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Universal Design Awareness among Urban Planners and Its Impact on Public Transport Systems in Nairobi, Kenya

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Abstract

The idea of Universal Design began in the 1950s with a new attention to disability in the wake of the major world wars. Universal Design proposes a collaborative systems approach that benefits from the synergies of cross-functionalism by approaching the diverse challenges facing society through socially responsible design. Although the concept of Universal Design application in public transport has been growing through major legislative initiatives in the developed economies; there is a gap on how developing countries have integrated the importance and the benefits of Universal Design awareness in transportation systems. The main objective of this paper was to investigate the level of universal design awareness among professionals and the general public in relation to public transport systems in Nairobi-Kenya. Using exploratory and descriptive research design, the study employed a case study approach and utilized mixed methods, both qualitative and quantitative techniques. The study was carried out in Nairobi County with particular emphasis on three major bus termini within the CBD including: Ambassador Hotel-KenCom Interchange and bus termini (as a single section and General Post Office. The subjects of this study were bus drivers and touts, passengers (public transport users), policy makers, National and County Government officials in urban planning departments, professionals (engineers, quantity surveyors, designers, architects), Persons with Disabilities and would be users of public transport. The research results revealed that universal design is not a common concept known to most public transport users. The major element of perceptions revolved around cost of universal design application. The study established a lack of a clear framework and policies on universal design application in public transportation services creates inconvenience and difficult transfers at transportation system connections. The study concluded that universal design application in Nairobi city's public transport is key to social inclusion and can strengthen the urban planning agenda.

Keywords: Accessibility, awareness, barrier, disability, public transportation, social inclusion, Universal Design.

INTRODUCTION

The idea of Universal Design (UD) began in the 1950s with a new attention to disability. 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 companion social policy of moving people with disabilities from institutional settings to the community. Barrier-free design still tended to be segregated and special, pertinent to people with serious physical limitations, primarily mobility impairments (Fletcher, 2014). According to Gosset and Feidt (2009), developed countries have laid emphasis on sustainable design as the guiding concept to create the built environment that meets the needs of the present without compromising the ability of future generations to meet their own needs (Gossett & Feidt, 2009). However, UD is an inclusive approach to designing for the broader population and is rapidly gaining popularity amongst design practitioners and planners globally (Woodcraft, Hackett & Caistor-Arendar, 2011). Moreover, the application of the concept of accessibility has received little attention in urban design and planning of Nairobi and other cities in Kenya and East Africa. This study intends to look at the need for Universal Design in the transportation sector in Nairobi City.

The intent of universal design is making the built environment more accessible and usable by everyone. While universal design is now a legal

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requirement in other parts of the world, it seems in Kenya, specifically Nairobi City lacks design with emphasis on universal access. Efforts at improving accessibility to buildings are visible but they seem more of after-thoughts rather than beforehand and purposeful. While some considerations have been made, the principles being employed may still be challenged by inadequacies in the level of awareness and application, hence a priority area for research.

In Nairobi City, transportation is an essential tool that enables people to access facilities and services by driving, bus public transport and railway. However, with the urban growth being experienced, the city not only faces problems of accessibility barriers; but a number of problems related to public transportation and city planning. In the public transportation sector for example, adequate measures to link different transportation companies and to provide information have not necessarily been taken, and the framework of past policies concerning the introduction of new public transportation services does not necessarily guarantee the ability to effectively take barrier-free measures. As a result, the lack of universal design inclusion in public transport creates inconvenience and difficult transfers at transportation system connections. It is against this background that the study investigated the level of universal design awareness among professionals and the general public in relation to public transport systems in Nairobi-Kenya.

The main objective was to investigate the level of universal design awareness among professionals and the general public in relation to public transport systems in Nairobi-Kenya. The study was envisaged to help policy makers and professionals in the in public transportation in Nairobi City to clearly understand the recommendation and the importance of Universal Design principles, and promoting quality in accessibility in transport sector and other environments.

THEORY

Universal Design has been defined as a strategy that is aimed at ensuring accessibility and use of services, information technology, communication, products and environments by all people to the maximum, with a greater emphasis on the people with disabilities (Reynolds, 2011). According to Cline (2011), Universal Design is promoted as a way to design for all people. It represents a paradigm shift, from a model that treats people with disabilities as part of the medical community to a model where everyone is treated as an equal citizen and a disability is seen merely as a social construct (Cline, 2011). In addition, Universal Design seeks to provide improved usability and safety for all groups in the community. It seeks to extend the ideals of accessible design to marginalized groups such the older generation, children and those that are visually impaired (Levine, 2003). Levine (2003) further points out that universal design enhances a city's image for everyone and offers a true home for visitors.

Within the context of transportation systems, Universal Design entails developing of all transport systems that are accessible to all users, irrespective of the users' abilities (Mace, 1985). Rapid global economic development and urbanization are fuelling massive growth in the demand for transportation (McCann, 2010). Many recent statements recognize the vital importance of transportation in advancing sustainable development, including the Bangkok 2020 Declaration, endorsed by 22 Asian countries, the Bogota Declaration, endorsed by 9 Latin American nations, as well as the Report of the Secretary General to the UN Commission on Sustainable Development 19th Session on Policy Options and Actions for Expediting Progress in Implementation: Transport (UN, 2010). However, the challenge for cities like Nairobi remains the inadequate efforts to realize seamlessness that guarantees highly convenient smooth overall travel including greater convenience and smoother transfers at transportation system connections (Stone, 2010). While there is a growing recognition by governments and business community of the value that design can add to the economy the potential for future development of Universal Design industry is still work in progress.

At the global level, countries such as USA, China, Norway, Ireland and Japan have well-positioned Universal Design applications in their transport sector (Imrie & Hall, 2001). In the Norwegian case for example, the Universal Design was introduced into the National Transport Plan in 2004 (Odeck, Hagen & Fearnley, 2010); and laws on accessibility

include general clauses on Universal Design (Fletcher, 2014). In Japan, the general principles of Universal Design Policy were introduced in 2005, which declared that buildings and public transportation should be designed using the concepts of Universal Design (Yoshihiko, 2012). In the United States, Universal Design applications in public transport is well documented, and designs accommodate all passengers, including people with disabilities; public streets are designed with curb cuts allowing free access for wheel chair users and people with disabilities can safely cross the streets (Bramley et al., 2009).

In Africa, accessibility to the built environment and public transport systems is still a major challenge for diverse groups of persons in Africa. Consequently, Zimmerman and Woolf (2014) point out that the consequences of low personal mobility include failure to access and benefit from services, such as health care, retail facilities, employment, education and training. In South Africa, there has been efforts towards adoption of Universal Design in the urban development projects (M'rithaa, 2009). According to M'rithaa (2009), Universal Design can ensure social inclusion and participation. While steps have been undertaken through legislative initiatives calling for implementation of accessible transit systems, finding solutions and standards that can be adapted for local use is still a work in progress and thus a priority area for research.

The move towards universal design has developed due to the expanding population of people with varying degree of abilities and advancing years, their demands for recognition and desire for independent living (Null, 2009). Carvero (2013) observes that press coverage to shine the spotlight on Universal Design and its efforts is important. The press needs to be educated on the application and advantages of Universal Design Principles (Mace, 1997). On the same note, Levine (2003) argues that if the public understands the advantages they will gain if products and services are designed using Universal Design Principles, they can help increase the acceptance of these principles by placing pressure on companies that produce consumer goods and services to accept and use these principles.

A central concept of Universal Design is the concept of accessibility and mobility in cities. Ideally, accessibility refers to the ease to approach, enter or use something. Therefore, an assessment of the practical suitability for universal design in transport would promote the design and layout of buildings and road infrastructure (Duncan, 2007). Yet, cities in developing countries face a risk compounded by barriers and safety issues. According to Graeme (2011), accessibility in transport has tended to isolate particular elements such as pedestrian environment and the bus design features and their approaches. On the same note, Ratcliff (2007) argues that facilities within the transport network have suffered from a limited coverage and thus the need for universal design standards. The articulation of the Principles of Universal Design by NCSU has clearly been responsible for the helping to create the successes of the Universal Design Principles wherever they are used. The seven principles, according to Preiser and Ostroff (2001), include: equitable use, flexibility of use, simple and intuitive, perceptible information, tolerance for error, low physical effort and size and space for approach and use.

RESEARCH METHODS

This study employed an exploratory and descriptive research design and utilized mixed methods, both qualitative and quantitative techniques. The design allowed for a survey of key case studies in Nairobi City on how Universal Design strategies can be effectively mainstreamed in public transport system. This study was carried out in Nairobi County with a focus on the Central Business District. The city offers challenges related to multifaceted components of design practice and public transport applications. The research was based on three major bus termini within the CBD (Ambassador Hotel, KenCom House Interchange, Railway Station and Tele Posta House Bus stop). The total number of targeted respondents was 400.

Data collection was undertaken by use of questionnaires, interview schedules, focus group discussions and document analysis with relevant authorities in the transport and urban planning sector. Data was analyzed through quantitative and qualitative techniques. Quantitative analysis involved use of numeric measures to evaluate the variables based on the study objectives. This

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was done through assigning numerical values to questionnaire responses and entering the same responses into SPSS computer system. On the other hand, qualitative data was described and interpreted; and information generated from the analysis presented through direct quotes.

The subjects of this study were bus drivers, conductors and other workers related to the vehicles and policy makers/implementers, informants drawn from policy makers within National and County Government concerned with city planning and transport sector); professionals (interior designers, architects, engineers, property owners and contactors), rogue designers, Bus/ Matatu designers and contractors within Nairobi County, persons with disabilities as well as the general public (both users and would-be-users of public transport).

This case study derived data from two main sources, namely; primary and secondary data. The primary data comprised field research, using questionnaires, face-to-face interviews, focus group discussions, seminars and observation. The study was also strengthened by comprehensive review of related literature, which provided understanding on application of Universal Design in Nairobi City, with particular emphasis on people with disabilities and public service vehicles, especially buses. The data from the field were analyzed and presented in cross tabulation, frequency distributions and percentage.

RESULTS

Universal Design Awareness

The level of awareness on Universal Design among different group was analyzed across information available in media, among professional, student community, public transport users and general public. The findings revealed varying trends with overall results depicting universal design awareness (principles of universal design) till low across media (50%), professionals (60%), students (68%), public transport users (80%) and PWDs (70%). From the foregoing, it is clear that indicators for lack of awareness of UD exist as far as awareness about UD application in transport concerned. The information and communication environment are usually constructed by corporate bodies with significant resources, a global reach and sometimes, experience with issues of accessibility. As a result, new technologies with Universal Designs are usually adopted more quickly in the virtual rather than in the built environment. But even with the rapid development of information and communication technology (ICT), accessibility can be limited by unaffordability and unavailability.

Apart from awareness, the greater setback of the lack inclusivity in the society and the community is the mentality of the local society of PWDs having to receive welfare and sympathy. The society mentality and attitudes should already move to the human rights social model of treating PWDs as equally and inclusively. Statements made by Erkilic (2011) and Froyen (2015) that refers to historical process of disability that one could claim that the formulation of the ideals of Universal Design was influenced by the long path of de-medicalization and universalization of the status of disability.

On the nature of information access on accessible transport among different groups from government, passengers (bus transport users) and persons with disabilities, the analysis revealed the government agencies scored low (18%) on UD information and awareness campaigns; PWDs (10%) awareness on UD while public transport users had little or no (3%) idea of universal design principles.

Regarding UD information on travel plans and information in all journey, the study established that some public vehicles contained information provided by the operators and transport authorities, but there were no specific attempts by

TABLE 1: Reasons for limited awareness on Universal Design

Factors	%
Lack of information	64
Few professionals	50
Limited stakeholder engagement	72
Lack of political will	40
Ignorance	80
Inconsistence transport policies	60

Source: Author 2019

the authorities and or operators to demand, collect and include information for PWDs. This lack of information was blamed on various factors, with ignorance scoring the highest at 80% (**Table 1**).

DISCUSSION

Among professionals engaged in urban transport projects, there is limited awareness of accessible transport, and particularly Universal Design standards. Consequently, the needs of persons with disabilities and of the co-benefits to other members of society of accessible transport measures are generally ignored; particularly the elderly, and pregnant women. While agencies involved in the transport sector indicated policies available to enhance accessibility, the general view was that decision-makers were not sufficiently aware, nor were many design professionals or bus operators.

Public consultation on planning and design is relatively low and has not been coherently institutionalized. This applies to all aspects of planning and design, not just accessible transport matters. The exception is the consultation required on safety standards on road safety matters; and while consultations occur at policy level with agencies championing for rights of persons with disabilities, the views expressed indicate a lack of commitment to address underlying challenges with regard to bus transport.

Although there is a well-defined institutional process for checking and verification of designs of civil works, there is a lack of clear monitoring standards on accessible transport. Consequently, clear gaps in this process are also contributing to lack of Universal Design application in the design of transport infrastructure.

The research results revealed that universal design is not a common concept known to most public transport users. The major element of perceptions revolved around a number of economic issues related to universal design application. While majority viewed a less connection between awareness and implementation, the major element of perceptions revolved around a number of economic issues related to universal design application. The study findings also established a connection between planning and implementation.

The study established that accessibility standards and codes have not mandated universal design and do not apply to most transportation systems in the city. While some policy documentation were available, implementation was a challenge, often emerging from ignorance, perception and lack of political will.

The study established a lack of a clear framework and policies on universal design application in public transportation services. This creates inconvenience and difficult transfers at transportation system connections. Moreover, the study revealed little coherence in how different agencies define the urban transport system and identify its critical problems, especially with regard to accessibility standards for all users. It was revealed that transportation system emphasis is placed on road safety (accidents) and not UD. The conceptual ambiguity and lack of programmatic focus on building UD awareness highlights the challenges and limitations of applying UD in Nairobi City.

CONCLUSION

The study concluded that universal design awareness in Nairobi city's public transport is key to social inclusion and can strengthen the urban planning agenda. UD application in public transportation signalize inclusion, and thus can strengthen the individual's courage to be part of the urban life. The attempts at providing solutions for UD principles have not been systematically processed in Nairobi City. The benefits and limitations of UD signal the perception regarding costs of applying UD.

The transport sector plays an important part in strengthening focus on accessible environments and inclusive transport systems. In practical terms, it is not sufficient to ensure that everyone can enter and use basic public transport services; it is equally important to apply the principles of Universal Design to the street environment and to the design of the facilities (buses) that people use. The findings of this study point to the 'transportation dilemma' which Nairobi City and developing countries face in managing and implementing effective urban public transportation system. The conceptual ambiguity and lack of programmatic focus on building UD awareness highlights the

challenges and limitations of applying UD in Nairobi City. Consequently, understanding the needs of PWDs poses unique challenges for UD application, but it has the potential to provide unique insights.

The significance of this study based on the findings is that: it addresses the needs of an under-represented and often non-vocal sector of society within the context of a technically complex system; it requires the participation of all actors and sectors for a common goal to promote UD awareness through bottom-up approach. Based on the findings of the study, mobility and access requirements of people with disabilities should be understood in the wider context when implementing universal design awareness programs. Overall, the findings of this study demonstrate that, in the context of UD application in public transport, performance measures are needed to assure that steps toward accessible public transport are first and foremost, focused where they will be most effective.

RECOMMENDATIONS

Research: While education is key to promoting Universal design awareness, the Government must prioritize supporting research to develop an evidence-based set of policies and good practices on universal design, with particular emphasis on public awareness on UD principles.

Strengthen capacity of disability groups/organizations: The County government should ensure persons with disabilities and their organizations are actively involved in UD awareness efforts for example, in the planning and implementation of transport design standards.

Launch and streamline policy framework on UD: The government together with respective agencies in the transport sector should adopt universal design as the conceptual approach for the design of buildings and roads that serve the public. More importantly, the need for public-private partnerships is key to enhancing awareness.

Monitoring and evaluation: The government should enhance monitoring and evaluation in the implementation of UD and accessibility laws and standards. Involving a broad range of stakeholders can also help UD awareness campaigns.

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