

Assessment of Accessibility and Disability Planning in Nigerian Construction Industry

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Abstract— Most private and public buildings in Nigeria do not incorporate accessibility design for people with disability (PWD). PWD lack suitable access to school, market, bank and public facilities, access barriers can hinder public mobility, access to services, and social involvement for PWD. This research investigated the level of accessibility planning and design in Nigeria's construction industry and suggest possible remedies to overcome identified accessibility challenges. To achieve this objective, the researcher reviewed literature, relevant laws and policies, formulated and distributed well-structured questionnaires to engineering professionals / firms and PWD, the questionnaires were analyzed using a joint approach which involved the use of both quantitative and qualitative data. The study findings indicates that 80% of construction firms in Nigeria do not include accessibility and disability planning when constructing public buildings, also the National building code (2006) does not contain measurable provisions for PWD.

Keywords— Accessibility Planning, Disability Design, Persons with Disability (PWD), Nigerian Construction Industry, Law / Policy, Public Buildings, National Building Code

I. INTRODUCTION

Contemporary design of built environments in Nigeria indicates evidence of inaccessibility, dependency and deficiency of those with disabilities (1). These challenges affects at least 25 million people or about 15 percent of Nigeria's population (2). Unsurprisingly, the United Nations estimates that about 25 percent of each country's population are special needs persons (3). In 2007, Nigeria ratified the United Nations Convention on the Rights of People with Disabilities (CRPD) and in 2018, Nigeria signed a new law against the discrimination against persons with disabilities (prohibition) act. Notwithstanding, Nigerians living with disabilities continue to face human rights abuses including stigma, discrimination, violence, and poor of access to healthcare, housing, and education (4).

Reports from around the world shows that people living with disabilities experience lower educational achievements, increased cost of living, less legal protection, lower levels of employment, higher poverty rates, poorer health outcomes, poorer health outcomes and less cultural and political participation, etc. compared to non-disabled people. The negative effects of disability is more pronounced in lower income countries, people from the poor homes, women, children and elderly people. Collectively, persons living with disabilities are more likely to experience severe socioeconomic conditions than persons without disabilities (5 - 9).

As the Corona Virus (COVID-19) pandemic continues to disrupt everyday activities, creating a new norm, it is noteworthy to understand how this changes impact the mobility and accessibility of persons with disabilities to public facilities, recreational services, health, education, transport, among other places of interest (8).

Research Problem

The growing demand for large-scale infrastructure, public systems, services, national or regional facilities that are indispensable for economic activity, including roads, telecommunications, power, public transportation, water supplies, and

schools need must include accessibility planning and disability design right from the conception to entire life cycle of such facilities, to reduce or avoid costs associated with retrofitting a building to improve access in future, should it be required (10-12).

This research investigates the level of accessibility planning and design in Nigeria's construction industry and suggest possible remedies to overcome identified accessibility challenges. To propose sustainable ways of overcoming accessibility challenges faced by the disabled, suggest way of creating greater awareness and implementing existing laws, acts, bills, regulations, policies and programs relating to persons with disability (12). The scope of this study was be restricted to the construction industries in Nigeria.

II. LITERATURE REVIEW

Many organizations have modified entry points to building in a bid to adhered to COVID-19 guidance and prevent the spread of the deadly virus (12). Persons with disabilities who rely on these methods for accessible to public facilities may not be able to satisfy their basic needs and access banks, markets, and other places.

Barriers to full social and economic inclusion of persons with disabilities include the unavailability of assistive devices and technologies, inaccessible physical environments and transportation, non-adapted means of communication, differences in service delivery, and discriminatory prejudice and societal stigma (8, 9). Globally, the United Nations convention on the rights of persons with disabilities (CRPD) creates awareness of disability-inclusive development, promotes the greater integration of persons with disabilities (13, 14).

The above challenges call for planning with cross disciplinary design teams including Architects, Design Engineer, Project Managers and other professionals to give a sense of belonging to the disabled in our midst through proper legislation and appropriate design of public infrastructures (15 - 17).

Best practices in Engineering Project Planning and Design

The best practices in project planning, engineering design includes features to facilitate accessibility by persons with disability from the onset increases the prospective of satisfying the needs of all the users. It is also significantly more cost-effective than making retrospective adjustments during the construction or post occupation phases design (13). Below are guidance to facilitate development of infrastructure, through best practice in project planning and design (13).

Universal design

Simplify life for people of all ages and abilities by making products, communications, and the built environment more usable for as many people as possible at little or no extra cost. (18). Figure 1 shows that such designs are often unavailable in developing country like Nigeria.



Fig. 1: A man in a wheel chair moves down an empty road in Victoria Island in Lagos on March 29, 2018. Source: Stefan Heunis/AFP/Getty Images

There are four interlinked factors that need to be assessed when considering infrastructure location they are: Safety, accessibility, reliability and affordability (SARA) (19).

Signage and Way-finding

Persons with visual limitations, older persons, persons with cognitive limitations and persons whose primary language is not English, may be highly dependent on a comprehensive signage system, for orientation and way-finding in large or complex

buildings, where public services or programs are available. Such signage and complementary way-finding strategies must be logical, consistent in design and distribution throughout the building and include lettering, numbers, pictograms or icons that are legible and easy to comprehend. Figure 2 illustrates a set of disability icons (20).



Fig. 2: Illustration of vector set of disability icons source: (21)

Addressing fundamental barriers limiting accessibility of persons with disabilities

The fundamental barriers limiting accessibility of persons with disabilities can be successfully overcome by: discriminatory laws and policies, lack of accessibility in physical and virtual environments, negative attitudes, stigma and discrimination, and to rehabilitation, and lack of measures to promote the independent living of persons with disabilities. Accessibility is best pursued by means of regulations and guidelines at the grassroots level and by thematic area, supported by national laws and accountability mechanisms (14).

Seven core design elements:

There are at least seven (7) core design elements do not necessarily accommodate the needs and abilities of all home occupants. However, they are considered to be of most widespread benefit and use in the majority of circumstances (22).

The seven core design features elements:

First, a safe continuous and step free path of travel from the street entrance and / or parking area to a dwelling entrance that is level. Second provide at least one, level (step-free) entrance into the facility. Third, an internal doors and corridors that facilitate comfortable and unimpeded movement between spaces. Fourth, provision of toilets on the ground (or entry) level for easy access. Fifth a bathroom that contains a hobless (step-free) shower recess. Sixth, Reinforced walls around the toilet, shower and bath to support the safe installation of grab rails at a later date. Lastly, a continuous handrail on one side of any stairway where there is a rise of more than one meter.

Disability Planning

This is an inclusion plan which is about making sure that people with disability can take part in our community which means that they can do the things that able people can do, the things they want to do, get into building and get around, get a job or study if that is good for them, use services, get the information they need, feel safe and feel included. In other words, disability planning is the way that government and local council can make sure that people with disability are included in our community (23 - 25).

Planning for the Disable

is creating a vision to enable you put plans into place that aim towards fulfilling the vision to the best of your ability noting that there is no one size fits for all as each person will have their hopes, dreams and wishes.

Accessibility Planning

The concept of accessibility involves identifying and accessing the barriers to access faced by certain social groups in particular areas, and developing strategies to improve accessibility for those most at risk.

Accessibility planning is planning at the capacity of people to travel or communicate or the location of opportunity and the availability of connections using the transport or electronic communication (26). The stages in accessibility planning include; Strategic assessment; Local assessment; Option appraisal; Plan preparation and Performance monitoring.

The following steps are necessary for accessibility planning and design: Removal of Barriers to Disable. Installing barrier free ramps. Ensure further sidewalks and curb accessibility. Pedestrian crossing including marking and tactile strips. Installation of barriers free doors operation and hold-open devices. Barrier free washroom upgrades. Removal of doors in public corridors (where appropriate).

Review of national and state laws, policies for person with disability in Nigeria

The National Policy on Education

The National Policy on Education categorises special needs persons based on visual impairment, hearing impairment, physical and health impairment, intellectual disabilities, emotional and behavioural disorders, as well as speech and language impairment. Others in the category of special needs persons, according to the policy document last revised in 2013, are with learning disabilities, multiple disabilities, the gifted and talented, and albino. The policy also makes education free at all levels for persons with special needs (3).

National laws on discrimination against persons with disabilities (prohibition) act

Nigeria's law on discrimination against persons with disabilities (prohibition) act, the sections part II to IV of 'accessibility of physical structure' which relates strongly to engineering construction industry is divided into the following six (6) subheads (27).

Part II - Accessibility of Physical Structure - This section covers the following: right of access to public premises, accessibility aids in public building, and accessibility to roads, side-walk and special facilities, transitory period, building plan and complaint of inaccessibility. This section ensures that a government or government agency, body or individual responsible for the approval of building plans shall not approve the plan of a public building if the plan does not make provision for accessibility facilities in line with the building code.

Part III - Road Transportation - This section covers the following: Goods, services and facilities, Accessibility of vehicles, Provision of facilities to persons with disabilities and reserved spaces.

Part IV - Seaports, Railways and Airport Facilities - This section covers the following: seaports and railways, assistive service and airline, and special safety briefing of persons with disabilities.

Lagos State Special People's Law 2010

Lagos state the commercial capital of Nigeria established the office for disability affairs, to safeguard people living with disability against all forms of discrimination and equalize their opportunities in all aspect of living in the society and for connected purposes. Provision of 24 of the law has significant importance to the built industry. Some of the provisions of the law on facilities of public building are outline below (28). A person living with disability shall have the right and necessary Facilities of facilities to access public building and public places. No public building shall be constructed without the necessary accessibility aids such as lift (where necessary), ramps and others that shall make them accessible and usable to persons living with disability. (28).

III. METHODOLOGY

In this research, questionnaire and oral interview were used to gather information, results were analysed using a joint approach which involved the use of both quantitative and qualitative data. Also the research carried out a review of the literature (research papers, laws and policies), (5).

In order to ensure that the questions develop gather appropriate required information, following guidelines were used to achieve effective questionnaire (29): Clearly and concisely define what is to be collected, Provide clear information, Maintain respondent's cooperation and involvement, Enable respondents to complete it accurately and within a reasonable time, Use the language that the respondents understand.

Method of Data Collection

The method of data collection was through questionnaire and oral interview surveys. Questionnaire were administered directly to the respondents by the researcher, to fast track submission and ensure properly completion of the questionnaire. Previous and fresh interviews were conducted and reviewed on the subject matter to provide more information to give us clearer ideas of the challenges faced by the disabled.

IV. RESULTS AND DISCUSSION

In this research a survey was used to collect and distribute of relevant information among number of population in the study. The target population in this research were construction firms' in Nigeria.

Data Presentation Analysis and Interpretation

The data collection and presentation, interpretation of the presented data, analysis are presented below.

Table 1 and fig. 3 shows the distribution of respondents by year of experience and organization respectively.

Table 1: Distribution of Respondents by Year of Experience in Percentage (Source; Field Data)

Years of experience	Frequency	Percentage	Rank
1-5	23	57.5%	4
6-10	11	27.5%	3
11-15	4	10%	2
16 and above	2	5%	1

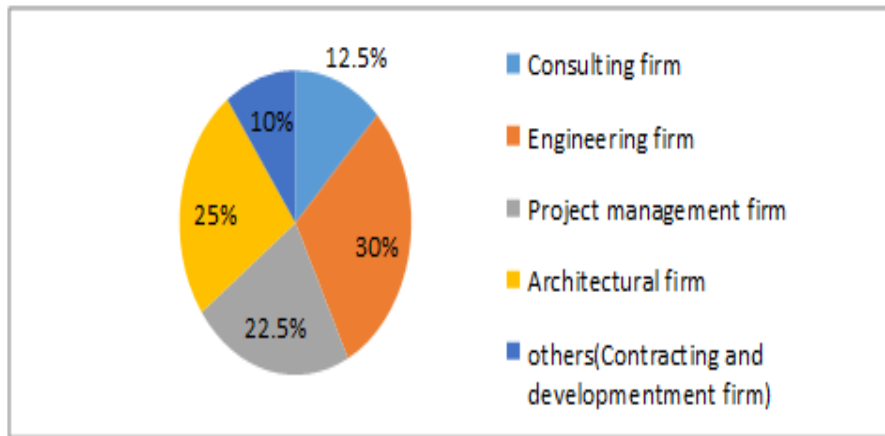


Fig. 3: Pie chart showing response based on organization Source: Field data

Awareness of disability design and planning in the built industry

Figure 4 indicated that over 80% of stakeholders in Nigeria's built industry comprising of Consulting firm, Engineering firm, Project management firm, Architectural firm, contracting firm/ development firm among other have little or no knowledge on of disability design and planning. From the chart 2 representing 5.7%, had adequate knowledge, while 4 representing 11.4% had intermediate knowledge, 7 representing 20% had fair knowledge, and 22 representing 62.9% had no knowledge at all. The Federal Ministry of Information is tasked to promotion awareness regarding the programs. Rights, respect and dignity of persons with disabilities; and Capabilities, achievements and contributions of persons with disabilities to the society. These is need to explore more public relations and marketing options like social media, television, radio etc.

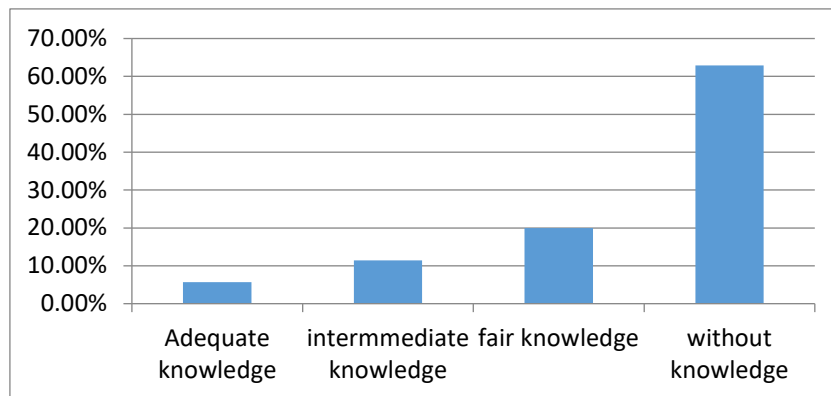


Fig. 4: Bar chart showing the level of awareness of disability design and planning.

Engineering construction companies and disability planning and design.

Only 95% of engineering construction companies conducts disability design and planning, this indicates a large room for growth and improvement. People with acquired physical disabilities, power chair and wheelchair users were the most disadvantaged group in inaccessible public spaces. Insufficient and inaccessible areas negatively effects the satisfaction of PWD when using public facilities. To improve the current knowledge gap Governments can: Promote access to mainstream services; Invest in specific programs for people with disabilities; Adopt a national and grassroots strategy and plan of action; Improve staff education, training and recruitment; Provide adequate funding; Increase public awareness and understanding on disability; Strengthen research and data collection; and Ensure the involvement of PWD in implementing programs and policies that impact of them, for instance the law state that at least five per cent of all public appointments must go to people with disabilities, governments at various levels demonstrates goodwill (27).

80% of construction firms in Nigeria do not include accessibility and disability planning when constructing public buildings. The result shows that only 8 respondents representing 20% provide such services for persons with disability. While 32 representing 80% do not. Also the national building code of Nigeria does not make inadequate provision, a small part of the code in section 4.8 (by only classifying buildings/structures) touches on disability. This may be a major contributor to why roads, buildings, parks, recreation centers are design without having the disable in mind (i.e. there is inadequate provision for the disable).

Pre-construction disability assessment / Inclusive construction planning and design

Engineering and construction companies in Nigeria carry out disability assessment before constructing for the public. 90% of these companies are not aware of the legal require for construction projects as it relates to persons with disability hence do not embed inclusive construction planning and design in execute projects as against 10% who do. When the law on discrimination against persons with disabilities (prohibition) act are enforced projects that do include disability planning and design cannot have their building plans approved. 65.7% representing 27 and 34.3% representing 13 of PWD presently benefit for existing public infrastructures in terms of houses, use the road and so on whereas the road and houses despite not having any special feature which was designed specifically for the disable.

Challenges to implementing accessibility planning and disability design

Many engineers are no taught accessibility planning and disability design in schools of higher learning / tertiary intuitions. There is not for deliberate effort to train engineers, technicians, craftsmen in engineering field of practice.

Employment prospects in construction firms for persons with disability

The survey showed that 38 representing 95% do not any worker with disability. While a small number of 2 representing 5% currently engage the services of persons with disability.

Opinion of persons with disability on accessibility planning and disability design

Varying opinion exist on whether disability design and planning form part of criteria for bid or tender evaluation in Nigeria. 75% representing 30 are in support of such imitative as a good noble form of motivation to drive inclusion of accessibility planning and disability design on all construction projects in Nigeria on the other hand 25% representing 10 disagree on disability design and planning forming part of bid/tender evaluation in Nigeria.



Fig. 5: Lois Auta an advocate for inclusive legislation in Nigeria. Source: (30)

Lois Auta as shown in fig. 5 uses a wheelchair she is an advocate for inclusive legislation in Nigeria, she is often faced accessibility challenges to meeting venues, and when required to cross rivers. She experienced reduced funding opportunities compared to most male candidates seeking the seat of the House of Representatives (30).

Evaluators Responds from the Disable

People with disabilities can live and participate in the community. 50% of people with disabilities do not generally have their needs met for assistance with everyday activities. 75% of respondents rely on family and friends for assistance with daily activities. They have limited access to all places they want go to. They face challenges using public facilities. They often change travel plans due to mobility challenges.

V. CONCLUSION

From the analysis of questionnaire, the following findings were made:

Individuals living with disability in Nigeria lack suitable access to facilities like school, market, bank and public facilities, access barriers can hinder public mobility, access to services, and social involvement for people with disability.

The investigation revealed that the introduction of access for the disable in buildings, roads, recreational centres etc. by engineering firms in Nigeria is a step towards improving the quality of life of the disable, hence create an inclusive environment.

At present, 90% of construction firms in Nigeria are not aware of the legal require for construction projects as it relates to persons with disability, hence do not embed inclusive construction planning and design in their projects.

The National building code (2006) do not have adequate provision for the disable in terms of creating access and planning for the disable. However, there are national and state laws like “Discrimination against Persons with Disabilities (Prohibition) Act, 2018”, “Lagos State Special People’s Law 2010” among others that protect and promote the interest of PWD.

Implications for Policy, Practice and Research

In Nigeria there is a paucity of data on accessibility, violation, enforcement of laws relating to PWD and impact on the quality of life and well-being of those living with disabilities. Therefore, more research focusing on these populations could lead to improved awareness of laws, increased accessibility and disability plaining. Additionally, future investment, policies on road development, transport services and health facilities must consider the needs of PWD.

Based on the research the following recommendation were made:

- Government has to enforce the legislation in the area of infrastructural design such that before that design is approved, it must make provision to cater for the accessibility needs of PWD.
- The Nigerian building code should provide a standard in the code to take care of the access need of the disable in all public buildings. This should be enforced.
- Construction firms/Government should carryout disability assessment before constructing for the public order to determine the accessibility need of persons with disability.
- The federal, state and local government should be plan and design public facilities in such a way as to provide for the accessibility needs of persons with disabilities.
- Existing laws on disability in Nigeria should be reviewed from time to time to reflect global realities.
- Engineering firms/Government should carryout disability assessment before the commencing of construction projects. Disability planning and design should form part of the Nigerian university curriculum for engineering disciplines.

VI. CONFLICT OF INTEREST

The author states that there are no conflict of interest.

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