be average, needs to be provided optimally at strategic locations within the study area to aid users experiences in such building. The study further concludes that since universal design propositions are important in the design of public buildings, it minimizes danger in terms of use. Finally, the study concludes that most respondents believes that users and designers are now more conversant with the principles of universal designs hence most facilities now possess universal design features at least to an average extent. However, there is a need to improve on accessibility needs for all, as that is still considered as being lacking in requirement in most public buildings.

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