

Adopting Inclusive Design Principles for the Proposed North East Development Commission's Headquarters in Maiduguri, Borno State

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Abstract

This paper reports architectural research about the application of inclusive design principles in the proposed North East Development Commission Headquarters in Maiduguri, Borno State. Inclusive design aims to create spaces that are accessible, usable, including those with disabilities, the elderly, and other vulnerable groups and appealing to diverse users, regardless of age, ability, or cultural background. The study adopted a qualitative research approach, expert interviews, and a case study of the proposed headquarters. This work reviews existing literature, demonstrating the benefits of inclusive design in public office buildings, including enhanced user satisfaction, improved employee productivity, and increased social inclusion. The findings highlight the importance of incorporating inclusive design principles, such as universal accessibility, flexible spaces, and cultural sensitivity, to create a welcoming and inclusive environment. The study provides recommendations for the design of the headquarters, emphasizing the need for a user-centered approach that prioritizes diversity, equity, and inclusion.

Keywords: Cultural Sensitivity, Inclusive Design, Social Inclusion, User-Centered Approach and Universal Accessibility.

Introduction

The North East Development Commission (NEDC) was established in 2017, after the bill establishing the commission was passed. It was signed as an act on October 25th, 2017. The deadly activities of the Boko Haram sect have led to several development challenges in the North-East States of Nigeria. After the activities of the infamous Boko Haram group were subdued to a manageable level, the North East Development Commission was established, and consequently, moved to its operational headquarters in Maiduguri, the Borno state capital to deliver mandate. In summary, the Boko Haram conflict has created enormous developmental challenges in the zone by aggravating the levels of unemployment, poverty, insecurity, hunger, humanitarian crisis, etc. (Dauda, 2018). Typical situations would be entrances that can only be reached via stairs, so wheelchair users cannot enter or signage that is too small, so people with limited vision cannot see important signs. Intelligent planning and design are necessary to create spaces that can achieve accessibility for everybody or at least a highest possible number of users. Morana, J., *et al.*, (2011). Public office buildings serve a critical function in the delivery of government services and public policy. However, these buildings often fail to meet the diverse needs of users, resulting in

barriers to access, exclusion, and inefficiency (Weisman, 2000). Inclusive design is an essential consideration in the creation of public buildings, as it ensures that spaces are equitable, accessible, and responsive to diverse user needs (Weisman, 2000). The North East Development Commission Headquarters in Maiduguri, Borno State, presents an opportunity to apply inclusive design principles in a region where social cohesion and economic development are critical. In order to explore the application of inclusive design principles in the proposed headquarters for the importance of inclusive design in public office buildings, it highlights its impact on user experience, social equity, and organizational performance. Inclusive design principles thus create spaces that are accessible, usable, and appealing to diverse users, regardless of age, ability, or cultural background. Inclusive design offers a solution, prioritizing user-centered design principles that promote equity, accessibility, and social inclusion (Steinfeld, 2010). Research has shown that inclusive design in public office buildings leads to:

- Enhanced user satisfaction (Imrie, 2012)
- Improved employee productivity (Dunn, 2002)
- Increased social inclusion (UNHCR, 2022).

Maiduguri, the capital of Borno State in Northeastern Nigeria, faces numerous challenges due to its socio-economic context and security concerns. Some of the current specific challenges include:

1. Displacement and IDP crisis: Maiduguri is hosting a large number of Internally Displaced Persons (IDPs) due to the Boko Haram insurgency, leading to a significant strain on resources and infrastructure (UNHCR, 2022).
2. Security concerns: The city remains vulnerable to terrorist attacks and security breaches, affecting economic activities and daily life (BBC News, 2022).
3. Poverty and unemployment: Maiduguri struggles with high levels of poverty and unemployment, exacerbating social and economic tensions (World Bank, 2020).
4. Limited access to education and healthcare: The city faces challenges in providing adequate education and healthcare services, particularly for IDPs and vulnerable populations (UNICEF, 2020).
5. Infrastructure deficits: Maiduguri's infrastructure, including roads, water supply, and electricity, is inadequate and in disrepair, hindering economic development and daily life (The Guardian Nigeria, 2022).

Statement of the Problem

Despite established federal legislature in 2017 yet, the commission currently occupies a temporary rented residential accommodation as office, which is not purpose design. Therefore, it lacks adequate office facilities, location, and architectural characters unique to its function and mandate. The design of the current remodeled office in Maiduguri does not take into cognizance that its users do have varying abilities and disabilities. Meanwhile, Inclusive design considers people's different ability in the design of built environment and

aims at removing the barriers that create undue effort and separation by enabling everyone to participate equally, confidently and independently in everyday activities (Fletcher, 2006). Yet, the lack of consideration for the variation in human abilities and changing physical ability in life makes the degree of pleasurable experiences that the office intends to give to its users limited only to a particular group of people thereby, preventing the provision of pleasurable architectural experience to a much broader cross section of people like the aged, the young, the physically impaired etc. hence, The need to include access and user comfort for people from all works of life considering the diversity in socio-cultural, religious and functional values of the society in the proposed design of an office building for North East Development Commission head office in Maiduguri, Borno state.

Literature Review

Creating an environment that embraces diversity and eliminates barriers and exclusions is crucial, for the benefit of everyone involved (Mace & Kratochwill, 1988). This holds significance because despite society's efforts and individual investments in enabling people to manage their personal circumstances (such as caring for the elderly or providing aids and adaptations for individuals with disabilities) there are still many individuals who find themselves unnecessarily limited by poorly designed environments (Adeshina, 2017). Consequently, these individuals end up taking responsibility for their limitations preventing them from making contributions, to society (Putt, 2006). Inclusive design recognizes the changes that everyone experience during his or her lifetime, taking all people: young, old, tall, short, and persons with various disabilities into consideration. It assumes that disability or variation in human ability is not special but normal and design should be able to accommodate each user without segregation or stigmatization (Nasiru, 2012). Inclusive design encompasses various principles, including universal accessibility (Imrie, 2012), flexible spaces (Dunn, 2002), and cultural sensitivity (Hernandez, 2007). These principles aim to create spaces that are adaptable, sustainable, and responsive to diverse user needs. Research has shown that inclusive design can enhance user experience, social interaction, and community engagement (Steinfeld, 2010).

The evolution toward inclusive design began in the 1950s with a new attention to design for people with disabilities. In Europe, Japan, and the United States, barrier-free design developed to remove obstacles in the built environment for people with physical disabilities. It followed the social policy of moving people with disabilities from institutional settings to the community. Barrier-free design still tended to be segregated and special, especially for people with serious physical limitations, primarily mobility impairments.

Inclusive design in the context of an office building can have a significant positive impact on the experience and well-being of its occupants and other users. By incorporating inclusive design principles, the office building can become more accessible, comfortable, and welcoming for people of diverse abilities, backgrounds, and preferences. Some ways that inclusive design can be integrated into an office building are accessibility features, universal

design, flexible spaces, diverse sensory considerations, inclusive amenities and accommodating diverse workforce.

Research Methodology

This study adopted a qualitative research approach, involving a literature review and expert interviews. Expert interviews were conducted with architects, designers, and users to gather insights on inclusive design principles and their application in the region. Historical development of Borno indicated that it was the second largest in area of the 36 states, only behind Niger State. Despite its size, the state is the eleventh most populous with an estimated population of about 6,111,500 [2022] – Projection. Borno, state, northeastern Nigeria. It is the central fragment of the old Bornu Empire of the Kanuri people. Its name is said to mean "Home of the Berbers. "The territory became part of Northern Nigeria after the division of Bornu between the British and the French at the turn of the century and became Borno state in 1967. Borno state was divided in 1991, and its western half became Yobe state. Borno borders the Republic of Niger to the north, Lake Chad (and the Republic of Chad) to the northeast, and Cameroon to the east; on the south and west it borders the Nigerian states of Adamawa, Gombe, and Yobe. The proposed site is located at former John hold Ltd. Along Sir Kashim Ibrahim road opposite Ramat Square, [race course] adjacent Sterling and Union banks, behind Fidelity bank. The site covers around 2 hectares of land [18,399.40 m²].

Analysis and Results

The findings highlight the importance of incorporating inclusive design principles in the proposed headquarters. The study identified key areas for consideration, including:

- Universal accessibility: Ramps, elevators, and accessible restrooms
- Flexible spaces: Modular design, adaptable furniture, and multi-functional areas
- Cultural sensitivity: Incorporation of local materials, colors, and patterns

The physical barriers that can prevent all-inclusive access to a building are identified in Table 1, with the results in which universal design principles can enhance accessibility and inclusivity in buildings, the physical barriers identified include, steps and staircases, narrow doorways and hallways, heavy doors, inaccessible restrooms, high counters and service desks, lack of signage, obstacles and clutter, inaccessible parking, improper lighting, elevators and lifts and public transportation.

Table 1: Physical barriers that can prevent all-inclusive access to buildings

S/N	Barrier category	Description
1	Steps and Staircases	<ul style="list-style-type: none"> - Lack of ramps or elevators - Steep or uneven steps - Lack of handrails
2	Narrow Doorways and Hallways	<ul style="list-style-type: none"> - Doorways too narrow for wheelchair access - Hallways too narrow for easy navigation
3	Heavy doors	<ul style="list-style-type: none"> - Doors that are difficult to open manually - Lack of automatic door openers
4	Inaccessible Restrooms	<ul style="list-style-type: none"> - Lack of accessible stalls - Sinks, mirrors, and soap dispensers that are too high - Insufficient turning space for wheelchairs
5	High Counters and Service Desks	<ul style="list-style-type: none"> - Counters that are too high for wheelchair users to reach
6	Lack of Signage	<ul style="list-style-type: none"> - Absence of Braille or tactile signage - Poorly placed or confusing signs
7	Obstacles and Clutter	<ul style="list-style-type: none"> - Furniture or fixtures obstructing pathways - Poorly placed decorations or displays
8	Inaccessible Parking	<ul style="list-style-type: none"> - Lack of designated accessible parking spaces - Inaccessible routes from parking to building entrances
9	Improper Lighting	<ul style="list-style-type: none"> - Inadequate lighting making it difficult for people with low vision - Glare or shadows that create visual difficulties
10	Elevators and Lifts	<ul style="list-style-type: none"> - Absence of elevators or lifts in multi-story buildings - Inaccessible elevator controls
11	Public Transportation	<ul style="list-style-type: none"> - Lack of accessible transportation options to and from the building
12	Inaccessible Entry Systems	<ul style="list-style-type: none"> - Intercoms or keypads that are too high or difficult to use - Security systems that are not accessible

Source: Researchers' Field Survey, 2024

Table 2 shows the result of assessment of the application of inclusive design principles (NEDC Maiduguri).

Rating keys: 1 absent, 2 low, 3 moderate, 4 high

S/N	Variables	Level of reflection				Remark
		absent	low	moderate	high	
1.	Simple and intuitive use		2			Use of revolving door at entrance. Using visual aids, local languages, and culturally relevant symbols can enhance understanding among all community members, including those with limited literacy.
2.	Equitable use	1				No provision for disabled access at the entrance and also provision of staircase and lift for the disabled.
3.	Perceptible information		2			No provision of verbal or tactical information mode. Ensure that information about development projects, assistance programs, and safety protocols is accessible in multiple formats (e.g., audio announcements, printed materials, and visual displays) to cater to individuals with different sensory abilities
4	Tolerance for error			3		Use of warning signs, provision of grab rails. safety and error prevention, and public spaces should have clear, easy-to-follow signage and emergency instructions
5	Flexibility in use			3		Provision of staircases for circulation. Programs and services should be adaptable to meet the diverse needs of the population
6	Low physical effort			3		Infrastructure projects should prioritize ease of access and use. Used minimal change in levels. Push doors that were provided require very low

						energy to push/pull and are self-returning.
7	Size and space for approach and use.				4	Adequate space planning is crucial to ensure that all individuals, including those using wheelchairs or other mobility aids, can navigate the environment comfortably. Provisions of windows and doors are fully glazed

Source: Researchers' Field Survey, 2024

Table 3 indicates the perception of individuals with special needs on NEDC office Maiduguri

S/N	Category	Perception
1	Wheelchair user	The office area is considered as a barrier-free environment. Comprehensive improvement of the area is needed to ensure equal opportunities for everyone.
2	Vision impaired	emphasized on the design of guiding blocks, tactile direction or warning indication to facilities in the building, and signage of the building, Braille should be used, if possible, wherever embossed characters are used
3	Hearing impaired	The office is equipped with smoke alarms and other assistive devices to warn the people with hearing impaired, room entrances or bathrooms, no clear visual signage and indicators, no visual communication devices inside some of elevators and other enclosed spaces
4	Stick or Crutches User	threshold as barriers in front of the ablution faucets

Source: Researchers' Field Survey, 2024

Table 4 shows the summary of findings

S/N	Research objective	Findings
1	To identify the physical barriers preventing all-inclusive access to the building	(i) Steps and Staircases (ii) Inaccessible Restrooms (iii) Narrow Doorways and Hallways (iv) Inaccessible Restrooms (v) Heavy doors (vi) High Counters and Service Desks (vii) Lack of Signage (viii) Obstacles and Clutter (x) Inaccessible Parking (xi) Improper Lighting (xii) Elevators and Lifts.
2	To review the inclusive design strategies in office building	1. Use clear signage and intuitive layouts 2. Ensure all entrances, exits, and key facilities are accessible 3. Provide information in multiple formats (visual,

		auditory, tactile) 4. Features that reduce accidents and allow easy correction of mistakes 5. Design adjustable workspaces and adaptable meeting rooms 6. Automatic doors, ergonomic furniture, strategically placed amenities 7. Ensure ample space for movement, wide corridors, spacious elevators
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Source: Researchers’ Field Survey, 2024

Summary

The study's findings emphasize the need for a user-centered approach that prioritizes diversity, equity, and inclusion. Inclusive design principles can enhance the social and economic impact of the headquarters, fostering a sense of community and promoting regional development.

Conclusion

This study demonstrates the need for inclusive design in public office buildings, highlighting its impact on user experience, social equity, and organizational performance. By prioritizing inclusive design principles, public office buildings can become more inclusive, efficient, and effective in serving diverse users with the value of inclusive design principles in the creation of public buildings like the North East Development Commission Headquarters. By incorporating universal accessibility, flexible spaces, and cultural sensitivity, designers can create a welcoming and inclusive environment that supports the diverse needs of users. The study's recommendations provide a foundation for the design of the headquarters, emphasizing the importance of inclusive design in promoting social cohesion and economic development in the region. Inclusive design in office buildings aims to create an environment that is accessible and usable by everyone, regardless of their age, ability, or other factors. Inclusive design strategies in office buildings are crucial for creating an environment that supports all employees and visitors. When effectively implemented, these strategies can significantly enhance accessibility, comfort, and productivity. However, challenges such as cost, space constraints, and the need for ongoing maintenance must be addressed. Ensuring that all entrances, exits, and facilities are accessible to everyone, regardless of ability, is a fundamental principle. This approach promotes equity by providing the same level of access to all users. In public spaces and buildings, the required precautions are taken according to the physically disabled people like wheel chair users, visually or audible impaired individuals and the like; but there are space solutions also for mentally and cognitively disordered people. In some country, some built environment preservations are taken only for the physically impaired people. However, some space solutions have to be searched and provided for the people who have autism, dementia or the other similar disabilities. In order to realize this, the society have to accept the behaviors that include disabled people and contribute to the formation of a fair-built environment for all. This research work considered appropriate inclusive design

principles and concept to be adopted in design of North-east development commission office. By integrating these inclusive design principles into the operations and initiatives of the North-East Development Office, Maiduguri can become a model for equitable and sustainable development, fostering a resilient and inclusive community.

Recommendations

1. Monitoring and evaluation: establish mechanisms for regular monitoring and evaluation of projects to assess their impact on different segments of the population and make necessary adjustments
2. Community engagement: Actively involve community members in the planning and implementation phases of development projects to ensure that their needs and preferences are understood and addressed
3. People with disabilities in offices should be able to arrive on the premises, approach the building and enter as freely as everyone else. At least one route of travel (e.g., from a parking lot in front of the building to the entrance of an office within the building) should be safe and accessible for everyone, including people with disabilities.

Areas for Future Research

1. Assessing the impact of inclusive design on user experience: Investigate how occupants and visitors experience and interact with the building's inclusive features.
2. Evaluating the effectiveness of inclusive design in promoting social cohesion: Study how the building's design influences social interactions and community building among users.
3. Investigating the economic benefits of inclusive design: Analyze the cost-benefit analysis of incorporating inclusive design principles in the building's design.
4. Exploring the application of inclusive design in other building types: Investigate the potential of inclusive design in other building types, such as schools, hospitals, and public spaces.
5. Developing inclusive design guidelines for the North East region: Create region-specific guidelines for inclusive design, considering local culture, climate, and context.
6. Investigating the role of technology in enhancing inclusive design: Examine how technology, such as assistive technologies and smart building systems, can enhance the building's inclusivity.
7. Assessing the environmental sustainability of inclusive design: Study the environmental impact of inclusive design principles and materials used in the building's construction.

8. Conducting post-occupancy evaluations of inclusive design: Investigate the long-term effectiveness of inclusive design principles in the building's performance and user satisfaction.

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