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*RESEARCH PAPER*

# ACCESSIBILITY OF THE CENTRAL BUSINESS DISTRICT OF KUMASI: PERCEPTIONS OF PERSONS WITH DISABILITIES

**A. K. Danso [1], *E. P. Tudzi, [2] S. Hammond [1]** and **K. Agyekum [1]**
[1]*Department of Construction Technology and Management, Faculty of Built Environment, College of Art and Built Environment, KNUST, Kumasi*
[2]*Department of Land Economy, Faculty of Built Environment, College of Art and Built Environment, KNUST*
**Corresponding author*

**ABSTRACT**
***Access for Persons with Disabilities (PWDs) to places used by the public has become an issue of international concern. However, there is not much empirical research on the accessibility of Central Business Districts (CBDs) of cities in Africa. This study, undertaken in 2016 focussed on Ghana's second largest city. Questionnaires developed from international accessibility standards were administered to 75 PWDs who used the CBD to ascertain their perspectives about its accessibility. The snowball sampling approach was used to identify the respondents. The study concludes that facilities in the CBD need to be redesigned and the city authorities also need to enforce rules that will make the CBD more accessible to PWDs.***

**Keywords:** *Central Business District, Persons with Disabilities, Kumasi*

## INTRODUCTION

The art of buying and selling has been with humankind for a long time. This phenomenon has grown over the years and given rise to the need for the development of well-planned areas to take care of this basic need of man (Togbi, 2008). This includes giving attention to the needs of Persons with Disabilities (PWDs) in this regard. The UN Convention on the Rights of Persons with Disabilities (2006) and various local legislation frown on discrimination against PWDs regarding their access to public places. This encapsulates the city centre, down town or the Central Business District (CBD). Ghana's Persons with Disability Act (Act 715) for instance states that places and services that are accessed by the public ought to be made accessible to PWDs. The Local Authorities as per Ghana's Local Governance Act (Act 936) are also to ensure that such city centres are appropriately managed.

Meyer *et al.* (2002) noted that there is the need for due considerations to be given to the design of the built environment to make them accessible to all manner of people including PWDs (Meyer *et al*., 2002). Uneven or discontinuous sidewalks, heavy traffic and inaccessible public transportation terminals are some of the built environment characteristics that can create bar-

riers for outdoor mobility (Clarke *et al.*, 2009). Siu and Wong (2015) opined that when public facilities such as open spaces, buildings, streets and a wide variety of street furniture provide adequate services and utilities to meet the needs of the community, they make a city functional, beautiful and liveable. At the user level, the design, installation and maintenance of urban street furniture are important factors, as people tend to interact with these public facilities in their daily lives. In addition, street furniture not only provides physiological satisfaction for city users, but also fulfils their social, cultural, psychological and ideological needs (Lee and Chan, 2008). However, there is a general lack of requisite infrastructure in cities in sub-Saharan Africa . Hove *et al.* (2013) noted that although there is increased demand for certain infrastructure and services as a result of urbanisation in Sub-Saharan Africa, the pace at which they are provided and maintained has not been similar to the rate of urbanisation. Consequently, this makes life quite challenging in such cities.

*Kumasi*

Kumasi is the second largest city of Ghana which is located in West Africa. The city handles a lot of the country's produce - cocoa, timber, gold and foodstuffs from the surrounding neighbourhoods on their first stage of their journey to the export markets. It is also the major link between the south and the north of Ghana and countries in the northern West African Region who use Ghana's sea ports for exports (Quayson, 1999). It is a principal transport terminal in Ghana and the West African sub-region by virtue of its location (Adarkwa, 2011). This makes it a place for immense trading activities and immense vehicular and pedestrian traffic. It is also the administrative capital of the Ashanti Region and home to Otumfuo Osei Tutu II, the Asantehene. Hence it is blessed with rich culture that attracts many tourists into the metropolis. In accordance with the Local Governance Act 2016 (Act 936) the Kumasi Metropolitan Assembly is directly responsible for governance issues in the metropolis and the administrative head is the Mayor. The metropolitan authority is accordingly responsible for development control and the management of the metropolis.

The Central Business District (CBD) of the Kumasi Metropolis is literally located in the centre of the city and surrounded by residential neighbourhoods (Fig. 1). The CBD is made up of Adum, Kejetia and Central Market. Adum is approximately made up of about 75% stores, 15% offices and 10% residential facilities. Kejetia is made up of 60% commercial parking/ commercial vehicles, 30% stores, 5% offices and 5% residential. The Central Market on the other hand, consists of 80% table top stores and 20% stores (Togbi, 2008). The Central Market is also the largest open air market in West Africa (Adarkwa, 2011). The conditions within the CBD should accordingly be convenient for PWDs to access the place and undertake any transactions that they need to do.

*Disability*

Disability is not a phenomenon but a phase. Everyone at one point or the other passes through such a phase. The elderly, ill, pregnant, obese, children, persons with fracture or with luggage could all be described as passing through a phase of disability ( Barrier- Free Manual Team, 2004). The World Health Organization (2014) reported that over a billion people have one or more forms of disability all over the world. Access and mobility are important dimensions of quality of life (Matthews *et al.,* 2003). Accordingly, PWDs should not be disadvantaged in this regard. Chan *et al.* (2009) posited that freedom of movement from place to place is recognised as a basic human right. Everybody regardless of age and physical condition should have proper and convenient access to certain places in their daily lives. For PWDs, every day trips are often fraught with problems and with many barriers imperceptible to persons without disabilities, hindering or totally restricting their movement. Living with disability poses unique challenges and can influence participation in many activities. PWDs have more things to consider and more challenges to face before and during a trip than those without (Yau and Mckercher, 2004). Mobility restrictions can affect an individual's health in various ways (Rosso *et al*., 2011). Such restrictions deny people the opportunity to participate in various spheres of life (Barrier - Free Manual Team, 2004).

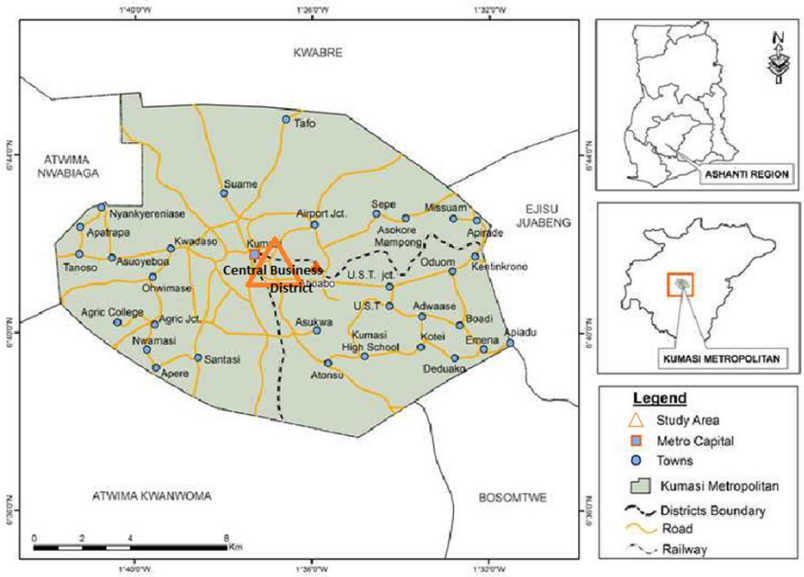


**Fig. 1: Map of Kumasi with its CBD**
(*Source: Mensah et al., 2014)*

An inclusive built environment has been identified to be conducive to the full participation of PWDs and their enjoyment of equal opportunities. In fact, barrier-free built environment has been a goal with universal appeal due to the large number of PWDs around the world (Yau and Lau, 2016). Nonetheless inaccessible built environment has continued to be one of the main forms of discrimination persisting against PWDs (Larkin *et al*., 2015). Yau and Lau (2016), argued that, disability should be perceived as a social construct where problems resulting from disabilities are centred on the environment's failure to accommodate the needs of PWDs, rather than a defect within individuals that require fixing or rectification. Many countries, especially the more developed ones, have acknowledged the need for removing barriers and making places accessible. This movement started gathering momentum in the late 1970's and initially focused on barriers faced by injured war veterans and other people with disabilities (Barrier- Free Manual Team, 2004). This steered the legislation and passage of Disability Acts in various countries.

In recent times a lot of research has been carried out to investigate how accessible the built environment is to PWDs. The general observation is that the most public places are inaccessible to PWDs. In a study conducted by Rimmer *et al*. (2004) in the U.S.A on barriers and facilitators affecting physical activity participation among PWDs, it was found that PWDs, fitness and recreation professionals, architects, and city planners/park district managers expressed the view that, the natural environment was inherently inaccessible. In their study on wheelchair accessibility of public buildings in Ibadan, Hamzat and Dada (2005) observed a very low level of accessibility to public buildings by wheelchair users and concluded that, this is an important factor that could limit opportunities for community integration of the wheelchair users. In a car centric transportation system, it was also reported that barriers created significant obstruction in the CBD of Ankara (Varol *et al*., 2006). Barriers to mobility in the built environment were seen to do more with urban than rural dwellers and made it inconvenient for such urban dwellers to access various plac-

es in South Africa (Maart *et al.*, 2007). In another study conducted in Ankara city by Baris and Uslu (2009), 67.5% of those with visual impairment, 68.5% of the respondents with walking impairment and 46.9% of wheelchair dependents reported of accessibility challenges. All the wheelchair dependents complained of the height of sidewalks. About 96.06% of persons with walking impairment had problems with the sudden changes of height and falls on the sidewalks. A study by Yarfi *et al.*, (2017), revealed that public buildings in the Kumasi metropolis were not accessible to wheelchair users. However, a search of the literature returned poor results for studies on the accessibility of the CBDs of cities especially in Africa. This study was therefore carried out to fill the gap and aimed at assessing the perceptions of persons with disabilities on the accessibility of the central business district of Kumasi.

## RESEARCH METHOD

Quantitative data was compiled by means of questionnaires responded to by PWDs. The categories of PWDs were those with visual impairment, those with physical disabilities (mobility impairments) and those with hearing impairment. These were adapted in line with the categories of the SOLIDERE (2004). The questionnaires were designed to ask the respondents whether they '**agree – a**', '**disagree – b**' or had '**no idea – c**' regarding questions relating to how they perceive the accessibility of the Kumasi CBD.

The Barrier-Free Manual Team (2004) noted that contrary to the general belief, barrier–free environment goes far beyond just a ramp. In line with this view, the elements that were considered in the questionnaire were pathways, signage, street furniture, curb ramps, pedestrian crossings and parking spaces. Three Accessibility Standards i.e. the Design Manual for Barrier-Free Environment (Barrier- Free Manual Team, 2004), BS 8300 (2010) and ADAAG (2004) were used to prepare a shortlist of the relevant elements. The questionnaire also captured the demographic information such as age, sex and type of disability of the respondents.

Taking into consideration the timing of the study, it was very difficult to obtain the exact number of the persons with disabilities, therefore, the snowball sampling approach was used to select a small population of known PWDs who used the CBD and expanded the sample by asking those initial participants to identify other PWDs that should participate in the study. The sampling resulted in the identification of seventy-five (75) PWDs who are very familiar with the Kumasi CBD. Questionnaires were prepared and administered to the seventy-five (75) PWDs. Since all the 75 PWDs were known, various arrangements were made to meet them for their responses. Some of them were met in their homes, whiles others were met in their various workplaces at the CBD. Research assistants supported the researchers in the administration of the questionnaires to the respondents after having been trained for the purpose. For those with hearing impairment, there was further assistance from a sign language interpreter. Those with visual impairment had the questionnaires read and interpreted to them in the local dialect (Twi) before they could respond to the questions. Cognisant of the rights of the respondents, they were informed that they had the freedom to refuse participation in the research or refuse to respond to any particular question. Secondly codes were used for the respondents so that their identities could be masked. Sixty-four (64) out of the 75 questionnaires were appropriately answered, yielding a response rate of 85.3%. The data obtained from the survey were fed into IBM SPSS Statistics Version 20. Descriptive statistics (mainly percentages) was then performed on the data obtained.

## RESULTS AND DISCUSSIONS

### Background information

Majority (51.6%) of the respondents whose questionnaires were evaluated were males and the rest (48.4%) were females (Table 1). This was expected because the country's population is evenly divided between the two gender groups. For all types of disabilities, there seem to be little variation in proportions between males and females. According to Ghana Statistical Service (2014) the number of PWDs is 42,060 representing 2.4% of the population of the Kumasi Metropolitan Area. There are about 2.5% of females with disability as against 2.3% of males.

**Table 1: Distribution of respondents by gender and type of impairment**

| GENDER | TYPE OF IMPAIRMENT | | | | | | TOTAL (N) | |
|---|---|---|---|---|---|---|---|---|
| | Hearing | | Visual | | Physical | | | |
| | N | % | N | % | N | % | N | % |
| **Male** | 3 | 9.1 | 7 | 21.2 | 23 | 69.7 | 33 | 100 |
| **Female** | 3 | 9.7 | 6 | 19.4 | 22 | 71.0 | 31 | 100 |

**Table 2: Distribution of respondents by age and type of impairment**

| AGE GROUP | TYPE OF IMPAIRMENT | | | TOTAL (N) |
|---|---|---|---|---|
| | Hearing | Visual | Physical | |
| **< 21** | - | 3 | 2 | 5 |
| **21 – 30** | 6 | 1 | 11 | 18 |
| **31 – 40** | - | 3 | 12 | 15 |
| **41 – 50** | - | 4 | 12 | 16 |
| **51 – 60** | - | 1 | 4 | 5 |
| **> 60** | - | 1 | 4 | 5 |
| **TOTAL (N)** | **6** | **13** | **45** | **64** |

Majority (76.6 %) of the respondents were between the ages of 21-50 years (Table 2). Most of the respondents (70.3%) were persons with physical disabilities. About a tenth (9.4%) of the respondents had hearing impairment and 20.3% had visual impairment. The data from the 2010 Population and Housing Census on the Kumasi Metropolitan shows that 42.8% of the PWDs have visual impairment whilst 22.5 % suffer from physical disability. Persons with speech and hearing disabilities are 12.9% and 11.9% respectively (Ghana Statistical Service, 2014). Although those with visual impairment happen to be the most dominant category of persons with disabilities, the findings from the current study agrees with other similar studies where respondents with mobility challenges predominated (Tudzi *et al.,* 2017; Baris and Uslu, 2009).

**Perceptions of PWDs on accessibility of the Kumasi CBD**

In this part of the survey, respondents were asked whether they agreed with a set of statements about the existing nature of some elements in the built environment of the Kumasi CBD. Their responses are summarized in Tables 3 to 8. The objective was to ascertain if they faced any difficulties in using the elements in the CBD.

***Walkways and pathways***

Five (5) issues were raised with respect to walkways and pathways. With each of them, an overwhelming majority (>70%) of the respondents were of the view that there were problems. The various categories of respondents also affirmed this position. The issues had to do with the presence of obstacles and protruding elements in pathways, lack of warning signs around obstructions, uneven pathway surfaces,

presence of hawkers and kiosks in pathways and interruption of movement by parked vehicles. Persons with visual impairment expressed the greatest concern with challenges that had to do with walkways and pathways. These posed a great danger by way of bumping into items or people and consequently being injured.

According to Afram and Olympio (2009), pedestrian pavements in the Kumasi CBD have been taken over by hawkers, thereby forcing people to walk on the road itself and impeding the smooth flow of traffic. Also, from a study conducted by Baris and Uslu (2009) in Ankara 94.43% of PWDs were of the view that the greatest barrier to all groups of PWDs was caused by the parking of vehicles on sidewalks. This compares well with the findings of the current study. On the contrary, Kirchner *et al*. (2008) recorded a very low number of respondents having problems with cars parked on sidewalks in New York City. This may be because New York is a well-planned city with sufficient parking spaces and a city in which laws are strictly enforced. Afrane and Ahiable (2011) in addressing the informal economic activities in Kumasi noted that there are pavements/ walkways, road shoulders that have been encroached upon by petty commercial activities and commodity production activities. Another study conducted by Abdul-Rauf and Barimah (2011) in Accra-Ghana on the barriers faced by disabled urban dwellers stated that, pathways were generally inaccessible. Fig 2 is a photograph that was taken to show how walkways have been obstructed by street hawkers.

From the findings of a study conducted by Rimmer *et al*. (2004), 89.31% of pedestrians shared the view that the sidewalks posed many difficulties and barriers with respect to accessibility for the disabled people in the built environment.

### *Signage*

According to Barrier- Free Manual Team (2004) signage forms an important part in creating a barrier-free environment. There are four main functional typologies into which signage could be classified – information signs; directional signs; identification (locational) signs; and warning (safety) signs. Information include

**Table 3: Distribution of views of persons with disabilities on the nature of walkways and pathways**

| ISSUE OF CONCERN | SCORE | TYPE OF RESPONDENT'S IMPAIRMENT | | | | | | TOTAL | |
|---|---|---|---|---|---|---|---|---|---|
| | | Hearing impairment | | Visual impairment | | Physical disability | | | |
| | | N=6 | % | N=13 | % | N=45 | % | N=64 | % |
| **Presence of obstacles and protruding elements in the pathway** | **a** | **3** | **50.0** | **12** | **92.3** | **42** | **93.3** | **57** | **89.1** |
| | b | 3 | 50.0 | 0 | 0 | 2 | 4.4 | 5 | 7.8 |
| | c | 0 | 0.0 | 1 | 7.7 | 1 | 2.2 | 2 | 3.1 |
| **Lack of warning signs around obstructions** | **a** | **2** | **33.3** | **9** | **69.2** | **35** | **77.8** | **46** | **71.9** |
| | b | 3 | 50.0 | 1 | 7.7 | 9 | 20.0 | 13 | 20.3 |
| | c | 1 | 16.7 | 3 | 23.1 | 1 | 2.2 | 5 | 7.8 |
| **Uneven pathway surfaces** | **a** | **5** | **83.3** | **13** | **100.0** | **40** | **88.9** | **58** | **90.6** |
| | b | 1 | 16.7 | 0 | 0.0 | 3 | 6.7 | 4 | 6.3 |
| | c | 0 | 0.0 | 0 | 0.0 | 2 | 4.4 | 2 | 3.1 |
| **Presence of hawkers and kiosks in pathways** | **a** | **5** | **83.3** | **13** | **100.0** | **41** | **91.1** | **59** | **92.2** |
| | b | 1 | 16.7 | 0 | 0.0 | 2 | 4.4 | 3 | 4.7 |
| | c | 0 | 0.0 | 0 | 0.0 | 2 | 4.4 | 2 | 3.1 |
| **Interruption of movement by parked vehicles** | **a** | **5** | **83.3** | **12** | **92.3** | **41** | **91.1** | **58** | **90.6** |
| | b | 1 | 16.7 | 0 | 0.0 | 2 | 4.4 | 3 | 4.7 |
| | c | 0 | 0.0 | 1 | 7.7 | 2 | 4.4 | 3 | 4.7 |

*Legend: a-agree, b-disagree, c-no idea*


**Fig. 2: Obstructions on side walkways along the Afia Kobi Ampem avenue**

include location signs, sign directories, maps for both internal and external areas for orientation of the user. Directional signs direct the user to a destination with arrow marks aiding the text. Identification signs are installed at specific individual destinations to indicate the location of a room, service, desk, among others. Finally, warning signs are installed for safety purposes. From the survey findings (Table 4), the respondents were not pleased with most aspects of the signage provision. However, compared with other elements within the CBD, signage performed relatively better. Majority (67.2%) of the respondents were of the view that signage was inadequate. A high proportion (61.4%) also felt that the signages were poorly positioned while 76.6 % felt that it was not easy to identify access routes and facilities that the signs were supposed to direct people to. Uneasy identification of access routes was a major concern for those with physical impairments. Although signage is generally important to all categories of persons, difficulty in finding one's way within the crowded CBD of Kumasi would add extra stress especially to wheel chair users within such an area.

***Street furniture***

Street furniture includes bus stops, benches, mail boxes, lampposts, signboards, telephone booths, public toilets, newspaper kiosks, flower vases and garbage bins. Street furniture also performed relatively better though not encouraging (Table 5). Majority (62.5%) felt the designs of the street furniture were improper. Most (59.4%) were of the view that they were blocking pathways. Majority (73.4%) of the respondents considered them to be inadequate and 64.1 % were of the view that they were inaccessible. This finding agrees with Danso and Tudzi (2015) who noted that street furniture at interchanges studied in Accra were not meeting the needs of PWDs. Since all categories of PWDs expressed much concern about inadequacy of street furniture, this should be an area of critical attention to the Metropolitan authorities.

As Siu and Wong (2015) put it, the design, installation and maintenance of urban street furniture are important factors, as people tend to interact with these public facilities in their daily lives. Streets are essential parts of peoples' living spaces. Poorly designed environ-

**Table 4: Views of PWDs on signage in the Kumasi CBD**

| ISSUE OF CONCERN | SCORE | TYPE OF RESPONDENT'S IMPAIRMENT | | | | | | TOTAL | |
|---|---|---|---|---|---|---|---|---|---|
| | | Hearing impairment | | Visual impairment | | Physical disability | | | |
| | | N=6 | % | N=13 | % | N=45 | % | N=64 | % |
| **Inadequate signage** | **a** | **4** | **66.7** | **10** | **76.9** | **29** | **64.5** | **43** | **67.2** |
| | b | 2 | 33.3 | 0 | 0.00 | 14 | 31.1 | 16 | 25.0 |
| | c | 0 | 0.0 | 3 | 23.1 | 2 | 4.4 | 5 | 7.8 |
| **Poor positioning of signage** | **a** | **3** | **50.0** | **9** | **69.2** | **29** | **64.5** | **41** | **64.1** |
| | b | 3 | 50.0 | 1 | 7.7 | 5 | 11.1 | 9 | 14.1 |
| | c | 0 | 0.0 | 3 | 23.1 | 11 | 24.4 | 14 | 21.9 |
| **Uneasy identification of access routes and accessible facilities** | **a** | **4** | **66.7** | **9** | **69.2** | **36** | **80.0** | **49** | **76.6** |
| | b | 2 | 33.3 | 1 | 7.7 | 6 | 13.3 | 9 | 14.1 |
| | c | 0 | 0.0 | 3 | 23.1 | 3 | 6.7 | 6 | 9.4 |

*Legend: a-agree, b-disagree, c-no idea*

**Table 5: Views of PWDs on street furniture in the Kumasi CBD**

| ISSUE OF CONCERN | SCORE | TYPE OF RESPONDENT'S IMPAIRMENT | | | | | | TOTAL | |
|---|---|---|---|---|---|---|---|---|---|
| | | Hearing impairment | | Visual impairment | | Physical disability | | | |
| | | N=6 | % | N=13 | % | N=45 | % | N=64 | % |
| **Improper design of street furniture** | **a** | **2** | **33.4** | **7** | **53.8** | **31** | **68.9** | **40** | **62.5** |
| | b | 2 | 33.3 | 0 | 0.0 | 7 | 15.5 | 9 | 14.0 |
| | c | 2 | 33.3 | 6 | 46.2 | 7 | 15.5 | 15 | 23.4 |
| **Blocking of pathways by street furniture** | **a** | **2** | **33.4** | **10** | **76.9** | **26** | **57.8** | **38** | **59.4** |
| | b | 2 | 33.3 | 0 | 0.0 | 13 | 28.9 | 15 | 23.4 |
| | c | 2 | 33.3 | 3 | 23.1 | 6 | 13.3 | 11 | 17.2 |
| **Inadequate street furniture** | **a** | **5** | **83.3** | **9** | **69.2** | **33** | **73.4** | **47** | **73.4** |
| | b | 1 | 16.7 | 0 | 0.0 | 8 | 17.8 | 9 | 14.1 |
| | c | 0 | 0.00 | 4 | 30.8 | 4 | 8.9 | 8 | 12.5 |
| **The street facilities are inaccessible** | **a** | **3** | **50.00** | **9** | **69.2** | **29** | **64.5** | **41** | **64.1** |
| | b | 1 | 16.7 | 0 | 0.0 | 8 | 17.8 | 9 | 14.1 |
| | c | 2 | 33.3 | 4 | 30.8 | 8 | 17.8 | 14 | 21.9 |

*Legend: a-agree, b-disagree, c-no idea*

ment, including street furniture, can be a nightmare for residents and visitors.

***Curb ramps***

Curb ramps are introduced when there is difference in level on pedestrian path. From the survey findings (Table 6), 73.4% of respondents felt that the transition between curbs and the streets were improper (Fig. 3). About 68.8% were of the view that curb ramps were inadequate while 56.3% considered the surfaces to be slippery.

Persons with hearing impairments expressed least concern about curb ramps as compared to the other categories of respondents. This is not surprising because like persons without visual and physical disabilities, they do not require any special assistive devices to be able to surmount such challenges within the CBDs.

This finding on curb ramps confirms that of Baris and Uslu (2009) in Ankara where the PWDs were concerned with sudden changes in heights. It also advances the findings of Amos-Abanyie *et al.* (2012) who studied selected buildings in Kumasi that are accessed by the public, and concluded that ramps were not in an ideal state in most public buildings in the Kumasi Metropolis.

***Pedestrian crossing***

From Table 7, 54.7% of respondents were of the view that there was a lack of tactile guide for persons with visual impairment at pedestrian crossings. Some (29.7%) were also not pleased with the lack of clear and audible signals from traffic lights at pedestrian crossings within the CBD of Kumasi. This did not seem to be an issue of major concern to the PWDs. Majority (71.9%) felt it was difficult to identify pedestrian crossings. Most (79.7%) were of the view that there were inadequate pedestrian crossings and 76.6 % also complained that there were inadequate speed humps to control the vehicular traffic.

Except for inadequacy of speed humps, the category of persons with disabilities that expressed most discomfort with the issues captured under crossing were those with visual impairment. Those with physical disability had

**Table 6: Views of PWDs on curb ramps in the Kumasi CBD**

| ISSUE OF CONCERN | SCORE | TYPE OF RESPONDENT'S IMPAIRMENT | | | | | | TOTAL | |
|---|---|---|---|---|---|---|---|---|---|
| | | Hearing impairment | | Visual impairment | | Physical disability | | | |
| | | N=6 | % | N=13 | % | N=45 | % | N=64 | % |
| **Improper design of the transition between curbs and street** | **a** | **3** | **50.0** | **9** | **69.2** | **35** | **77.8** | **47** | **73.4** |
| | b | 1 | 16.7 | 1 | 7.7 | 4 | 8.9 | 6 | 9.4 |
| | c | 2 | 33.3 | 3 | 23.1 | 6 | 13.3 | 11 | 17.2 |
| **The ramps are inadequate** | **a** | **4** | **66.6** | **8** | **61.5** | **32** | **71.1** | **44** | **68.8** |
| | b | 1 | 16.7 | 2 | 15.4 | 8 | 17.8 | 11 | 17.2 |
| | c | 1 | 16.7 | 3 | 23.1 | 5 | 11.1 | 9 | 14.1 |
| **Slippery ramp surfaces** | **a** | **2** | **33.3** | **9** | **69.2** | **25** | **55.6** | **36** | **56.3** |
| | b | 1 | 16.7 | 1 | 7.7 | 10 | 22.2 | 12 | 18.7 |
| | c | 3 | 50.0 | 3 | 23.1 | 10 | 22.2 | 16 | 25.0 |

*Legend: a-agree, b-disagree, c-no idea*

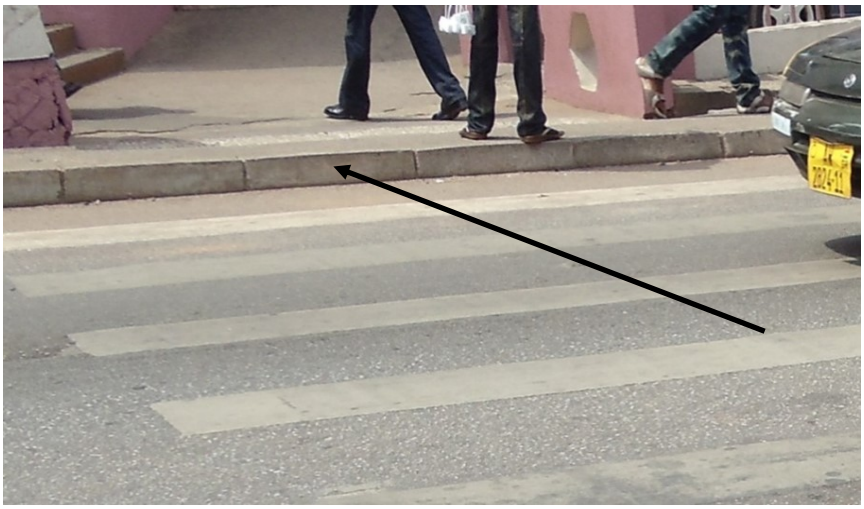

**Fig. 3: No curb ramp at pedestrian crossing (Prempeh II Avenue)**

the highest proportion (82.2%) regarding the inadequacy of speed humps. The discomfort that the respondents reported with respect to crossings epitomise the perspectives of PWDs in the research on road interchanges in Accra by Danso and Tudzi (2015). This is an issue of concern because Adarkwa and Poku-Boansi (2011) identified the CBD as a major traffic generator in Kumasi. Therefore, if the environment is not friendly to PWDs the possibility of injuries and possible loss of lives is high.

***Parking spaces***

According to the BS 8300 (2010) parking spaces should have 6% of the total capacity for visiting motorists who have disabilities. From the survey findings (Table 8), 77.8 % of respondents were of the view that special parking spaces were not allocated to the PWDs within the CBD. Half of the respondents had no idea about the sufficiency of the widths of the parking isles. This was obvious because they were not experts to be sure of or privy to the required dimensions. Majority (67.1%) of the respondents were of the view that parking areas within the CBD were poorly located and most respondents (71.9 %) had no idea as to whether persons without disabilities were parking in spaces allocated to PWDs. This was also to be expected since there was much uncertainty about the presence of parking places allocated to PWDs in the CBD in the first place. Afram and Olympio (2009) confirmed that parking space generally had been and continues to be a major problem in the CBD of Kumasi. It is therefore not surprising that provision for PWDs to park is a problem.

## CONCLUSION AND RECOMMENDATIONS

The study concludes that it is the perception of the PWDs that most of the elements of the infrastructure that impact accessibility within the CBD of Kumasi are not appropriate for their needs. This relate to unavailability, inappropriate design or lack of regulatory control in keeping places like walkways clear of obstructions from traders and parked vehicles. This agrees with the findings on general unfriendliness of the built environment to PWDs though this study addresses a relatively un-researched area which is the CBD in an African country. It is accordingly recommended that the Metropolitan Authority makes a conscious effort to retro-

**Table 7: Views of PWDs on nature of pedestrian crossing**

| ISSUE OF CONCERN | SCORE | TYPE OF RESPONDENT'S IMPAIRMENT | | | | | | TOTAL | |
|---|---|---|---|---|---|---|---|---|---|
| | | Hearing impairment | | Visual impairment | | Physical disability | | | |
| | | N=6 | % | N=13 | % | N=45 | % | N=64 | % |
| **Lack of guide strips for the blind** | **a** | **1** | **16.7** | **10** | **76.9** | **24** | **53.4** | **35** | **54.7** |
| | b | 1 | 16.7 | 0 | 0.0 | 1 | 2.2 | 2 | 3.1 |
| | c | 4 | 66.6 | 3 | 23.1 | 20 | 44.4 | 27 | 42.2 |
| **Clear and audible signals from traffic lights** | **a** | **3** | **50.0** | **0** | **0.0** | **16** | **35.5** | **19** | **29.7** |
| | b | 2 | 33.3 | 12 | 92.3 | 19 | 42.3 | 33 | 51.6 |
| | c | 1 | 16.7 | 1 | 7.7 | 10 | 22.2 | 12 | 18.7 |
| **Uneasy identification of pedestrian crossing** | **a** | **4** | **66.7** | **11** | **84.6** | **31** | **68.9** | **46** | **71.9** |
| | b | 2 | 33.3 | 0 | 0.0 | 11 | 24.4 | 13 | 20.3 |
| | c | 0 | 0.0 | 2 | 15.4 | 3 | 6.7 | 5 | 7.8 |
| **There are inadequate pedestrian crossings** | **a** | **5** | **83.3** | **11** | **84.6** | **35** | **77.8** | **51** | **79.7** |
| | b | 1 | 16.7 | 0 | 0.0 | 7 | 15.5 | 8 | 12.5 |
| | c | 0 | 0.0 | 2 | 15.4 | 3 | 6.7 | 5 | 7.8 |
| **Inadequate speed humps** | **a** | **4** | **66.7** | **8** | **61.5** | **37** | **82.2** | **49** | **76.6** |
| | b | 2 | 33.3 | 1 | 7.7 | 4 | 8.9 | 7 | 10.9 |
| | c | 0 | 0.0 | 4 | 30.8 | 4 | 8.9 | 8 | 12.5 |

*Legend: a-agree, b-disagree, c-no idea*

**Table 8: Views of PWDs on the parking spaces in the Kumasi CBD**

| Issue of concern | Score | TYPE OF RESPONDENT'S IMPAIRMENT | | | | | | TOTAL | |
|---|---|---|---|---|---|---|---|---|---|
| | | Hearing impairment | | Visual impairment | | Physical disability | | | |
| | | N=6 | % | N=13 | % | N=45 | % | N=64 | % |
| **Special parking spaces have been allocated to persons with disabilities** | **a** | **2** | **33.3** | **0** | **0.0** | **2** | **4.9** | **4** | **6.5** |
| | b | 3 | 50.0 | 9 | 69.2 | 38 | 84.0 | 50 | 77.8 |
| | c | 1 | 16.7 | 4 | 30.8 | 5 | 11.1 | 10 | 15.6 |
| **The parking aisles are insufficient in width** | **a** | **1** | **16.7** | **2** | **15.4** | **20** | **44.5** | **23** | **36.0** |
| | b | 3 | 50.0 | 1 | 7.7 | 5 | 11.1 | 9 | 14.1 |
| | c | 2 | 33.3 | 10 | 76.9 | 20 | 44.4 | 32 | 50.0 |
| **Parking areas are poorly located** | **a** | **4** | **66.7** | **7** | **53.8** | **32** | **71.0** | **43** | **67.1** |
| | b | 2 | 33.3 | 0 | 0.0 | 4 | 8.9 | 6 | 9.4 |
| | c | 0 | 0.0 | 6 | 46.2 | 9 | 20.1 | 15 | 23.6 |
| **Persons without disabilities always use parking spaces designated for persons with disabilities** | **a** | **2** | **33.3** | **4** | **30.8** | **9** | **20.0** | **15** | **23.4** |
| | b | 1 | 16.7 | 0 | 0.0 | 2 | 4.4 | 3 | 4.7 |
| | c | 3 | 50.0 | 9 | 69.2 | 34 | 75.6 | 46 | 71.9 |

*Legend: a-agree, b-disagree, c-no idea*

fit facilities in the CBD to make them friendly, and enforce relevant laws to decongest, especially, the pathways for the sake of PWDs.

This recommendation is purely based on the responses which were received from the respondents of this study. For example, curb ramps should be provided at various road crossing points and where there are street islands. Street furniture should be located outside the pedestrian pathway. The number of pedestrian crossings within the CBD should be increased for the sake of the PWDs so as to reduce risks associated with crossing the roads. These will go a long way to enable PWDs to enjoy their rights as enshrined in the Republican Constitution and the Persons with Disability Act (Act 715). It will accordingly be consistent with international protocols like the United Nation's Convention on the Rights of Persons with Disabilities that deal with accessibility for PWDs that Ghana is Party to. The researchers perfectly agree with the position of Soltani *et al.* (2012) that a significant amount of effort by [local] government bodies and also redesigning of the current facilities are needed, so that the disabled community would feel better accepted in the society and furthermore increase their equality and accessibility.

This study encountered some limitations that need to be addressed in future studies. The study focused on PWDs within the CBD of the Kumasi Metropolitan Assembly. Subsequent studies can be undertaken in the various metropolitan areas of the country using the recently enacted Accessibility Code of Ghana (GSA, 2016) to ascertain the extent of compliance with the requirements for the categories of PWDs captured in the current study. Also, the study only focused on PWDs without any technical know-how of those facilities. A further study can be conducted taking into consideration the appropriate authorities and experts to determine the rationale behind the designs and construction of such facilities. The study again did not involve any field studies of such facilities under investigation. It is recommended that future studies will consider the field study of such facilities in addition to interviewing the Metropolitan Authorities responsible for such facilities.

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