ARCHITECTURAL FEATURES CONSTITUTING HINDRANCES TO ACHIEVING UNIVERSAL DESIGN IN SELECTED SHOPPING MALLS IN LAGOS STATE, NIGERIA

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ABSTRACT

The introduction of Universal Design in the field of architecture has brought about a change in design approach, from planning for normal situations that do not usually cater for all user groups, to designing to accommodate the needs of everyone from the planning stage. This study investigated architectural features constituting hindrances to achieving Universal Design in selected shopping malls in Lagos State, Nigeria, with a view to making contributions on how to enhance accessibility and usability in such buildings for all user groups, regardless of their ability or inability, towards promoting social inclusion in the development of public environments. The study adopted a qualitative research approach that gathered data with an observation guide designed for the study in four selected shopping malls in the study area. The data was content analysed, and the result presented using a descriptive approach with the aid of photographic images for easy understanding. Several architectural features were discovered to constitute hindrances to achieve Universal Design in the malls. The said features were mostly accessibility features useful for people with disabilities to gain access to use the buildings on equal terms with able-bodied individuals. In addition to recommending retrofitting of the malls with appropriate accessible features where they are lacking or inappropriately provided, the study recommended that the building industry design professionals should pay more attention to such areas in the planning of future schemes, towards achieving social inclusion in the development of public environments. The study is useful for better understanding of issues pertaining to developing inclusive public environments.

Keywords: Universal Design, Accessibility, Usability, Social Inclusion, Shopping Malls, Lagos State and Nigeria.

1.0 INTRODUCTION

Everyone has a right to access and use public buildings such as eateries, offices, educational, institutions, stadiums, libraries, cinemas and shopping malls. However, in some parts of Nigeria, there are no wheelchair-accessible features for streets or in offices for the benefit of the physically challenged. Though there are accessibility and usability provisions in some public buildings in the country, they do not often meet the needs of every user (Sholanke, Adeboye & Alagbe, 2019a; Sholanke, Adeboye & Alagbe, 2019b; Sholanke, Adeboye, Alagbe & Ugah, 2018; Ibem, Oni, Umoren & Jiga, 2017; Soyingbe, Adenuga & Ogundairo 2016). As a result, if an individual is genuinely crippled, moving out of the home to public environment becomes a challenge (Ubani & Ugwu 2013). This poses a problem of inclusion in the country as the physically challenged feel marginalised within the society because they are not able to enjoy the same privileges as other persons in public spaces. There is therefore a need for public buildings in Nigeria to be designed to meet the need of all persons including the people with disabilities (PWDs) (Mohammed, 2017). To achieve inclusivity in public buildings, it is important to imbibe inclusive design strategies at the planning stage.

Universal Design (UD) is an inclusive design strategy that involves the planning of products and environments to be usable by all persons to the greatest possible way, regardless of their abilities or inabilities (Sholanke *et al.,* 2019a; Sholanke *et al.,* 2019b; Mace, Burgstahler, 2016; Hardie Hamraie, 2017; Persson, Yngling, Ahman & Gulliksen, 2015 & Place, 1990;). UD design approach aims to increase the inclusivity margin in public environments. In a Bill by the National Assembly of the Federal Republic of Nigeria in 2014 on the need to provide facilities to cater for PWDs in public environments, the Bill highlighted shopping malls as one of the most commonly used public buildings in the country. A shopping mall is a place where people get their basic daily needs such as foodstuff, electrical appliances, toiletries, medications and groceries. It is important that such a development used by all members of the society is designed in line with UD ideology. In the Disability Bill which has been passed into law, it was stipulated that all public buildings must have adequate accessibility and usability facilities provision for all persons. The Act also provided all public buildings in the country a maximum of five years to comply with the law. It is, therefore, necessary that specific areas of architectural features constituting hindrances to achieving social inclusion in public environments are identified in Nigeria, with a view to suggesting ways for improvement.

It is on this note that this study investigated the architectural features constituting hindrances to achieving UD in shopping malls in Lagos State, Nigeria to make contributions on how to enhance accessibility and usability in such public environments for all categories of users, regardless of their ability or inability, towards promoting social inclusion in the development of public environments. Consequently, the sole research question formulated for the study is: what are the architectural features constituting barriers to achieving UD in shopping malls in the study area? The scope of the study was restricted to shopping malls because the recent Disability Act in Nigeria, specifically highlighted shopping malls as one of the key public environments where social inclusion is expected to be promoted in the society. The study investigation was also restricted to shopping malls in Lagos State because according to the Disability Act, the state has the highest number of PWDs in Nigeria. It is therefore envisaged that any contribution towards enhancing social inclusion in the country will be highly beneficial in such an environment. Also, the scope of the study investigation is restricted to areas that are readily accessible to the public on a day to day basis. The research is useful to stakeholders such as building professionals, students, researchers, educators and policymakers, in understanding and addressing issues relating to developing public environments to achieve social inclusion. Also, it is useful for benchmarking shopping malls in the study area with that of other parts of the country and the globe. The subsequent part of this paper is divided into the following sections: Literature Review, Methodology, Results and Discussion, Conclusion, Acknowledgements and References.

2.0 LITERATURE REVIEW

A shopping mall is an important part of society, as it represents the modern-day market. A shopping mall or modern-day market development started as far back as the 1700s and gradually evolved in terms of functions and use to what we know it to be today. Due to the ever-growing human needs from century to century, the need for larger shopping centres arose where people can get all their basic daily needs in one place. In ancient times there was the Roman Agora and Bazaars, which are still present to date. These traditional market squares represented shopping malls within the society in the past (Hayes & Schul, 2010). But, during the 1950s, large shopping malls began to bounce up in urban centres around the world, with popular ones situated in Paris and London. As vehicles and rural areas increased, strip shopping centres were made, while the major shopping malls were based in downtown areas (Matthew, 2009).

A shopping mall can be described as an agglomeration or gathering of different stores offering various brands, goods or services at a point (Mbaskool, 2019). Shopping malls are made up of different stores grouped into departments based on products sold. They are arranged in strips. They usually have recreational spaces for related activities, administration, food courts and eateries. A shopping mall has become a mainstay in our environment due to its vast use and benefits. It is of use to everyone as it is a place of no restriction to acquire various basic needs. This positions the shopping mall as a public building that should be designed to be used by all persons, towards promoting social inclusion in the society. An effective way to design and construct public buildings to combat segregation and promote inclusivity in the society is through the implementation of Universal Design (UD) principles and strategies.

The term UD was first coined by Ronald L. Mace in the mid-1980s. He described UD as designing all products, buildings and outdoor environments to be usable by all persons to the most convenient way possible. UD simply means a design for everyone irrespective of ability or inability (Knut, 2018). It involves designing accessibility and usability provisions to accommodate the need of all members of the society. UD is also referred to as design for all. Though some other accessibility concepts exists, but UD is more used than the other inclusive concepts, because it involves designing to suit all persons. UD aims at enabling everyone to have equal chances to be involved in the everyday part of the society.

There is a process by which UD is carried out according to Burgstahler, (2016). The process is important as it helps provide a path to follow to achieve UD in different fields. The first step is to *"Identify the application".* This means one should determine the necessary product or environment to apply UD in. The second is to *"Define the universe".* This entails describing the entire population that is related to UD and considerations made for their diverse characteristics. The third is to *"Involve consumers"*. It is necessary to examine and engage persons with diverse personalities in every aspect of the development, implementation and assessment of UD. This is also done to obtain necessary perspectives through diversity programmes provided. The fourth is *"Adoption of guidelines or standards".* This involves the selection of existing UD guidelines or standards to provide a good level base of expected minimum quality. The fifth process is *"Application of guidelines or standards".* It is not just enough to acquire standards, but it is necessary to also apply them to provide inclusive designs, be it of products or environments. The sixth process is *"The plan for accommodations".* This translates to developing processes to tackle accommodation issues, especially for persons whom the application of the designs do not immediately provide access for. The sixth is *"Training and support".* It is necessary to provide training and necessary support to persons such as instructors, support staff and volunteers. It is important that these training can accommodate all persons regardless of age and ability. The last process is to *"Evaluate".* The design should include UD measures in the occasional evaluation of the use of the measures put in place. Application within a diverse group of persons should be measured and alterations made on the applications should be based on feedback provided.

UD is governed by seven principles developed by a team of professionals consisting of architects, product designers, engineers and environmental design researchers at the Centre for Universal Design (CUD) at the North Carolina State University in Americt. The first principle is *"Equitable Use"*. This means there should be provision of facilities for PWD's which are not distinguishable or separable from that of able-bodied persons. The second principle is *"Flexibility in Use".* This translates that the design must be able to entertain a broad range of personality tendencies and capacities. The third principle is *"Simple and Intuitive use".* This means that the use of the design must be easily understood. The fourth principle is *"Perceptible Information"*. The information should be communicated viably to the customer through

the design, notwithstanding status or abilities. The fifth principle is *"Tolerance for Error".* There should be a moderate resilience for error in the design. The sixth is *"Low Physical Effort".* The design should be successfully and adequately utilised with little or no weariness. The last principle is *"Adequate Size and Space for Approach and Use".* Suitable space and capacity are provided for access, control, ability and utility, notwithstanding user's versatility, body size or stance (Sholanke *et al.,* 2019; Sholanke *et al.,* 2018; Ibem *et al.,* 2017; Burgstahler, 2016). These UD principles provide guidelines that interpret their characteristics. They are globally accepted in any area of life. The principles have become important in guiding the design process, because they accommodate all persons and useful to evaluate existing products and environments. In addition to the UD principles, accessible design standards also exist. Two of the standards are: Document M (2016) popularly used in the United Kingdom and Wales, and those provided by the Department of Justice (2019) used in America.

According to Mace's (1985) and the Disability Act (2005), there are three important concepts in UD which include: usability, accessibility and communication. Any item or environment designed with the intent of accomplishing the most noteworthy execution feasible in these three areas can make certain to be universal (Ibem *et al*., 2017). UD strategies have been infused into the design of building elements to provide buildings usable by all. The strategies are used in achieving UD in car parks, walkways, ramped access, entrances, doors, lifts, sanitary and electrical installations, signage, handrails and stairs.

According to Document M (2016), to achieve UD in the design of carparks, accessible carpark provisions should be located close to the main entrance of a building with minimum dimensions of 2400mm x 4800mm per carpark space. The surface material for the carpark should be non-slip to prevent hazards in the carpark. Walkways should have a minimum width of 2000mm and have resting spaces, 30m apart, in case of long walkways. The floor of the walkways should be slip-resistant to prevent accidents. The ramped access provisions into buildings should have necessary provisions that will enable people to use them easily. To achieve such in ramps, it is necessary the ramps have a gradient slope of 1:20, have handrails on both sides, well illuminated at each side, as well as have a minimum landing of 1200mm x 1200mm for PWDs to navigate their way through the ramps. For an entrance to be universally designed, the entrance door should have signage showing the universal sign of accessibility. The entrance should provide weather protection and must be located along access routes. Doors used in universally designed, buildings should have a minimum width of 1000mm and a minimum clearance of 2000mm from the door. Door colour should contrast with the surroundings to provide visibility of the door. Lifts should have a minimum width of 900mm and a minimum clearance of 1200mm x 1200mm. Electric installations such as switches should be within the minimum height range of 750mm to 1200mm from the ground. Sanitary fittings like water closets (WCs) should have flush knobs located centrally, so they can be used effectively for both right and left-handed persons. Manoeuvring corridors and access routes within a building should have a minimum 1800mm unobstructed route. Staircases risers should be a minimum of 150mm high. The thread should be 300mm deep and have a landing clearance of 2000mm, with handrail provided on both sides. The handrails of the stairs should be within the height range of 900mm-1200mm. A second handrail placed at 600mm for children and people with short stature is also required (Document M, 2016).

Designs and constructions of new buildings should be done in ways that they accommodate all sort of persons. In cases where alterations are needed to be made, the path of travel from the altered spaces and spaces for restrooms should have provisions for PWDs, including wheelchair users. Any alternation or changes made that poses a threat to the accessibility of spaces for PWD is prohibited (Department of Justice,

2019). Provisions should also be made for other user groups such as persons with impaired movement, the aged, pregnant women, children or persons who are short, tall or fat.

Due to the importance of UD, some UD studies were found to have been carried out in Nigeria and some other countries. For instance Sholanke *et al.* (2019a), Sholanke *et al.* (2019b) and Sholanke *et al.* (2016) discovered that provisions for PWDs are generally inadequate in public buildings investigated in Nigeria. The studies employed qualitative research approaches to conduct the researches. A research by Gladstone, (2015) on assessment on the accessibility of public buildings and their facilities to the disabled in Ghana, also used a qualitative approach in conducting the research. The study found that most public buildings in Accra do not have provisions for the physically challenged and concluded that policies be made to incorporate designs for PWDs in such buildings. A research that assessed the disability inclusivity of university buildings in Hong Kong carried out by Wai, Daniel & Yung (2016) also used qualitative approaches. But the authors discovered that majority of the public buildings investigated had sufficient features and provisions for all user groups including PWDs, though they added that there are rooms for improvement. A study by Rozafa (2018) on disability and the built environment, an analytical study of public buildings in Pristina, Malaysia also used a qualitative approach to gather data. The study found that many buildings in the study area have little or no provisions for the physically challenged. A UD study on the accessibility of public buildings in Putrajaya, Malaysia by Syazwani (2014), used a mixed research approach to conduct the research. The study concluded that a UD approach is necessary in providing accessibility features in a buildings without segregation of PWDs. The lack of equitable provisions in public buildings to accommodate the needs of everyone, especially PWDs, is not a problem associated with Nigeria alone, but a global problem. Based on the aforesaid, this study was conceived to investigate the architectural features constituting hindrances to achieving UD in shopping malls in Lagos State, Nigeria, with a view to identifying specific areas for further improvements.

3.0 METHODOLOGY

The study was conducted to investigate the architectural features constituting hindrances to achieving UD in selected shopping malls in Lagos State, Nigeria. This necessitated the features to be identified, examined and described for clarity and easy understanding. The Centre for Innovation in Research and Teaching (2018), advanced that qualitative research method is utilised when a research problem is aimed at examining, understanding and describing a phenomenon. Hence, qualitative research approach was considered suitable and adopted. Data was gathered from multiple case studies, thus, the study is also a multiple case study research. A case study research is said to be exploratory, explanatory or descriptive and is of preference to answer questions of “how” and “why” (Yin, 2009), which conforms with the target of the study. To select the shopping malls that constitute the sample size, Lagos State was divided into two zones: Island and Mainland. After which two shopping malls built in the last 20 years, were randomly selected from each zone. The two shopping malls chosen on the Island are Circle Mall and The Palms Shopping Mall, while Ikeja City Mall and Maryland Shopping Mall are the ones selected on the Island.

To gather field data, relevant literature were first examined to sieve out information that was used to develop an observation guide. The observation guide was used to collect data from the four shopping malls that constitute the sample size. The observation guide was divided into two sections: the first

section addressed accessibility features, while the second section addressed usability features. The architectural features constituting hindrances to achieving UD in the shopping malls were noted and documented with photographs. The field data were collected between December 2019 and January 2020. To analyse the data, the architectural features constituting barriers to achieving UD were first identified, coded, grouped in themes and content analysed. The result was content analysed and presented using descriptive approach with the aid of photographs.

4.0 RESULTS AND DISCUSSION

As earlier mentioned, four shopping malls were investigated in the study area. The first is Ikeja City Mall situated on the Mainland. The mall is a privately-owned high-end retail facility located beside the secretariat of the Lagos State Government at 194, Obafemi Awolowo Way in Ikeja. The shopping mall comprises of 94 retail stores and 3 Anchor tenants, which include: Shoprite, Silverbird Cinemas and Play Zone. The shopping mall design fuses informal meeting spaces, a food court and five cinema halls within the building. The facilities provided in the shopping mall include stores, sanitary facilities, carpark, open space, service facilities, service corridors and cinema halls.

The second mall investigated is Circle Mall on the Island. The mall is Nigeria's first convenience centre. It is a combination of high-end retail and lettable office space within a single commercial development. The shopping mall comprises of 26 retail stores and an anchor tenant which is Shoprite. The shopping mall design fuses office and commercial spaces, a food court, outdoor seating, retail stores and a cinema hall together. The facilities provided in the mall include stores, sanitary facilities, carpark, open spaces, service facilities, service corridors and cinema halls.

Maryland Shopping Mall is the third shopping mall examined. It is located along Ikorodu Road on the Mainland. The mall termed the "Black Box" was completed in July 2016 after a construction period of over 16 months. The building has a total floor area of about 7000 square meters of retail space. The mall also hosts Shoprite and Genesis Cinemas as anchor tenants, a food-court with varied options, banking services and over 40 retail outlets.

The fourth mall examined is The Palms Shopping Mall on the Island. It is the first large-scale shopping mall built in West Africa. It was built in 2004. It has a total of 25,000 square meters of lettable retail space with Shoprite, The Game and Genesis Cinema as anchor tenants, The shopping mall building is a single story with a carpark that accommodates up to 1000 cars.

The architectural features identified as hindrances to achieving UD in the four shopping malls cut across all the malls. The features are examined in the following sections:

4.1 INAPPROPRIATE SIZE OF ACCESSIBLE CARPARKS

The size of the accessible carparks provided did not meet UD requirement. The carparks measured 2400mm by 4800mm with no clearance space provided beside and behind them for the physically challenged to easily and safely manoeuvre around a car. PWDs, especially wheelchair users will find it difficult manoeuvring around cars at the carpark. The accessible carparks are shown in Plates 1, 2, 3 and 4. There design contravenes the first principle of UD (equitable usage).

Plate 1: Ikeja City Mall

Plate 2: Circle Mall

Plate3: Maryland Shopping Mall

Plate 4: The Palms Shopping Mall

Plates 1, 2, 3 and 4: Inadequate Size of Accessible Carparks

4.2 ABSENCE OF DROPPED KERB AROUND EXTERNAL WALKWAYS

Dropped kerbs were not provided in the shopping malls in areas where there are changes in level along external walkways. The dropped kerbs are needed for easily transition between the road and walkway levels for the physically challenged or shoppers pushing trolleys. The height difference between the level of the walkways and roads in some cases exceeds 150mm, which when encountered could be easy to navigate for able-bodied persons, but most likely to pose a challenge for people with mobility impairment. This contravenes the first principle of UD (equitable use), as shown in Plates 5, 6, 7 and 8.

Plate 1: Ikeja City Mall

Plate 2: Circle Mall

Plate 3: Maryland Shopping Mall

Plate 4: The Palms Shopping Mall

Plates 5, 6, 7 and 8: Absence of Dropped Kerb around External Walkways

4.3 INAPPROPRIATE STAIRCASE AND HANDRAIL PROVISIONS

The staircases provided in the shopping malls do not meet the standard requirement for safely and conveniently accommodating thw needs of all persons. The staircases have threads whose depths are less than the 300mm standard for accessible designs. This implies that people with large foot will require extra care to walk on them to avoid missing their step by mistake. This contravenes UD safety requirement. The staircase landings also lack appropriate clearance spaces and handrails. Several of handrails do not meet the minimum 900mm-1200mm height required for accessible designs. They also do not have a lower level handrail at a height of 600mm in line with UD standards. This will make it difficult for children and persons with short stature to conveniently use them. The inappropriate stairs provisions are shown in Plates 9, 10, 11 and 12. The staircase shortcomings contravene the standard

stipulated in Documument M (2016) for stairs. It also contravenes the fifth principle of UD (tolerance for error) as this gives room for accidents to occur while the staircases.

Plate 9: Ikeja City Mall

Plate 10: Circle Mall

Plate 11: Maryland Shopping Mall

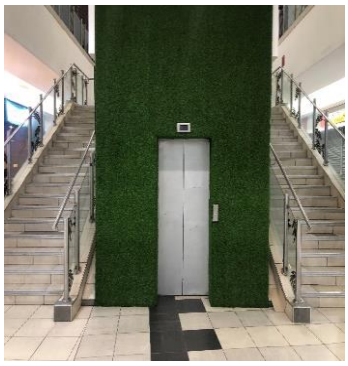

Plate 12: The Palms Shopping Mall

Plates 9, 10, 11 and 12: Inappropriate Staircase and Handrail Provisions

4.4 INAPPROPRIATE RAMP PROVISIONS

Ramps are also provided inappropriately in the shopping malls. The ramps do not meet the required slope. They are too steep and unsafe to use, especially for persons with mobility difficulties. Also, handrails are not provided along ramps hence not safe to use for all user groups. Those with mobility challenges will find it challenging to navigate through ramps as shown in Plates 13, 14, 15 and 16.

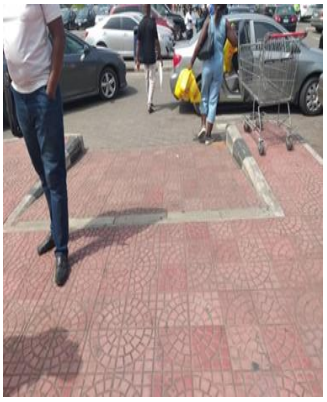

Plate 13: Ikeja City Mall

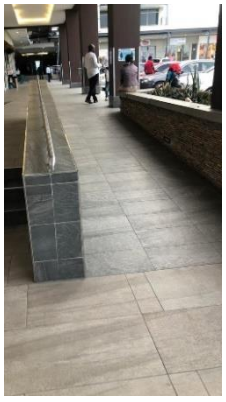

Plate 14: Circle Mall

Plate 15: Maryland Shopping Mall

Plate 16: The Palms Shopping Mall

Plates 13, 14, 15 and 16: Inappropriate Ramp Provisions

4.5 ABSENCE OF TACTILE SURFACES AND AUDIO DIRECTIONAL GUIDE

There are no audio directional guides and tactile surfaces to provide direction for persons with hearing and visial impairment in all the shopping malls. Such features are used to aid movement for such persons within public buildings. Where they are not provided, it pose a challenge easy and unguided movement for these user groups within the malls. The absence of these features' contravenes the fourth principles of UD, "Perceptible information". Adhering to this principle encourages the use of devices to easily communicate information to persons without regard for their various abilities or inabilities.

4.6 DISCUSSION

In investigating architectural features creating challenges to movement for users of shopping malls thereby constituting hindrances to achieving UD in the malls, four malls were investigated in Lagos State, Nigeria. The result showed that architectural features that do not conform with UD standards are mainly features needed by the physically challenged, such as staircases, ramps, walkways and accessible carparks, which are important to facilitate movement for such persons around and within the shopping malls environment. This non-conformity of the features with UD strategies creates a hindrance for achieving UD in the shopping malls. The accessible carpark provisions in the malls did not meet required UD standard, thus likely to pose a challenge for PWDs when using the carparks. Walkway provisions around the malls were also found to fall short of UD requirements, as most of them did not have dropped kerbs to assist persons with mobility challenges, where there are changes in level along walkway routes. Other accessibility features such as ramps and staircases also recorded low compliance levels with UD requirements. The ramp provision in the shopping malls did not have handrails in conformity with UD standard. Several of the staircases had handrails provided on only one side of the stairs instead of on both sides.

The results of this study agrees generally with findings of previous studies that discovered that some public buildings in Nigeria do not have sufficient provisions to cater for the needs of all persons particularly the physically challenged (Sholanke *et al.*, 2019a; Sholanke *et al*., 2019; Ibem *et al.*, 2017; Sholanke *et al.*, 2016; Gladstone, 2015; Danso *et al.*, 2011). The findings negate the requirements of the recently passed disability law in Nigeria. The Act stipulates that equitable provisions of accessibility and usability measures should be made for all categories of users to be able to use public environments on equal terms. The implication of the result is that the physically challenged will find it difficult to navigate around in the shopping malls, contrary to UD expectation.

5.0 CONCLUSION

The study investigated architectural features that constitute hindrances to achieving Univeral Design in selected shopping malls in Lagos State, Nigeria, with a view to making contributions on how to enhance accessibility and usability in such buildings for all user groups, regardless of their ability or inability, towards promoting social inclusion in the development of public environments. Four shopping malls were investigated. They include: Maryland Shopping Mall and Ikeja City Mall on the Mainland and Circle Mall and The Palms Shopping Mall on the Island. The result indicated that areas constituting barriers to achieving Universal Design in the malls are similar. They are mainly accessibility features that are either lacking or inappropriately designed to accommodate the needs of everyone. They include: inappropriate size of accessible carparks; absence of dropped kerbs around external walkways; inappropriate staircases and ramps provisions; and absence of tactile surfaces and audio directional guides. These areas are most likely to pose a challenge for people with disabilities, particulary those with mobility challenge, to easily navigate through them. The significance of the result is that enough accessibility and usability provisions are not made for people with disabilities in the shopping malls, contrary to Universal Design ideology.

The research contributes to knowledge by providing empirical data on the architectural features constituting barriers to achieving Universal Design in the selected shopping malls in the study area. The study further draws attention to the problem of insufficient provisions for people with disabilities in several public buildings in Nigeria, identified by previous studies. Based on the findings of the research,

the study recommends retrofitting of the shopping malls with appropriate accessible features where they are lacking or inappropriately provided. Building industry design professionals should also pay more attention to such areas in the planning of future schemes, towards achieving social inclusion in the development of public environments.

The study investigation was limited to selected shopping malls in Lagos State, Nigeria. Therefore, the findings cannot be generalised within the study area. To this end, it is recommended that similar studies should be conducted to cover more shopping malls to provide a result that can be generalised as the prevailing situation on shopping malls in the study area. Different types of public buildings should also be investigated to allow for comparative analysis, as well as provide a general picture of the prevailing situation on public environments in the study area. Likewise, similar studies can also be carried out in other parts of the country and around the globe to provide a wider picture on the various architectural features constituting hindrances to achieving Universal Design in existing public environments. Such studies are necessary feedback mechanisms for designers and policy makers, towards making provisions for promoting the development of public environments that are inclusively developed.

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