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ORIGINAL RESEARCH ARTICLE

EVALUATION OF THE ACCESSIBILITY OF PUBLIC TRANSPORT FACILITIES BY PHYSICALLY CHALLENGED COMMUTERS IN ILORIN TOWN, NIGERIA

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ARTICLE INFORMATION

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ABSTRACT

Following the persistent outcry of disabled persons over non accessibility to public transport facilities in Ilorin town, Nigeria, this study examined the plight of physically challenged commuters in accessing public transport facilities in the town. Questionnaires were administered to 201 disabled commuters who use public transport facilities in the study area. Facility condition inspection was also used to evaluate accessibility and user satisfaction. Results of the study revealed that; male disabled persons travelled at relatively high rate of 76.10% compared to the female folks at 23.90%. The common disability among disabled persons was physical disability at the rate of 77.10%, while visual disability was 22.90%. Travel demand among disabled persons showed that teenagers and adults travelled at relatively higher rate of 10.00% and 84.00% respectively compared to the aged at 6.00%. Begging and work trip purposes had relatively high rate of 29.35% and 21.38% respectively compared to other trip purposes. The commonest nature of disability among commuters included; wheelchair user, sight impairment and hearing difficulty at 25.40%, 22.90% and 18.90% respectively. Uneducated and disabled persons with primary education rated high in the sampled population at 36.80% and 29.90% respectively. Accessibility rating and physical inspection revealed the poor state of public transport facilities in Ilorin town leading to human right infringement, social exclusion and inequality among city dwellers. Therefore, right to travel and access to basic facilities as stipulated in the Nigerians Disability Decree of 1993 to enhance livability and ensure equality among city dwellers were ignored. The construction of public transport facilities to bear sidewalks, ramps, traffic control devices, bus stop shelter and good drainage systems to conform to international best practices in Ilorin town was recommended.

1.0 Introduction

The living standard of a city is measured majorly by the efficiency of its transport system with emphasis on public transport services (Onokala, 2001; Abdulkareem, 2002; Schiller et al., 2010; White, 2002; Adeke et al., 2019). An efficient and reliable public transport system should be able to provide transport services for all categories of people living in the city. This helps to eliminate social exclusion and guarantee equity among the dwellers. In addition to the wellbeing of city dwellers, public transport system is a key driver of socio-economic growth by providing easy movement of people and their goods (Lyndon and Todd, 2006; Schiller et al., 2010). The imposition of inequality rules on the use of public infrastructures among individuals living in cities is a common practice in most societies. Disability could be a separation line for discriminating city dwellers. It is a physical, sensory, mental or any impairment arising from natural or artificial causes, which impacts adversely on persons' capacity to participate in social, economic, cultural or political activities (Republic of Kenya Disability Act, 2012).

According to the Department for International Development – (DFID, 2005) and World Health Organization-WHO as stated in Lang and Upah (2008), physically challenged people

comprise approximately 10% of the world's population with 75% living in developing countries. According to Nigeria National Population Commission (2010), Nigeria would have a projected population of 4,625,681 disabled persons by the year 2017, with Ilorin town having 14,897. Poor public transport policies have made physically challenged people, irrespective of where they live to likely be unemployed, less educated, have less or no access to developed support networks and social capital than their able-bodied counterparts. Improved public transport policy and infrastructural development that could carter for disabled persons is crucial in alleviating poverty for nation development, economic and socio-cultural growth (Ribbonaar and Verster, 2004).

DFID (2004) provided practical guidelines and solutions towards enhancing the access and mobility of people with disabilities in developing countries. The Nigeria policy document titled; Nigerians with Disability Decree (1993) also stipulates equalization of opportunities for people with disability for enhance performance in the society. Despite variations in specifications across countries, recommendation for good access to transport facilities is common among nations. Interestingly, most previous studies recommended the design and construction of facilities with ramps, suitable toilets, handrails, tactile surfaces, etc. to aid accessibility by physically challenged persons using wheelchairs, pushing buggies or trolleys and people using walking sticks (Cullen, 2006: Sawyer and Bright, 2007).

The United Nations (UN) Convention on the Rights of Persons with Disabilities (UNCRPD) stipulates the right of persons with disabilities to access public facilities such as roads and road transport facilities (United Nations, 2006). Odufuwa (2007) revealed that 77.47% of disabled persons do not have access to private vehicles. They depend on public transportation for most trips and spend greater part of their income on transportation. Due to the poor state of Nigerian public transportation services and the prolong travel difficulties encountered. Many studies have suggested the need for implementing basic mobility standards that suit the needs of disabled people such as; the use of wider and low- floor steps, hand-rail for boarding and alighting on vehicles, adequate travel information, upgrading of bus stops, removing barriers in bus stops, installation of traffic signals, paving of walkways where available, installation of kerb ramps, prioritized seats and fare concessions in order to improve the state of Nigerian public transport.

Griffin (2000) suggested that the simplest way of increasing the accessibility of public transport facilities by the physically challenged is to create an environment where pedestrian access is safe, convenient, affordable, and comfortable. This shall enable physically challenged persons afford to live in cities freely and happily since they can easily gain access to public transport facilities in terms of modes and use of terminals. According to Odak (2014) barriers that limit access by the physically challenged persons to transport facilities are grouped into; physical (climbing steps, walking distances, lifting weights), sensory (reading about the destination of a bus from a notice board, hearing public announcements), cognitive (identifying which bus to board or finding the way to the platform or departure gate) and financial (paying the fare). These barriers also include not being aware that a service exists or knowing how to use it. Other barriers involve being deterred by operation personnel who are unhelpful or unfriendly and policies that bar certain groups of travelers usually on the grounds of safety.

While developed societies have ensured equity among city dwellers and safety for sustainable development in the transport sector, many cities in Nigeria like Ilorin are yet to be on track. This calls for the implementation of universal design standards for transport facilities with easy usability. The aim of this study therefore is to evaluate the accessibility of public transport facilities to the physically challenged commuters in Ilorin metropolis.

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2.0 Materials and Method

2.1 Description of Study Area

Ilorin the capital city of Kwara State lies along the South-west region of Nigeria. Ilorin town like many other State capitals in Nigeria is an important residential, industrial, commercial, social, educational and health, and administrative center. The creation of Kwara State and the choice of Ilorin as the state capital resulted to its rapid population increase and area expansion to harbor different kinds of individuals (Aderamo, 2004). The choice of Ilorin town for this study is due to its relatively high population of disabled persons as stated by previous surveys (NPC, 2010). An extract of the map of Ilorin town is as shown in Figure 1,

Figure 1: Map Showing the Study Area (Google Earth, 2018)

2.2 Research Population, Sample and Sampling

The representative population sample of physically challenged passengers in Ilorin town used for the study was estimated using the Taro Yamane's (1967) model as shown in Eqn. 1 (Glenn, 1992). It was used for determining the required sample size at 95% confidence level and precision level of ± 7%;

$$S = \frac{N}{1 + N(e)^2} \quad (1)$$

Where, S is the required sample size, N is the given population and e is the margin of error (7% or 0.07). Considering a population size of 14,897, the sample size was estimated at 201 persons. The random sampling technique was employed for sampling the representative sample size from the population. The survey was conducted across Seventeen (17) locations in Ilorin town viz; Maraba, Post-Office, Sango, Tipper Garage, Oke Odo, Tanke Junction, Sanrab, Gaa-Akanbi roundabout, Offa Garage, Cha-lenge, Unity road, Taiwo road, Gambari, Oja Oba, Kwara State School for the Special Needs, Kwara State Chapter of the National Association for the Blind and Handicapped, and the Wheelchairs Pushers Association of Nigeria, Kwara State Chapter.

2.3 Data Collection

Questionnaires and site observations were employed in this study. Copies of the questionnaire were administered to the sampled physically challenged persons in Ilorin town. The public transport service and facilities were also inspected to ascertain travel environment for physically challenged passengers. Questionnaire used for the revealed preference survey was sub-divided into three sections, the first section obtained information on socio-demographic characteristics of commuters such as; age, gender, type of disability and level of education; the second section sourced information on travel characteristics such as; trip purposes, transport safety measures and challenges of public transport facilities/services. The last part of the questionnaire probed into perceptions on factors responsible for the existing situation, trip

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frequency and accessibility condition rating of public transport facilities and services in Ilorin town.

A pilot survey was carried out to explore possibilities of research participants and agendas at the sampled sites within Ilorin town. The pilot study aimed at developing and fine-tuning questions for interview, determining suitable sample size, assessing the feasibility of the survey, designing research protocol, assessing whether research protocol was realistic and workable, and identifying possible logistical problems that may occur (Teijlingen and Hundley, 2001). The visual inspection aimed at assessing facilities used for public transport services in Ilorin town, and to ascertain provisions made to cater for the physically challenged persons. The city's arterials were inspected, as well as public transport agencies and private vehicle owners to assess their vehicle conditions and operations. Data sheets and writing materials were used during site inspections to note vehicle conditions such as; comfort, safety, reliability, accessibility, the availability and condition of road facilities that can aid accessibility for disabled commuters such as; sidewalk, ramp, traffic signals, drainage system, etc., and the data obtained were analysed using descriptive statistics. The analysis examined relationship between respondent's social demographic characteristics and travel environment. It also explored the relationship between accessibility of public transport facilities, associated challenges and travel characteristics.

3.0 Results and Discussion

3.1 Gender Distribution of Disabled Commuters

Table 1 shows the distribution of disabilities among disabled commuters based on gender and type of disability.

Table 1: Gender Distribution of Disabled Commuters

Description	Gender		Types of Disability		Total
	Male	Female	Physical	Visual	
Count	153	48	155	46	201
Percentage (%)	76.1	23.9	77.1	22.9	100

Table 1 revealed that male commuters had disabilities more than their female counterparts based on findings of this research. This implied that despite their challenges, the male counterparts always struggled to make ends meet; hence their ratio compared to women was relatively higher which conform to findings of Odufuwa (2007). Also, the commonest disability among the commuters was physical challenge.

3.2 Age Distribution of Disabled Commuters

Table 2 shows the age distribution of disabled commuters who were either physically or visually impaired.

Table 2: Travel Demand across Age Distribution of Disabled Commuters

Age (years)	Frequency	Percentage (%)
10 – 20	20	10.0
21 – 30	83	41.2
31 – 40	56	27.9
41 – 50	30	14.9
51 – 60	11	5.5
Above 60	1	0.5
Total	201	100

Table 2 revealed the frequency of travel demand across age distribution of disabled commuters. It shows that disabled teenagers and adults (10 – 40) travel more frequently compared to the

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aged. This was attributed to social influence and struggle for survival through begging and providing working force (Odak, 2014). On the other hand, the aged (50 and above) disabled persons traveled less often due to their age disadvantage and possibly poor health.

3.3 Distribution of Trip Purposes by Disabled Commuters

Figure 2 shows the distribution of trip purposes by disabled commuters.

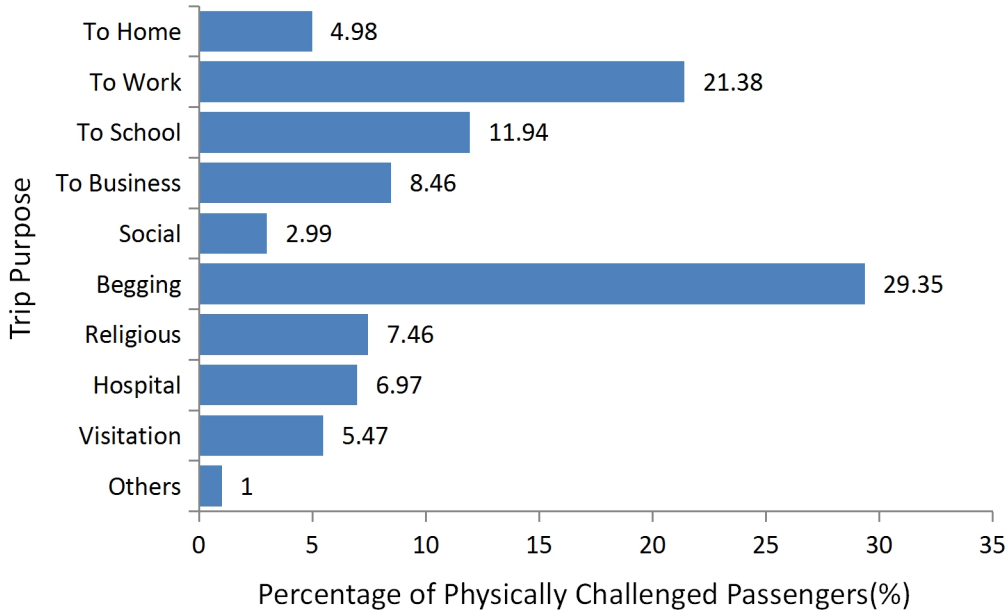

Figure 2: Distribution of Trip Purposes by Disabled Passengers

Figure 2 revealed that most disabled commuters traveled for the purposes of earning a living through begging and going to work at average rate of 29.35 % and 21.38 % respectively. This is due to the unbalanced environmental opportunities between the abled and disabled persons in our societies as stated in WHO (2013). Also, environmental factors such as temperature, terrain, accessibility of transport, climate, noise, etc. improve or hinder a physically challenged person participation in some activities such as working, going to school, taking care of one's home, and being involved with family and friends in social, recreational and civic activities in the community. The least purposes of travel were those for social reasons, this implied that, travelling environment was not conducive to motivate pleasurable trips by the physically challenged persons.

3.4 Distribution of Disability among Respondents

The classification of disabled persons based on type of disability is as shown in Table 3.

Table 3: Disability Distribution of Respondents

Difficulty applied to disability	Frequency	Percentage (%)
Blind/partially sighted and using stick/cane	46	22.9
Wheelchair users	51	25.4
Difficulty walking/using walking stick	20	10.0
Difficulty walking/using crutches	22	10.9
Deaf/hard of hearing	38	18.9
Mental problems	5	2.4
Sketch board	19	9.5
Total	201	100

Table 3 reveals that, disabled persons with ailment of total blindness or partial sightedness using sticks to walk and wheelchair users constitute relatively large size of the sampled population. This was attributed to the poor design of the public transport vehicles and facilities which hindered the ease of use by physically challenged persons leaving with limited choices. Other ailments leading to difficulty in walking which required using walking sticks, crutches and sketch board constitute approximately 10% each of the sampled population.

3.5 Level of Education

The level of education is a vital demographic feature which influences the travel mode and frequency of trip makers (Odak, 2014). This is because, most physically challenged persons who are educated were likely to be employed, and most of them who are employed are likely to be mobile than their counterparts who are not employed. However, due to insufficient public transport and non-motorized transport systems in Ilorin, it is highly likely that their occupational mobility will be much less than their abled counterparts, which in turn is likely to limit their choices and opportunities for employment because majorities have no formal education. Figure 3 illustrate the level of education of disabled persons in Ilorin town.

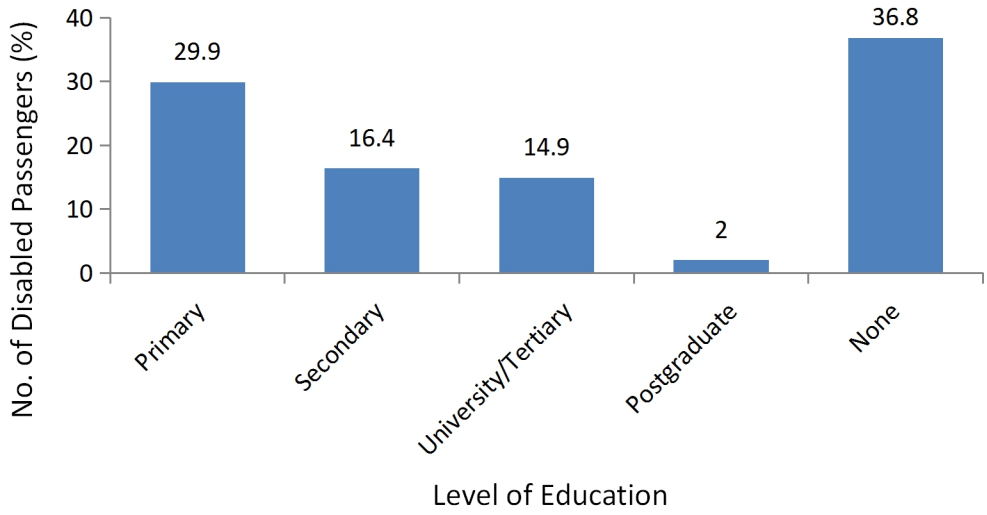

Figure 3: Level of Education of disabled persons in Ilorin Town

Figure 3 revealed a relatively high rate of illiteracy among disabled persons in Ilorin town. This indicated that significant number of respondents lacked formal education due to limited access to public transport facilities thereby creating social exclusion and inequality in the society as quoted by Odufuwa (2007).

3.6 Public Transport Facilities and Travel Environment

Transport facilities in Nigeria are rapidly deteriorating with time. Bus terminus and bus stops lack basic facilities such as shelter, seats and lights. Most sidewalks are unpaved, poorly maintained and crowded/occupied by vendors (food, newspaper, etc.) resulting in reduced right-of-way and highway capacity. Travel information is not easily provided to most physically challenged passengers to enable them to complete their movement and apart from inaccessible location of terminal or bus stops; most bus stops are not adequately taken care of. Figure 4 presented the satisfaction derived from using public transport facilities by the disabled commuters in Ilorin town.

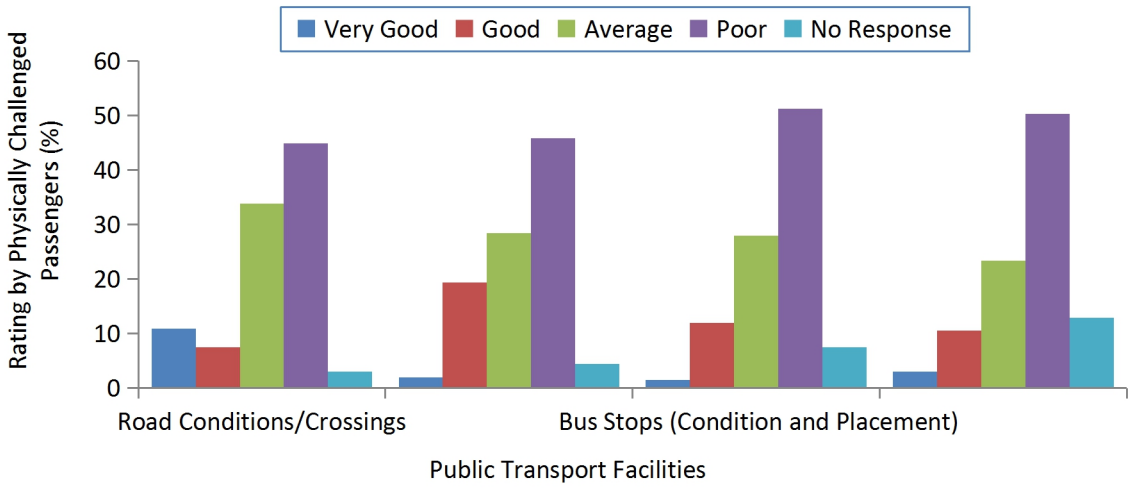

Figure 4: Satisfaction derived from public transport facilities by the disabled

The satisfaction rating by disabled commuters and visual inspections indicated that, the existing footpaths were either poorly designed or poorly maintained such that they were not useful to the physically challenged. By physical inspection, the facilities lacked clear separation from vehicular traffic, sidewalks with adequate width, bus stops (and facilities such as shade, seats, etc) and surrounding conditions, road markings and traffic signals at crossings as confirmed by (Odufuwa, 2007). Where the footpaths exist, they are also inaccessible with most of them being used as parking for taxi and motorcycles. Barriers should be installed to protect the pedestrians and abled persons from accident risks posed by motorized traffic.

3.7 Services of Public Transport Vehicles

An efficient transport system aims at providing safe, reliable, convenient, and accessible transport services at all times to meet daily needs of commuters. The rating of public transport services in Ilorin town by disabled passengers is as presented in Figure 5.

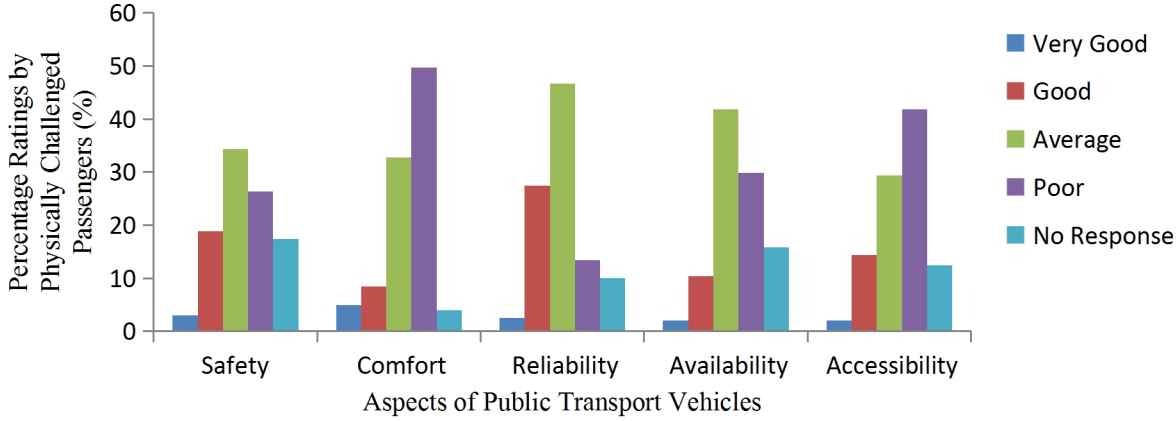

Figure 5: Ratings of public transport Services in Ilorin

Figure 5 reveals that respondents rated safety as being average, comfort as poor, reliability as average, availability as average and accessibility as poor. This is attributed to the fact that bus interior and body designs standards do not satisfy the international best practice for use by the physically challenged persons. Out of the 164 vehicles inspected, 38.31% were taxis, 13.93% were buses, 3.98% were mini buses, 11.94% were motorcycle, 11.44% were tricycle and 1.99% were train, none satisfied standard requirements for public transport facilities that suits the physically challenged persons. It was noted that boarding via steps was not easy and none of the buses or taxis had ramps to aid the disabled persons. Most respondents suggested improved accessibility through the use of ramps, wider doors. Also shelter and bus stops would aid their mobility during boarding and alighting.

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3.8 Challenges of Accessing Public Transport Facilities in Ilorin Town

Conditions of road facilities for public transport system in Ilorin town are as presented in Table 4.

Table 4: Conditions of Public Transport Facilities

Roads	Road Condition		Sidewalks			Bus Stops		
	Road Width (3.65m)	Shoulder	Width of Sidewalk (1500mm)	Availability of Ramps	Width of Ramps (1200mm)	Availability of Ramps	Parking Bay	Open Drainage
MuritalaMoh'd Road	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
Old Jebba Road	Yes	Yes	Yes	No	No	No	No	Yes
TundeIdiagbon Road	Yes	Yes	Yes	No	No	No	No	Yes
Gaa-Akanbi Road	Yes	No	No	No	No	No	No	Yes
Ajaselpo Road	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
Unity Road	Yes	No	Yes	No	No	No	No	Yes
Emirs Road	Yes	No	Yes	No	No	No	No	Yes
Taiwo Road	Yes	No	Yes	No	No	No	No	Yes
Airport Road	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
Offa Road	Yes	No	No	No	No	No	No	Yes
Ahmadu Bello Way	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
Agbabiaka Road	Yes	No	No	No	No	No	No	Yes
Asa Dam Road	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
Sulu Gambari Road	Yes	No	No	No	No	No	No	Yes

The result show that, significant number of roads in Ilorin town were not designed and constructed to conform to international standards that permit access and usage by the physically challenged passengers (DFID, 2004). Therefore, physically challenged persons were exposed to risk of accidents. An example of poor road facility is as presented in Figure 6.

Figure 6: Sidewalks and drainage system along Murtala Moh'd Way

Road facilities in Ilorin town were characterized with no traffic calming devices to reduce vehicle speedsat pedestrian crossing spots. There are also no safety and advance warnings signs for vehicles to stop or give priority to disabled pedestrians as they approach street crossings at the study sites. The few traffic signal devices installed were not actuated but pre timed and without sound signals to notify the visually impaired pedestrians at the cross points to guaranty safety. Also, bus stops and terminal facilities such as shelter, seats and billboards were absent

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or poorly installed such that the physically challenged passengers could not easily gain access to the facilities. Some few sites with bus stops had open drains disconnecting the bus stop canopy from the roadway thereby making access impossible or difficult for the disabled persons as shown in Figure 7(a).

Figure 7(a): Simple bus stop shelter in Ilorin

Figure 7(b): Simple bus shelter in Grenoble, France (ECMT, 2006)

On contrary, a standard bus stop developed in accordance with international standards to carter for disabled passengers is as presented in Figure 7(b). On the other hand, taxis and buses in Ilorin town do not provide facilities to accommodate disabled passengers as required by international best practices. A pictorial comparison of taxis, minibuses and coaches used in Ilorin and those of developed societies is as shown in Figures 8, 9 and 10 respectively.

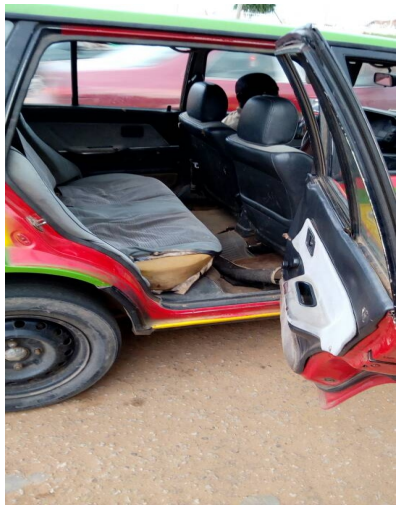

Figure 8(a): Taxi in Ilorin Town

Figure8(b): Taxi in United Kingdom (Source: World Bank, 2013)

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Figure 9(a): Minibus in Ilorin Town

Figure 9(b): Minibus at Belgium (Source: ECMT, 2006)

Figure 10(a): Coach in Ilorin Town

Figure 10(b): Coach in Grenoble, France. (Source: ECMT, 2006)

Figures 8, 9 and 10 showed that taxi, minibuses and coaches in Ilorin town had elevated floors without ramp which created access challenges for the disabled passengers, unlike those from developed cities like UK, Belgium and France. Other features of buses in developed cities included; priority seating arrangement for the disabled, mobility aids such as hand rails, storage for mobility aids (walking stick and wheelchairs), actuated bell/light for communication with the driver are provided.

4.0 Conclusion and Recommendations

4.1 Conclusion

This study examined the accessibility of public transport facilities by physically challenged captive commuters in Ilorin town using a reveled preference survey approach. Questionnaires were administered to a randomly sampled population size of 201 disabled commuters who use public transport facilities in the study area. Facility condition inspection was also used to evaluate accessibility and user satisfaction. Descriptive statistics was used for data analysis. Results of the study revealed that; male disabled persons travelled at relatively high rate of 76.10% compared to the female folks at 23.90%. The common disability among disabled persons was physical disability at the rate of 77.10%, while visual was 22.90%. Travel demand among disabled persons showed that teenagers and adults travelled at relatively higher rate of 10.00% and 84.00% respectively compared to the aged at 6.00%. Begging and work trip purposes had relatively high rate of 29.35% and 21.38% respectively compared to other trip purposes. The commonest nature of disability among commuters included; wheelchair user,

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sight impairment and hearing difficulty at 25.40%, 22.90% and 18.90% respectively. Uneducated disabled persons and those with primary education only rated high among the sampled population at 36.80% and 29.90% respectively. The accessibility rating of public transport facilities by disabled commuters and physical inspection revealed the poor state of public transport facilities in Ilorin town. This was attributed to poor design and construction of transport facilities which do not conform to modern design standards that could accommodate physically challenged persons. This implies that most physically challenged persons struggle to gain access to public transport facilities. This situation subjects them to accident risks and creates untold hardship for living in Ilorin town. Their right to travel and access to basic facilities as stipulated in the Nigerians Disability Decree of 1993 with emphasis on giving priority to disabled persons or groups to enhance livability and ensure equality among city dwellers are therefore ignored. A situation which led to human right infringement, social exclusion and inequality among city dwellers.

4.2 Recommendations

The following recommendations were made:

The redesign and construction of public transport facilities to bear sidewalk, ramps, traffic control devices, bus stop shelter and provision of good drainage systems to conform to international best practices or policies should be implemented in Ilorin town to reduce the hardship imposed on physically challenged commuters living in the town.

The Federal and Kwara state governments should provide special fund for infrastructure upgrade scheme to address the needs of physically challenged persons in Nigerian cities such as Ilorin.

The study limited the scope to cover only physically and visually impaired, thus further research should be conducted to cover all types of disabilities.

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