FACTORS AFFECTING ACCESSIBILITY OF BUILDING INFRASTRUCTURE BY PHYSICALLY HANDICAPPED PERSONS: THE CASE OF MERU TOWN MERU COUNTY KENYA

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DECLARATION

This research project report is my own original work and it has not been presented in this or any other institution for any award.

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This research project report has been presented for examination with my approval as the university supervisor.

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DEDICATION

This work is dedicated to my spouse Carol Gacheri for being there for me during the period of struggle for this degree. Her sacrificial contribution towards my success is invaluable.

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ABBREVIATIONS AND ACRONYMS

ADA	Americans with Disabilities Act
APDK	Association of Physically Handicapped persons of Kenya
AODA	Accessibility for Ontarians with Disabilities Act
BCA	Building and Construction Authority
CRPD	Convention on the Rights of Persons with Disabilities
CSPD	Council for the Support of Persons with Disabilities
DDA	Disability Discrimination ACT
DDAA	Disability Discrimination Australian Act
EAF	Enabling Accessibility Fund
ECPP	Enabling Change Partnership Program
NCA	National Construction Authority
PWDA	Persons with Disability Act
PWMLs	Persons with Mobility Limitations
ODA	Ontarians with Disabilities Act
OTF	The Ontario Trillium Fund
RECU	Reach, Enter, Circulate and Use

ABSTRACT

Though global governments have enacted various laws expressed through building codes, standards and local regulations, accessibility to both privately owned and public buildings infrastructure is still is a major problem bedeviling physically handicapped persons. In spite of that there is paucity of research on factors affecting the equal and full enjoyment of opportunities emanating from the inaccessibility of building infrastructure and in particular in developing countries. This study therefore specifically investigated the effect of; built environment, building regulations, financial resources and public awareness on the accessibility of building infrastructure by physically handicapped persons. Descriptive survey research design was used for the study. The study was hinged on two theories: Poststructural Theory and Resistance Disability Theory. The study employed. Target population of Members of APDK-Meru branch is 158, County planning officers were 13 and Consultants were 21.The sample size was of 100 Members of APDK-Meru branch, 10 County planning officers and 18 Consultants that were selected to participate in the study. Stratified sampling and Simple random sampling was used to pick the respondents. Questionnaires were used to collect data from all the respondents in the study locale. Data was analyzed qualitatively and quantitatively using Statistical Package for Social Scientists (SPSS) version 21.0 and was presented in frequency tables. The study established that built environment, building regulations, public awareness and funding resources all affected accessibility of building infrastructure by physically handicapped persons in Meru Town, Meru County, Kenya. 61.1%, of the respondents agreed that the absence of Curb Cuts adversely affected accessibility of building infrastructure by physically handicapped persons. Greater number of the respondents as shown by a Mean of 4.8981 agreed that accessibility government funds for the provision of disabled car parks in the built environment do not exist in Meru Town. Further, the results of this research have revealed that there exists building regulations on provision of wheelchair ramps in public housing in Meru Town, as shown by a majority of respondents by a Mean of 4.2710. 59.3% of respondents agreed that there exists a government fund for making building infrastructure accessible by physically handicapped persons. The study concludes that though there exists building regulations on provision of wheelchair ramps in public housing in Meru Town most buildings don't have these facilities portraying failure on the supervisory role of National Construction Authority (NCA) in enforcement of these regulations. It can also be concluded that, the existence of traditional media campaigns for the provision of access routes to building infrastructure and online campaigns provision of disabled car parking outside of building infrastructure in Meru Town could undertake a dominant role in the improved accessibility of these buildings by physically handicapped persons. From the finds the study recommends that effective advocacy on accessibility of building infrastructure by physically handicapped that would improve public awareness on accessibility, enactment of relevant building regulations and provision of financial resources should be strengthened in developing countries like Kenya through devolved units. Additionally, the study recommended that the government with the help other development partners should provide funding and capital grants to construct unobstructed access routes that would improve accessibility of building infrastructure by physically handicapped persons. The current study investigated the the factors affecting accessibility of building infrastructure by physically handicapped persons only in Meru Town, Meru County Kenya. Research could be done on similar topic on other major towns in Kenya for comparison and generalization purposes.

CHAPTER ONE:
INTRODUCTION

1.1 Background to the Study

According to the United Nations, Convention on the Rights of Persons with Disabilities (CRPD), around ten per cent of the global population or approximately 650 million, are physical challenged persons and they are world's largest minority. Imrie, (2012) the concept of accessibility is hinged on the idea that each and every person should enjoy equal access to the built environment without prejudicial tendencies premised on one's level of ability. He notes that it is characterized as the opportunity that an individual, at any given area and of any given ability, enjoys to execute and participate in a distinct activity or a set of activities within the built environment. Accessibility is therefore mainly about the Reach, Enter, Circulate and Use (RECU) principle (Imarie, 2012). The Standard Rules on Equalization of Opportunities for Persons with Disabilities in 1993 and the Convention on the Rights of Persons with Disabilities in 2006. The convention stipulates that signatory states must identify and eliminate obstacles and barriers to accessibility in buildings and other types of physical environment (United Nations, 2006).

In the United States of America (U.S.A) Burns and Gordon, (2010) reported that disability legislation such as the Fair Housing Act did lead to more accessible building infrastructure for physically handicapped persons through the installation of wheelchair ramps, sliding doors and grab rails in lavatories in old buildings. Further, Roof and Oleru, (2008) reported that the built environment in most hospitals lacked standard wheelchair ramps and the presence of steep staircases made hospital buildings inaccessible by physically handicapped persons (PWMLs) leading to media campaigns activism. In Canada, Sanderson, (2006)reported on two building regulations; the Ontarians with Disabilities Act 2001 (ODA) and the Accessibility for Ontarians with Disabilities Act 2005 (AODA) which required that both public and private building infrastructure be accessible to physically handicapped persons contributing to the renovation of old buildings for the installation of wheelchair ramps and sliding doors. Further Lord, (2010) reported on the use of different disability awareness creating platforms; online media, youth forums and traditional media as important avenues of raising issues related to accessibility of building infrastructure by PWMLs in Canada.

In the United Kingdom (U.K) Prideaux, (2006) reported that the Disability Discrimination Act (DDA) of 1995 did lead to the renovation of old building infrastructure that witnessed the introduction of ramps, wider doors and grab rails in lavatories making buildings accessible by handicapped persons on wheelchairs. Further, in the U.K Hall and Imrie (1999) had reported that the built environment was the major barrier to accessibility of building infrastructure in the country. In Ireland, Goodall, (2010) also reported that the Disability Discrimination Act (DDA) of 1995 had lead to the construction of new building infrastructure that was more accessible to physically handicapped persons and the renovation of old buildings to include features such as; ramps, wider lavatory doors, wider principal entrances and reserved parking for the physically handicapped. Priestley, (2013) reported that The Building Code 2012 (Bouwbesluit) requiring that both public and private buildings be more accessible had witnessed renovations in old buildings leading to the installation of ramps and sliding doors and the construction of more inclusive built environments in The Netherlands.

Scholars in Asia have also reported on different factors that create barriers to the accessibility of building infrastructure by physically handicapped persons. In Malaysia, Hashim et al., (2012) reported that the built environment in a commercial complex was characterized by narrow principal entrances, absence of ramps and steep staircases making it inaccessible for physically handicapped persons. In China, Guozhong, (2006) reported that the Code for Design on Accessibility of Urban Roads and Buildings (JGJ-2001) that requires buildings to have wheelchair ramps, sliding doors, less steep staircases and spacious lavatories has been instrumental in making more buildings accessible for physically handicapped persons. In the Philippines, Tabuga, (2013) reported that the enactment of the Magna Carta for Persons with Disability has led to the construction of more accessible and inclusive building infrastructure for physically handicapped persons in the country. Further in India Hajra and Shahla (2014) reported that the Persons with Disabilities (Equal Opportunities, Protection of Rights and Full Participation) Act, 1995 did lead to the construction of building infrastructure with ramps, outside opening doors, installed with elevators and less slippery floors making them more accessible to physically handicapped persons.

In Nigeria, Soyingbe, Ogundairo and Adenuga, (2009) reported that the built environment such as steep staircases, absence of ramps and slippery floors was a major barrier to accessibility by

physically handicapped persons to public buildings infrastructure. Similarly, Ihedioha (2015)reported that barriers in the built environment characterized by slippery floors, obstructed access routes and steep staircases made building infrastructure inaccessible for physically handicapped persons and denied them opportunity for job placements in organizations in Nigeria. In Ghana, Ahiamenyo, Ibrahim and Ahiamenyo (2016) reported that notwithstanding the existence of the Persons with Disability (PWD) Act 2006 (Act 715) there was need to create an accessibility policy for disabled students in polytechnics to make more buildings in these academic institutions accessible for these students.

Further, Tugli, et al., (2013) reported that students rated the lack of strict building regulations as the major cause of inaccessible buildings for physically handicapped in public universities in rural South Africa. In Zambia, Banda-Chalwe, Nitz and De Jonge, (2012) reported that features in the built environment such as slippery floors and steep stairways and the absence of wheelchair ramps adversely affected the accessibility to building infrastructure by physically handicapped persons. In Zimbabwe, Mandipa, (2013) reported that the lack of building codes requiring developers to construct inclusive buildings did result to the construction of building infrastructure that lacked wheelchair ramps adversely affecting accessibility to building infrastructure by physically handicapped persons.

In Tanzania, Majinge and Stilweel, (2015) reported that despite the ratification of the Persons with Disabilities Act 9 of 2010 most building infrastructure and in particular libraries in public universities lacked wheelchair ramps, were characterized with slippery floors and lavatories that lacked grab rails making them inaccessible by physically handicapped persons. In Uganda, Nakabuye, Mukasa and Mersland (2006) reported that the lack of effective accessibility legislation has contributed to the construction of inaccessible building infrastructure in the country. In Kenya, Gighuru (2012) reported that lack of public disability awareness continued to derail the realization of the rights of physically handicapped persons key among them being accessibility to employment and business building facilities. In their study Ochien'g, Onyango, and Wagah, (2013) found that public toilets were characterized by barriers such as; narrow doors, absence of grab rails and high threshold adversely affecting the accessibility of physically handicapped students to these building infrastructures.

1.2 Statement of the Problem

Though viewed as a global problem, inaccessibility to building infrastructure is a common problem in developing countries. This problem is more severe in the middle and low- income urban areas. Inadequacy in building infrastructure facilities can be analyzed in terms of numbers, types and sizes of available building infrastructure facilities, ratios of physically handicapped persons to population.

Practical accessibility is a function of not only space but also a function of availability of transportation network and economic means of utilizing available building infrastructure. Attaining these goals requires the elimination of any form of barriers that may hinder physically handicapped persons from accessing the building infrastructure facilities. This requires means of identifying area-specific barriers and develops means for objectively analyzing areas and extends of need. These barriers are as a result of various factors such as; features in the built environment, passive building regulations and codes, lack of accessibility funding and insufficient public disability awareness. In particular the existence of passive accessibility of building regulations and codes such as the Persons with Disability Act 2003 and or the non-existence coupled with laxity of authorities charged with enforcement of such regulations creates room for rouge government contractors to build inaccessible public buildings while private investors register high non-compliance with these regulations. This coupled with lack of accessibility funding creates limitations in the construction of reserved disabled parking spaces and unobstructed access routes further adversely affecting the accessibility of building infrastructure by physically handicapped persons. The accessibility building infrastructure by physically disabled persons is also negatively affected by the presence of steep stairs both at the entrance and in these buildings and the non-existence of grab rails in lavatory and enough space inhibits sanitary accommodation and elevators and wheelchair ramps adversely affects their horizontal circulation.

This research aims at addressing the shortage of facilities and accessibility features in and outside of building infrastructure such as; reserved disabled parking, wheelchair ramps, curb cuts, stairways with double hand rails and spacious lavatories with grab rails for physically handicapped persons in Meru town.

1.3 Purpose of the Study

The purpose of the study is to investigate on the factors affecting accessibility of building infrastructure by physically handicapped persons in Meru Town, Meru County, Kenya.

1.4 Objectives of the Study

This study was guided by the following objectives:

1. To establish the effect of built environment on accessibility of building infrastructure by physically handicapped persons in Meru town, Meru County;
2. To assess the effect of building regulations on accessibility of building infrastructure by physically handicapped persons in Meru town, Meru County;
3. To examine the effect of funding resources on accessibility of building infrastructure by physically handicapped persons in Meru Town, County;
4. To determine the effect of public awareness on accessibility of building infrastructure by physically handicapped persons in Meru town, Meru County.

1.5 Research Objectives

The study sought to answer the following research questions:

1. How does the built environment affect accessibility of building infrastructure by physically handicapped persons in Meru town, Meru County?
2. How do building regulations affect accessibility of building infrastructure by physically handicapped persons in Meru town, Meru County?
3. How do financial resources affect accessibility of building infrastructure by physically handicapped persons in Meru town, Meru County?
4. To what extent does public awareness affect accessibility of building infrastructure by physically handicapped persons in Meru town, Meru County?

1.6 Significance of the Study

It is anticipated that this research study will provide valuable data, which can be used by planners in the Ministry of Land, Housing and Urban Development and the Meru County Department of Land and planning to both assess and provide guidelines on the accessibility of

building infrastructure by physically handicapped in Meru Town and Kenya at large. The study also contributes knowledge to different academic disciplines on reasons why there still exists inaccessible building infrastructure and by so doing inform policy gaps in the measures so far undertaken to address this social issue. The study also provides suggestions that can be adopted by the Association of Physically Disabled of Kenya (APDK) Meru Branch which can be used to petition the County Assembly of Meru County to pass legislation that provides Building Codes for the construction of accessible building infrastructure in Meru Town. The study will also provoke other researchers to carry out research on other factors that affect accessibility of building infrastructure in Meru Town.

1.7 Limitations of the Study

The study's main shortcoming is that other scholars may not agree with the researcher's definition of accessibility to building infrastructure by physically handicapped persons. The study is limited to four key variables; built environment, building regulations, financial resources and public awareness and how these affect accessibility to building infrastructure by physically handicapped persons. Accessibility to building infrastructure may also result from a multiplicity of other factors not covered by the study.

1.8 Delimitation of the Study

The research's locale is building infrastructure in Meru Town and therefore findings cannot be generalized for accessibility in other towns in Meru County. The study will cover; Members of APDK Meru branch, County planning officers and Consultants in the building and construction industry but it will not cover Contractors. The construction of inaccessible building infrastructure is rampant in Meru Town and the town being the socio-economic hub of Meru County, inaccessibility denies physically handicapped persons (PWMLs) an equal opportunity to take part in the socio-economic development of both their lives and the county.

1.9 Assumptions of the Study

The researcher assumes that the sample population will be a representative of the general population; the researcher assumes that Members of APDK Meru are aware of factors affecting accessibility of building infrastructure in Meru Town and that County planning officers are

familiar with inaccessible buildings in the town and with measures adopted so far to deal with these issue and that construction consultants will be truthful in providing information relating to the topic of study.

1.10 Definition of Significant terms Used in the Study

Built Environment

It refers to constructed features either indoor or outdoor that make building infrastructure accessible or inaccessible by physically handicapped persons. These include; car parks, ramps, staircases, doors, floors, access routes and spacious lavatories.

Building Infrastructure

Refers to constructed structures under which persons of different abilities ought to receive services such as; shelter, health care, education, hospitality and engage in recreation and economic activities. Such structures can include; hospitals, residential houses, commercial buildings housing (fashion and clothing businesses, hotels and restaurants) and religious buildings.

Building Regulations

These are laws, legislation or building codes that guide the construction of more accessible building infrastructure for example through the installation of: ramps, lavatories with grab rails, wide doors and other features in the built environment that facilitate easier access of building infrastructure by physically handicapped persons.

Financial Resources

This refers to funding made available by government or foundations in terms of grants and banks in terms of loans to facilitate the construction of completely new accessible building infrastructure or renovate existing ones to make them accessible by physically handicapped persons.

Physically Handicapped Persons

These refers to persons that face both functioning and mobility challenges emanating from birth defects such as neurological disorders and or accidents restricting them in one or more daily activities and usually use wheelchairs or crutches for mobility.

1.11 Organization of the Study

This study is organized into five chapters. Chapter One will be introduction covering; background to the study, statement of the problem, purpose of the study which explained what the study intended to accomplish, research objectives and research question, significance of the study. The significance of the study justifies the reason for my study. This chapter also highlights delimitation and limitation of the study, and assumptions of the study.

Chapter Two reviews literature of the study. This chapter brings out what previous researchers have found out in the area of study. This chapter covers how various independent variables: Building regulations, Built Environment, Financial Resources and Public Awareness and how these influence accessibility to building infrastructure by physically handicapped persons from a global point of view narrowing down to the local level. It will also cover theoretical and conceptual frameworks.

Chapter Three consist of Research methodology covering; research design, target population, sampling procedure which will be discuss in detail how the sample for this study will be selected. It will also cover methods of data collection, validity and reliability of data collection instruments.

Chapter four will cover data analysis, presentation and interpretation of findings, based on background information and on four variables under study which include; Building regulations, Built Environment, Financial Resources and Public Awareness.

Chapter five covers summary of findings, discussions of the findings, conclusions and recommendations. It will also provide suggestions for further studies.

CHAPTER TWO:
LITERATURE REVIEW

2.1 Introduction

This chapter contains pertinent literature information that correlates and is consistent with the objectives of the study. The section is imperative as it ascertains the information that link the current study with past studies and what future studies will still need to explore so as to improve the body of knowledge in relation to the topic of study. The chapter also discusses relating theories and the conceptual framework of the study.

2.2 Built Environment and accessibility of Building Infrastructure by Physically Handicapped persons

According to a study by Sawyer and Bright, (2007) the built environment does present barriers for the accessibility of building infrastructure especially for physically handicapped persons or People with Mobility Limitations (PWMLs). Further, they contend that characteristics of the built environment such as; vastness and room for approach and use, acceptance of oversight, equitable use and flexibility of use have a significant relationship with the accessibility or inaccessibility of building infrastructure by physically handicapped persons (Sawyer & Bright, 2007). In their study Sendi and Kerbler-Kefo, (2009) observed an increase in the accessibility of buildings in Slovenia by physically handicapped persons. They also noted that the renovation of old buildings to install ramps, grab rails in toilets, automatic main entrance doors and the creation of access routes did make buildings more accessible for PWMLs (Sendi & Kerbler-Kefo, 2009).

Chan, Lee and Chan, (2009)found evidence that most public housing estates buildings had very limited provision for accessibility by physically handicapped persons. They further contend that most of these buildings in Hong Kong had no ramps for wheelchair users a factor that limited both the horizontal and vertical circulation of physically handicapped persons and aisles were not wide enough to allow their horizontal mobility (Chan, et. al., 2009).Further, in their study Kadir and Jamaludin, (2012) found evidence on a strong positive relationship between certain blockades present in the constructed environment and the inaccessibility of public buildings by physically handicapped persons in Malaysia. They also demonstrate that the absence of ramps

did in particular limit the vertical circulation of wheelchair users, the presence of heavy doors and uneven pedestrian pathways made horizontal circulation difficult and therefore denying them access to public services in these buildings (Kadir & Jamaludin, 2012).

Similarly in his study Evcil, (2009) found evidence pointing to the fact that the nature of the built environment was significantly positively correlated with the accessibility of public buildings in Istanbul. He further contends that the presence of heavy doors and narrow doorways limited the horizontal circulation of wheelchair users while the limited presence of ramps and physically challenged persons elevators limited their vertical circulation all these denying them equal enjoyment of state opportunities offered in these public buildings (Evcil, 2009). Baris and Uslu, (2009) also found evidence on an important positive association between barriers existing in the built environment and accessibility of buildings by physically handicapped persons in Ankara. They further demonstrated that steep gradient ramps, narrow aisles, uneven curb cuts, minimal parking spaces dedicated for PWML and heavy doors were all barriers to the accessibility of building infrastructure by physically handicapped persons (Baris & Uslu, 2009).

In their study Mehdi,Khadijeh and Mehran, (2010) also found evidence that the absence of ramps, sliding doors and narrow aisles made building infrastructure inaccessible for PWMLs on wheelchairs in Iran. They also noted that most access routes were obstructed and toilets lacked grab rails and therefore unfriendly to PWMLs (Mehdi, et al., 2010).Similarly, Bodaghi and Zainab (2012) found evidence that most library building infrastructure in public universities in Iran lacked wheelchair ramps, handrails on crumb ramps and principal entrances were opening to the inside. Further, they observed that access routes such as corridors were obstructed and lavatories' doors were not wide enough for wheelchair users and steep staircases which negatively affected the accessibility of these building infrastructures by crutch users (Bodaghi & Zainab, 2012).

Danso, Ayarkwa and Dansoh, (2011) observed there existed a relationship between features of the built environment and the access by PWMLs to public monumental buildings in Ghana. They also argued that wide lavatory doors, both horizontal and vertical grab rails made toilets PWML friendly and elevator lifts in these buildings also made them accessible. However, they noted the absence of ramps, heavy main entrance doors, and lack of seats for wheelchair users and obstructed access routes and corridors made these public buildings inaccessible for physically

handicapped persons (Danso, et. al., 2011). Kportufe, (2015) also found evidence on the association between features in the built environment and the accessibility to public buildings by PWML. He further observed that the absence of ramps, functional elevators and wheelchair accessible lavatories made these buildings inaccessible for PWMLs (Kportufe, 2015).

Further, Hamzat and Dada, (2005) found a meaningful relationship between some features in the built environment and PWMLs accessibility to public buildings in Nigeria. They also observed that most lavatories had narrow doors and lacked grab rails, the floors were slippery and lacked standard ramps for wheelchair users (Hamzat & Dada, 2005).Similarly,Adebowale, (2009) observed that most physically handicapped people had limited access to buildings including their residential houses. He also demonstrated that the lack of ramps, slippery floors and narrow lavatories' doors made houses inaccessible for PWMLs on wheelchairs and steep staircases for PWMLs on crutches (Adebowale, 2009).

In their study Maart, Eide, Jelsma, Loeb and Toni, (2007) observed that there existed a positive relationship between certain characteristics of the built environment and the accessibility by PWMLs of buildings in South Africa. Further they argued that obstructed access routes, absence of grab rails and ramps made buildings inaccessible for PWMLs (Maart et al., 2007). Ushotanefe, Moyo and Munyoga, (2009) also found evidence that exhibited a positive relationship between characteristics related to built environment and the accessibility of public buildings by physically handicapped persons in Harare, Zimbabwe. They further observed that most toilets in public buildings were wheelchair inaccessible, parking areas were unfriendly to PWMLs, the absence of ramps and when available were very steep made these buildings inaccessible to physically handicapped persons (Ushotanefe, et. al., 2009).

Further, in her study Banda-Chalwe, (2012) observed that barriers related to the built environment did have a significant relationship with the accessibility of public buildings by PWMLs in Zambia. She specifically noted that the absence of ramps and rails made both the horizontal and vertical circulations of PWMLs difficult, the absence of wheelchair accessible toilets made the buildings unfriendly and heavy doors at the building's entrance made access frustrating for most physically handicapped persons (Banda-Chalwe, 2012). Asfaw, Azage and Gebregergs (2016) found evidence that exhibited a significant association between features in the built environment and the accessibility of lavatories by PWMLs in public buildings in Ethiopia.

They further observed that features such as; narrow doors, absence of grab rails, elevated foot rests and the distance of the lavatories did make them inaccessible to PWMLs (Asfaw, et. al., 2016).Similarly in his study Tungaraza, (2010) noted that features in the built environment such as; steep stairways, slippery floors and limited number of ramps were major barriers to the accessibility to building infrastructure in a public university by PWMLs students. Further, he demonstrated how narrow aisles in lecture halls limited accessibility of wheelchair users, distance of the lavatories limited accessibility by crutch users and the absence of elevators made it difficult for this group of students to access the upper floors of libraries and lecture halls (Tungaraza, 2010).

2.3 Building regulations and accessibility of Building Infrastructure by Physically Handicapped persons

In his study Prince, (2010) mentioned two legislations that were adopted as accessibility laws; Rehabilitation Act of 1973 and the Americans with Disabilities Act (ADA) of 1990 in the United States (U.S.A). He further observed that these two accessibility laws required that all entities such as; academic institutions, health care facilities, state public housing estates and recreation facilities that receive federal funding maintain buildings that are accessible to physically handicapped persons (Prince, 2010). However, in his study Kane, (2009) found a significant positive relationship between adherence to ADA in a local university and accessibility to university buildings by physically handicapped students (PWMLs) in the U.S. Further, he argued that physically handicapped children found lavatories inaccessible due to narrow doors and the absence of grab rails and in some cases found lecture halls inaccessible due to narrow aisles (Keane, 2009). In another study Simonson, Glick and Mary Ellen, (2013) found evidence that a university in The U.S was compliant to ADA and that physically handicapped students (PWMLs) found most buildings accessible. They noted that main entrance doors were wide enough for wheelchair users, lavatories had grab rails and their doors were opening to the outside and libraries had ramps in both exit and entrances (Simonson, et al, 2013).

Further, in their study Roulstone and Prideaux, (2009) observed that the Disability Discrimination Act (DDA) of 1995 in the United Kingdom (U.K) and Equal Opportunities (Persons with Disability) Act (EOA) in Malta were important milestones in buildings accessibility legislation for PWMLs. They also argued that this created cordial partnerships and

arrangements to institute the principle of reasonable adjustments to enhance access to modern and ancient buildings through the installation of ramps, access routes and PWMLs friendly toilets especially in government funded entities such as; academic institutions, hospitals and public housing estates (Roulstone & Prideaux, 2009). In their study Otmani, Moussaoui and Pruski, (2009) also observed that the Code of Construction and Dwelling that established Law 2005-102 required that public buildings in their entirety are accessible to physically disabled persons providing them with the opportunity to enter with ease, get around, exit and equally prosper from all services granted to citizenry in France. They also noted that the accessibility of these establishments or installations for physically challenged persons have to satisfy specific obligations relating to negotiable routes, elevator lifts, stairs, car parks and lavatories in terms of non-slippery, non-moving and obstacle free floors, ramps that lead to principal entrances and sliding doors for wheelchair users (Otmani, et al., 2009).

Larkin, Hitch, Watchorn and Ang, (2015) posit that the Disability Discrimination Australian Act. (DDAA) of 1992 and National Disability Strategy were the two major legislations that guide building accessibility by PWMLs in Australia. Further, they argued that these regulations had introduced state building codes that required that all government funded entities; academic institutions, hospitals, public recreation facilities and public housing estates to be accessible by PWMLs (Larkin, et al., 2015). In another study Ward, Franz and Adkins (2013) had found evidence of a positive relationship between adherence to DDDA and accessibility to public housing estates in Australia. They further noted that adherence to the DDDA had resulted to the construction of accessible lavatories completely fitted with grab rails, the installation of staircases that were friendly to crutch users and ramps that made the houses accessible to wheelchair users (Ward, et al., 2013).

In their study, Hussein and Yaacob, (2012) also mentioned that a legislation; The Person with Disabilities Act (Act 685) was adopted in Malaysia in 2008. Further, they observed that the PWD ACT 685 introduced two codes; Code of Practice for Access for disabled persons to public buildings which required that all government funded buildings including; academic institutions, health care facilities, state public housing estates are accessible to physically handicapped persons (PWMLs) and the Code of Practice for Access of Disabled Persons outside Buildings which required that access routes to buildings were not obstructed, the availability of standard

ramps for wheelchair users and staircases for crutch users and conducive parking spaces for PWMLs (Hussein & Yaacob, 2012).Lau, Ho and Yau, (2014) also found evidence exhibiting a positive relationship between adherence to the PWD ACT 685 and accessibility by PWMLs to university buildings in Hong Kong. They also noted that most university buildings were being renovated which involved; the construction of ramps, PWMLs friendly lavatories and conducive staircases for crutch users and unobstructed access routes (Lau, et al., 2014).

Scholars have also found evidence on building regulations that provide framework for accessibility of buildings by PWMLs. In their study Asante and Sasu, (2015) observed that the Persons with Disability (PWD) Act 2006 (Act 715) was adopted to provide a regulatory framework to make academic, residential and recreational facilities barrier-free for PWMLs in Ghana. They however found evidence that most established buildings were inaccessible to PWMLs since most had inaccessible principal entrances, lacked wheelchair ramps, their toilets lacked grab rails and their staircases were too steep for crutch users (Asante & Sasu, 2015). Similar findings were reported by Armah and Kwantwi-Barima, (2016) who noted despite the existence of the PWD Act 2006 (Act 715) most public buildings and government funded institutions such as colleges were inaccessible for PWMLs. They also noted that most of these buildings and facilities especially colleges lacked ramps for wheelchair users, small lavatories that lacked grab rails and their principal entrances were heavy doors unfriendly for crutch users (Armah & Kwantwi-Barima, 2016).

Similarly in their study Ahmed, Awad and Adam (2014) observed despite the existence of the Nigeria with Disability Decree of 1993 most buildings in the country including academic institutions were inaccessible for PWMLs. They further noted the buildings lacked ramps, were characterized with slippery floors and steep staircases (Ahmed, et al., 2014). In their study Ramakuela and Maluleke, (2011) mentioned The Disability Policy Guideline of South Africa that provides standards to making public buildings accessible for physically handicapped persons. However, they argued that poor infrastructural designs of university buildings denied physically handicapped students access to some building parts due to lack of ramps and narrow lavatories' doors both of which denied wheelchair users access. They further observed steep staircases denied students with crutches physical access to libraries while narrow aisles denied students on wheelchairs access to lecture halls (Ramakuela & Maluleke, 2011).

In their study Aldersey and Turnbull, (2011) mentioned The United Republic of Tanzania's National Policy on Disability requiring better treatment for PWMLs. However they contend that this law has not improved accessibility to building infrastructure by PWMLs (Aldersey & Turnbull, 2011). Similarly, Majinge and Stilwell (2013) found an insignificant negative relationship between the existence of the United Republic of Tanzania's National Policy on Disability and accessibility of library building infrastructure in a public university by wheelchair users. Further, they contend that the enactment of the law did not witness the construction of more accessible building infrastructure in public universities by PWMLs in the country (Majinge & Stilwell, 2013).

2.4 Financial Resources and accessibility of Building Infrastructure by Physically Handicapped persons

In their study Sancton and Young, (2009) observed several funding programs such as; Enabling Accessibility Fund (EAF), The Ontario Trillium Fund (OTF) and Enabling Change Partnership Program (ECPP) that were adopted to enhance accessibility to building infrastructure by physically handicapped persons in Canada. Further they noted that the EAF provides funding for community-based projects that improve accessibility for Canadians PWMLs while the OTF offers $150,000 capital grants for renovations, especially those that improve accessibility to building infrastructure and the ECPP provides $11 million per year in grants and contributions to assist organizations in complying with accessibility standards and to improve accessibility for PWMLs to building infrastructure (Sancton & Young, 2009).

However in his study Parker, (2011) observed that the lack of enough federal funding for the construction of affordable accessible housing did create scarcity of accessible building infrastructure in The U.S. This he argued was because developers could not afford to renovate built environment to install some of the accessibility features in the built environment such as; wheelchair ramps, automatic sliding doors and elevators negatively affecting accessibility to this building infrastructure by physically handicapped persons (Parker, 2011). Similarly, Liebermann, (2013) found evidence that exhibited that lack of funding as the dominant influence leading to the shortage of accessible buildings in the U.S. She further argued lack of enough federal funding and grants created a situation in which developers accessed mortgages and loans from banks whose cost limited the number of accessibility features such as elevator lifts and

adversely sliding doors adversely affecting the accessibility to this building infrastructure by PWMLs (Liebermann, 2013).

Further in their study Andani, Rostron and Sertyesilisik (2013) lack of enough government funding and grants from foundations did adversely affect the renovation of old historic buildings to make them inaccessible by physically handicapped persons in the U.K. This they argued did create accessibility issues to these building infrastructures by PWMLs since developers could not afford to include accessibility features such as; enough hand rails on stairways, lifts and automatic sliding doors (Andani, et al., 2013).Further in his study Barnes, (2013) observed that Municipals in Sweden provide accessibility grants to physically handicapped persons to improve on the accessibility of their homes. This he noted included; the removal of doorsteps, the mounting of support rails, widening of doorways, fitting of automatic door openers, or the installation of special elevators positively affecting accessibility to their homes (Barnes, 2013).

Scholars have also found evidence exhibiting the importance of funds in creating accessibility to building infrastructure by physically handicapped persons (Building and Construction Authority, 2013). In his study Li Youmin, (2010) observed that the disability legislation in China only protects and helps the disabled. He therefore contends it does not provide a funding framework for creating an equal accessible environment adversely affecting the accessibility to building infrastructure by physically handicapped persons (Li Youmin, 2010). Similarly, Weizheng Fu, (2011) noted that failure to include accessibility provisions in disability legislation in China limited accessibility funding adversely the availability of accessibility features in old building infrastructure. Further he argues that failure to provide accessibility funding in China as is the case in Canada, leads to the absence of ramps, elevator lifts and curb cuts in old building infrastructure adversely affecting physically handicapped persons accessibility to these buildings (Weizheng Fu, 2011). In a study Lee, (2011) observed that the Building and Construction Authority (BCA) provides $40-million (U.S Dollars) Accessibility Fund for enhancement of the accessibility of existing privately owned structures and establishments in Singapore. He however noted that these funds are for buildings that were constructed in the preceding period to the enactment of compulsory stipulations entrenched in the Code on Barrier-Free Accessibility in Buildings (1990) and that they are limited to the construction of Ramps and or Lifts for

enhancement of accessibility in buildings' first floor and toilet that are accessible in the first floor or entrance level of the establishment (Lee, 2011).

In her study Banda-Chalwe M., (2014) noted that lack of enough government funding for public buildings did result to the construction of building infrastructure that lacked accessibility features such as disabled reserved car parking. She further contends that the unavailability of accessibility funds resulted to the absence of wheelchair ramps, absence grab rails in toilets adversely affecting the accessibility to these building infrastructures by physically handicapped persons (PWMLs) (Banda-Chalwe, 2014).

2.5 Public Awareness and accessibility of Building Infrastructure by Physically Handicapped persons

Gleeson, (2006) had observed that public disability consciousness contributes to the public an sympathetic appreciation of the challenges by physically handicapped persons (PWMLs) deal with. He further contends that it helps eliminate unfavorable societal attitudes and beliefs that often construct new barriers in the building infrastructure to PWMLs (Gleeson, 2006). Similarly in their study Haller, Dorries and Rahn, (2006) observed that through provisions under the Americans with Disability Act (ADA) the media in the U.S had reduced the use of limiting, narrowing stereotypes on physically handicapped persons. This they further contend did contribute to change in public attitude about physically handicapped persons leading to the design and construction of more accessible building infrastructure for PWMLs (Haller et al., 2006). Further in his study Prince, (2009) observed that disability movements were using various models to create public awareness on issues affecting PWMLs such as accessibility to building infrastructure in Canada. He however noted that the use of online media and opinion leaders' forums were becoming more effective in both agitating and creating awareness on the need for more accessible building infrastructure (Prince, 2009).

Further, Plantier-Royon, (2009) demonstrated that there existed a positive association between disability awareness raising stakeholder trainings and changes in the way building infrastructure was designed and constructed. He also postulated that stakeholder awareness raising trainings for; practicing architects, engineers, technicians, project managers or students in these fields

played a key role in making building infrastructure more accessible for PWMLs (Plantier-Royon, 2009). Goodall and Pottinger, (2010) found evidence on the existence of a positive relationship between the number of disability awareness inclusive built environment training workshops for built environment professionals and improved accessibility of built environment by PWMLs in Ireland. This they argued created a positive attitude among built environment professionals such as architectures and engineers resulting to an increase in the design and construction of more inclusive building infrastructure in the country (Goodall & Pottinger, 2010).

In his study Sanchez, (2010) observed that including physically handicapped persons in frequent television and radio programmes and also in alternative media can aid present opportunities for equitable and unprejudiced representation. This would aid in countering commonplace stereotypes that perpetuate negative perceptions of PWMLs. Further he contends that depicting people with disabilities from a dignified platform and the adoption of respectable practices in the media can aid in promoting a more inclusive built environment which facilitates easier access for PWMLs (Sanchez, 2010). Similarly in his study Penas, (2007) noted that formation of the Council for the Support of Persons with Disabilities (CSPD) that broadcast issues affecting persons with disability on; television, radio, advertising agencies, production companies and advertisers was instrumental in changing public attitudes in Spain. He also argues that through the CSPD accessibility to the public buildings was highlighted which played a key role in the construction of more inclusive building infrastructure in the country (Penas, 2007).

In their study Columna, Yang, Arndt and Lieberman (2009) found evidence on indicating a positive association between the creation of disability awareness making use of online media and the existence of positive attitudes towards the accessibility by physically handicapped persons to building infrastructure. They further argued that the more the people that the use of online disability awareness videos reached, the more the buildings with accessibility features such as ramps were constructed (Columna, et al., 2009).However, in their study Kadir, Jamaludin and Rahim (2013) noted that the lack of disability awareness training among building managers did negatively affect the accessibility of PWMLs to building infrastructure. This they contend did lead to public buildings that were characterized by; slippery floors, absence of ramps and inaccessible toilets making these buildings inaccessible for PWMLs (Kadir, et al., 2013).Another study by Yung and Wai (2016) found evidence that exhibited a significant positive relationship

between disability awareness among property managers and accessibility of building infrastructure by PWMLs. They also argued that the creation of awareness in the form of training workshops for property managers was very important in changing their attitudes which in turn increased the lobbying for inclusive built environment contributing to accessibility of building infrastructure by PWMLs (Yung & Wai, 2016).

Further in his study Olusola, (2013) observed that there existed a negative portrayal by the media of physically handicapped persons and issues affecting them in Nigeria. He further contends that it is such negative media coverage of issues affecting physically handicapped persons that derailed advocacy efforts for more accessible building infrastructure negatively affecting the accessibility to these infrastructures by PWMLs (Olusola, 2013). In their study Inimah, Mukulu and Mathooko, (2012) found evidence that exhibited a positive relationship between the negative portrayal of physically handicapped person in the media and the existence of negative attitudes in communities in Kenya. This they further argued made the community insensitive to their issues such as accessibility to services in public buildings due to the nature of these building infrastructures (Inimah, et al., 2012).

2.6 Theoretical Framework

According to Anfara and Mertz (2006) a theoretical foundation is an evidence-based or an ostensibly empirical theory of social or psychological procedures which exist at variations of different degrees and employed to the comprehension of phenomena. A theoretical framework grants the researcher an opportunity to “scrutinize” and “comprehend” particular facets of the phenomenon been researched on while some are obscure. However, a theoretical foundation on itself cannot contribute a detailed explanation on the study problem.

This study will be pivoted on two theories; Poststructural Critical Theory and Resistance Disability Theory.

2.6.1 Poststructural Critical Theory

Siegle, (1997) a proponent of the Poststructural critical theory postulates thatthough significant improvements in addressing integrated accessibility to the built environment have been brought about through the use of Universal Design, its implementation has been unsuccessful in dealing with many of the underlying social issues. He therefore argues that the Poststructural critical

theory challenges underlying belief systems as a channel for assessing the principles of Universal Design simultaneously with the social and cultural beliefs upon which concerns on accessibility especially the physically handicapped rests (Siegle, 1997).

Further, Siegle (1997) contends that the Poststructural critical theory also challenges continuing problems of frequent segregation of the able and disabled populations, where in lieu of providing an integrated accessible building infrastructure; accessible accommodations exist in building infrastructure amongst a predominantly inaccessible whole. Such segregation exists as a significant social problem based not on malice, but rather entrenched concepts of disability held by our society (Siegle, 1997).Orens, (1997) another proponent of the Poststructural critical theory argues that the theory exposes and provides a critique to these conceptual beliefs, has the ability to address the underlying issues and in the process placing Universal Design within a broader social and cultural context.

In adopting this theory this study therefore contends that while accessibility is generally conceived as a problem of physical barriers, social and psychological barriers performs a crucial role in the separation of society into able and disabled populations (Orens, 1997). In providing a platform to advance the principles of Universal Design (U.D) such as; equitable use, low physical effort, simple and intuitive use and flexibility in use, the theory helps to addresses research questions; 1 on the effect of the built environment, 3 on financial resources by challenging social and cultural beliefs it calls for better disability provisions for accessibility funding and 4 on the effect of public awareness by exposing and critiquing existing social beliefs on the disabled.

2.6.2 Resistance Disability Theory

Gabel and Peter, (2004) proponents of the Resistance Disability Theory contend that the theory is premised on the idea that disabled persons are supposed to create opposition to stigma, disablement, social maltreatment, political and economic exclusion. Further, they postulate that the theory is a practical application to the struggles of disabled people within the world's societies with relate to equal participation opportunities (Gabel & Peter, 2004). Resistance theory also argues that through resistance, disabled persons try to pull the society in seeing things such accessibility to building infrastructure as they see them. However, they note that it is not only the disabled that resist but other groups like politicians resist against the disabled persons and

therefore only offer reactive responses to the accessibility needs of physically handicapped persons (Gabel & Peter, 2004).

In adopting this theory this study therefore contends that through its strong civil rights component the theory addresses research question 2 on the effect of building regulations by moving beyond the reactive responses of legislation such as the PWD 2006 ACT 715 of Ghana but to both proactively, strongly oppose entrenched beliefs and propose designs which integrate accessible features into the overall design scheme positively affecting accessibility to the building infrastructure.

2.6 Conceptual Framework

David and Robert, (2007) define a conceptual framework as a model of presentation through which an investigator represents the correlation between variables under study and illustrates it graphically. Accessibility to building infrastructure by physically handicapped person is affected by a multiplicity factors such as: built environment, building regulations, financial resources and public awareness. The effect brought about by these factors either by causing positive or adverse impact on the accessibility to buildings infrastructure is the study's independent variables and their correlation with the study's dependent variable (accessibility to building infrastructure by PWMLs) is as illustrated in Figure: 2.1

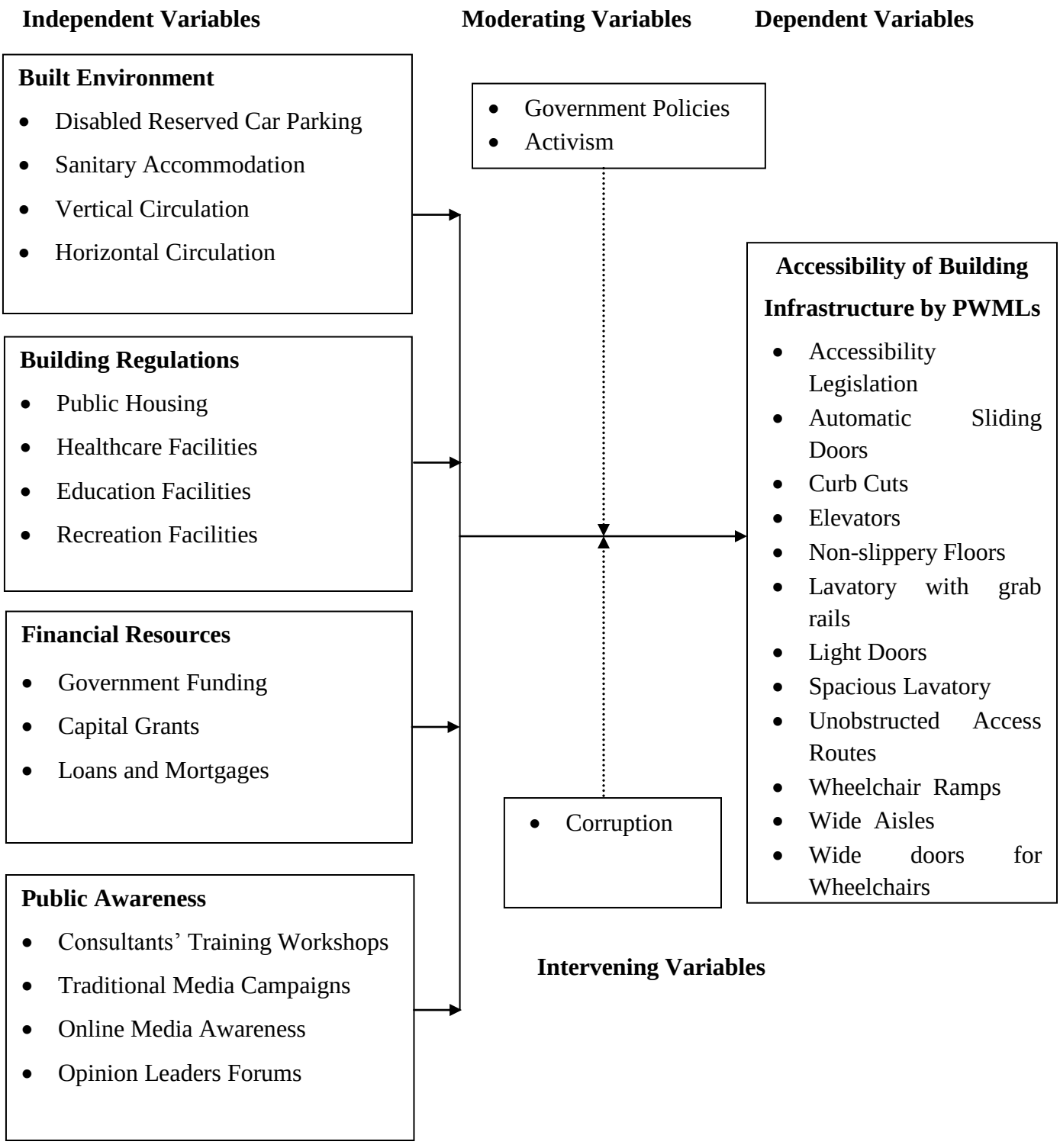

Figure 2.1:

Conceptual Framework of Factors affecting accessibility of building infrastructure by physically handicapped persons

The independent variables have indicators that portray the variables and form a basis on how they will be measured. Accessibility legislation affects the existence of wheelchair ramps in public housing, education facilities and health facilities while consultants' training affects the installation of Curb Cuts that enhances vertical circulation, government funding and traditional media campaigns affect the provision of un-obstructed access routes and sanitary accommodation is negatively affected by the non-existence of building regulations on the provision of grab/handrails, the non-existence of opinion leaders forums adversely affects the provision of accessible toilets and all these either positively or negatively affect the accessibility of building infrastructure by physically handicapped persons. Further, the existence of capital grants effects the provision of un-obstructed access routes and wheelchair ramps both of which affect the accessibility of building infrastructure by physically handicapped persons or people with mobility limitations (PWMLs). The existence of a reserved disabled car park enhances the accessibility of building infrastructure by physically handicapped persons or people with mobility limitations (PWMLs) as it grants this group of persons the opportunity to drive their vehicles close to the building infrastructure.

CHAPTER THREE:
RESEARCH METHODOLOGY

3.1 Introduction

This chapter contains the research design to be used in the study, the target population, sampling procedure and methods of data collection, validity and reliability of the questionnaire which will be used for data collection. It also contains the operationalization table of variables and objectives under study and methods of data analysis plus ethical considerations.

3.2 Research Design

Fellows and Liu, (2008) define a research design as the plan adopted by a research study which enables a researcher to carry out various research operations, hence creating a favorable environment to access sufficient information with very little expenditure on effort, time and financial resources. This research study employed the descriptive survey research design to investigate on factors affecting accessibility of building infrastructure by physically handicapped persons in the study locale. Descriptive survey research design is appropriate as it was possible to collect both qualitative and quantitative data on how study variables such as; building regulations, built environment, financial resources and public awareness affect the accessibility of building infrastructure by physically handicapped person in Meru Town. Further, this design involves description of events, portrays the characteristics of a population fully and it also enabled the researcher to establish the link between study variables and study problem (Fellows & Liu, 2008).

3.3 Target Population

According to the National Construction Authority there are 21 registered building and construction consultants operating in Meru town. This study concentrated on these respondents because they are expected to have a wealth of information on the research topic from their experiences in working on building projects. The study sought information regarding the research topic from 158 members of the Association of Physically Disabled of Kenya (APDK) Meru Branch and 13 County planning officers employed by the Meru County government.

This is summarized in Table: 3.1 on target population

Table 3.1 Target Population

Respondents	Target Population
Members of APDK Meru Branch	158
County Planning Officers	13
Consultants (Architects, Structural Engineers, Inspectors and Quantity Surveyors)	21
Total	**192**

Source: National Housing Construction Authority, APDK and Meru County Government (2016)

3.4 Sample Size and Sampling Procedure

Osborne, (2008) defines sampling as the procedure of selecting a number of study units from a define study population. This research study used probability sampling technique. Specifically Stratified and Simple Random sampling was used.

3.4.1 Sample Size

The sample size for the study was 128 drawn from a targeted population of 192 respondents. This sample size was obtained by applying the formula:

$$Ns = (Np)(p)(1-p)$$

$$(Np-1)(B/C)\,2 + (p)(1-p)$$

$n=(Z^2.PQ/\alpha^2)$ by Dillman, (2007) as shown in 3.4.2 sampling procedure.

The adjusted sample size $n_1=1+384/ (1+384/245) =128$

3.4.2 Sampling Procedure

The sampling techniques that were used in this study are Stratified and Simple Random sampling techniques. This is because the target population was grouped into three different categories; stratified sampling ensured proper representation of the different study's respondents to enhance representation of variables related to them. Simple random sampling was then used to select the final subjects proportionately from different strata.

The sample size was computed as follows:

At 95% confidence level or probability of 0.05, sample size n can be calculated as:

Desired sample n=(Z^2.PQ/α^2)

Where Z= Critical value of Z at 0.05 which is equal to 1.96

P=Accessible proportion of the target population= 50%

Q= In accessible proportion of the target population=50%

The acceptance error estimate =α.

Using the above formula, the maximum sample size (n_o) required from a large population of 10,000 or more units would be 384 units. The sample size can be adjusted with respect to target population as:

The adjusted sample size $n_{1=}n_o/ (1+n_o/N)$. Where N is the size of the target population in the area of study

The adjusted sample size n_1=1+384/ (1+384/192) =128

The sample size is as shown in Table 3.2 on Sampling Frame

Table 3.2 Sampling Frame

Respondents	**Target Population**	**Sample Size**
Members of APDK Meru Branch	158	100
County Planning Officers	13	10
Consultants	21	18
Total	**192**	**128**

3.5 Research Instruments

The researcher used questionnaires to collect the data required for this study. Saris, (2007) define a questionnaire as a self-report data collection device that each research participant fills out as part of a research study. Questionnaires were used because they are independent of interviewee prejudicial tendencies and respondents had sufficient time to give logical feedback. The questionnaires also provide relatively straight forward information to analyze (Leedy and Ormrod, 2010).Primary data was collected using a structured questionnaire. Structured

questionnaires were used because they will be easy to administer as each item is accompanied by choice answers and they were also economical in terms of time and money. The questionnaire consisted of both closed and open ended questions. Closed questions consist of a fixed set of questions to be answered by clients and contracts in a specified sequence and with a pre-designated response options. Open ended questions were not restrictive to the respondents. Open ended questions provided respondents with opportunities to reveal information in a naturalistic way. The questionnaire was divided in 5 sections. Section one requested the respondent to fill in his or her background information, whereas the remaining 4 sections consisted of variables which the researcher intends to research on. The sections were; Built Environment, Building Regulations, Financial Resources and Public Awareness and how these affect accessibility to building infrastructure by physically handicapped persons. Questionnaires were administered in person through the use of the drop and pick later method to the sampled respondents. A register of the questionnaires were maintained to facilitate tracking of the research collection instrument.

3.5.1 Pilot testing of Instruments

A pilot study was conducted to pre-test the research instruments. Administering the research instruments to a pilot study, will assist in both the identification and the ironing of errors and spotting of weaknesses in the research instruments (Dawson, 2013). The pilot study enabled the researcher to undertake an appropriate appraisal of validity and reliability of the study's questionnaire and the interview guide (Dawson, 2013). According to Springer, (2009) a pilot study should be conducted with the elements from the target population and replicate the approaches and procedures that have been chosen for data collection. Neuman, (2011) recommends that 10-20% of the target population is suitable for a pilot study. For this study the researcher used 15% of the target population the pilot study. Therefore, this study's pilot was conducted on 29 respondents representing different strata from the target population within Meru Town. Using convenience sampling, the researcher first settled on final subjects to participate in the pilot study and contacted them on the importance of the study. The next step was to share the research instruments with the sample respondents through email. Data was then analyzed and the results from the pilot study were then used to make changes in the research instruments.

3.5.2 Validity of Research Instruments

Neuman, (2011) defines validity as a measure of determining that the research tool in question gathers the data it attempts to gather. This study adopted content, construct and face validity. Content validity was evaluated and appraised making use of qualitative techniques.Qualitative content validity was determined using the assessment of scholarly authority as recommended by (Drost, 2011). Experts from University of Nairobi were requested to perform a qualitative audit and an appraisal of the research instruments to check on research questions in relation to questions in the questionnaire, check for grammatical, terminology, apportionment of items and acceptable scaling and consistency. They then presented criticism on which recommended corrections were implemented. Construct was achieved through checking on adequacy of the operational definition of variables by checking on clarity, vagueness and quality of instructions in the questionnaires. Face validity was established by skimming through the surface of the research instruments; it involved the application of a subjective and subjective overview of the questionnaire by the researcher's supervisor. The validity of the research instruments was also established by holding discussion and seeking counsel with the researcher's supervisor and modification of the instrument was implemented after supervisor's approval.

3.5.3 Reliability of Research Instrument

According to Babbie, (2010) an instrument is said to be reliable when it consistently generates the same results when the units being measured hasn't changed. To check reliability of the research instruments and address any deficiencies in the research instruments, a pilot study was conducted using 15% of the main sample size as recommended by (Neuman,2011). Therefore, this study's pilot was conducted on 29 respondents representing different strata from the target population. Further, reliability was established by using more than one instrument to the group of individuals during the same time. To enhance reliability of the instrument, the researcher employed split-half technique. This method was used to approximate internal consistency by splitting the scale into halves, and then correlating the scores on these two halves.

To calculate the reliability coefficient the researcher used the Spearman-Brown formula as suggested by (Mugenda & Mugenda, 2003):

$$r_{xx} = \frac{n \times r}{(n-1)r+1} \frac{2 \times 0.06}{(2-1)0.06+1}$$

$r_n = 0.11$

Where: r = the original reliability

r_n= reliability of the test n items long

n = number of items in the instrument

$$r_{xx} = \frac{0.11 \times 1}{(2-1)r+1} \frac{2 \times 0.06}{(2-1)0.06+1}$$

A high correlation indicates that the two sets yield consistent information Somekh, (2006) and 0.8 or higher will indicate good reliability (Mugenda & Mugenda, 2008).

3.6 Data collection procedures

After acquiring an introductory letter from University of Nairobi –Meru Extra Mural Centre ascertaining that the researcher is a bona fide student and a permit from the Commission for Science, Technology and Innovation, the researcher collected primary data needed for the study making use of structured questionnaires. Structured questionnaires were used because they were administered with ease as individual items were accompanied by choice answers and they were also be economical in terms of time and money. These (questionnaires) were administered in person making use of the drop and pick later technique to the sampled respondents. A register of the questionnaires was maintained to facilitate tracking of the research collection instrument.

3.7 Data Analysis Techniques

Data analysis is the procedure that involves the establishment of order, a framework and context to the pile of primary data collected by a researcher (Jackson, 2012).To ensure that data is entered correctly, scores are high or low and how many in each category, frequency and percent distribution was constructed using SPSS version 21.0. SPSS was used because it aid in the identification of in accuracy in data entry or unexpected data marks and has full set of statistical tests (Pallant, 2011). Data to be collected was analyzed to get statistical measures such as correlations among different variables, mean and standard deviations for easy interpretation of

the study findings. Further, the analysis helped the researcher to make valid inference on the topic of study.

Content analysis was employed to analyze data from open ended questions by presenting these data in themes as per the research objectives (Franzosi, 2008). This was done through inductive content analysis which involved open coding, creating categories and abstraction. Open coding involved the writing of an abstract and captions in the text while reviewing them. Recorded material was reviewed through again, and several captions deemed necessary were written down in the perimeters to interpret all features of the content collected from the margins on to coding sheets. After open coding, categories was created which guided the abstraction process which involved the formulating of a synoptic explanation of the research topic by naming individual categories using content-characteristic words as recommended by (Hsieh & Shannon, 2005).Frequencies and percentages tables was used to summarize information.

To establish the significance of each of the study's four variables with respect to accessibility to building infrastructure by physically handicapped persons, the study adopted a multivariate regression model. This is an adjustable approach of data analysis that is suitable in situations when quantitative variables (the dependent) are to be evaluated in relation to either of existing alternative factors. Further, the model shows correlations between the independent (predicator) variables and the dependent or outcome variable. Correlations may be linear or non-linear, independent variables could be designed as quantitative or qualitative and individual researchers can investigate on the influence of a single variable or multiple variables with or without factoring the influence of other variables (Tabachnick & Fidell, 2013).

The regression model is presented as:

$$Y = \beta 0 + \beta 1X1 + \beta 2X2 + \beta 3X3 + \beta 4X4 + \varepsilon$$

Where:

Y = Accessibility of Building Infrastructure by Physically Handicapped Persons

$\beta 0$ = Constant Term

$\beta 1$, $\beta 2$, $\beta 3$ and $\beta 4$ = Beta coefficients

X1= Building Regulations = $Y = \beta 0 + \beta 1X1 + \varepsilon$

X2= Built Environment = $Y = \beta 0 + \beta 2X2 + \varepsilon$

X3= Financial Resources = $Y = \beta 0 + \beta 3X3 + \varepsilon$

X4= Public Awareness = $Y = \beta 0 + \beta 4X4 + \varepsilon$

3.8 Ethical Considerations

Consent was sought from the participants to indicate the willingness to participate; the researcher also ensured anonymity when it comes to answering the study questionnaire. The researcher ensured that the information was used for research purposes only (Macfarlane, 2009).To conduct this study, the researcher is also sought a permit from the National Commission for Science, Technology and Innovation.

3.9 Operationalization of Variables

The variables are defined as shown on Table 3.3

Table 3.3 Operational Table of Variables

Objectives	Variable	Indicators	Measurement	Measurement Scale	Data Analysis	Tools of Analysis
To establish the effect of built environment on accessibility of building infrastructure by physically handicapped persons in Meru town, Meru County.	Independent Variable Built Environment	• Disabled Reserved Car Parking	Number of Members of APDK, county planning officers and consultants reporting on the number of disabled reserved car parking and how they affect accessibility to building infrastructure by PWMLs.	Nominal Scale	Descriptive Statistics	Regression
		• Sanitary Accommodation	Number of Members of APDK, county planning officers and consultants reporting on the number of spacious lavatory with grab rails and how they affect accessibility to building infrastructure by PWMLs.	Nominal Scale	Descriptive Statistics	Regression
		• Vertical Circulation	Members of APDK, county planning officers and consultants reporting on the number of building infrastructure that have vertical circulation features and how this affects the accessibility building infrastructure by PWMLs.	Interval Scale	Descriptive and Inferential Statistics	Regression
		• Horizontal Circulation	Members of APDK, county planning officers and consultants reporting on the number of building infrastructure that have horizontal circulation features and how this affects the accessibility to building infrastructure by PWMLs.	Interval Scale	Descriptive and Inferential Statistics	Regression
		• Wheelchair Ramps	Number of Members of APDK, county planning officers and consultants reporting on the number of buildings with wheelchair ramps and how they affect accessibility to building infrastructure by PWMLs.	Nominal Scale	Descriptive Statistics	Coefficient
		• Wide Aisles	Members of APDK, county planning officers and consultants reporting on the number of building infrastructure with wide aisles and how these affect the accessibility building infrastructure by PWMLs.	Interval Scale	Descriptive and Inferential Statistics	Regression
To assess the effect of building regulations on accessibility of building	Independent Variable Building Regulations	• Public Housing	Number of Members of APDK, county planning officers and consultants reporting on the number of building regulations enacted and how they affect accessibility to public housing building infrastructure by	Nominal Scale	Descriptive Statistics	Regression

infrastructure by physically handicapped persons in Meru town, Meru County.			PWMLs.			
		• Health Care Facilities	Number of Members of APDK, county planning officers and consultants reporting on the number of building regulations enacted and how they affect accessibility to healthcare facilities buildings by PWMLs.	Nominal Scale	Descriptive Statistics	Regression
		• Education facilities	Members of APDK and county planning officers reporting on the number of building regulations enacted and how they affect accessibility to education facilities buildings by PWMLs.	Interval Scale	Descriptive and Inferential Statistics	Regression
		• Recreation Facilities	Number of Members of APDK, county planning officers and consultants reporting on the number of building regulations enacted and how they affect accessibility to healthcare facilities buildings by PWMLs.	Nominal Scale	Descriptive Statistics	Regression
		• Accessibility Building Legislation	Number of Members of APDK, county planning officers and consultants reporting on building regulations enacted and how they affect accessibility to healthcare facilities buildings by PWMLs.	Nominal Scale	Descriptive Statistics	Coefficient
To examine the effect of funding resources on accessibility of building infrastructure by physically handicapped persons in Meru Town, County.	Independent Variable Financial Resources	• Government Funding	Number of Members of APDK, county planning officers and consultants reporting on the existence of accessibility government funding and how this affects accessibility to building infrastructure by PWMLs.	Nominal Scale	Descriptive Statistics	Coefficient
		• Capital Grants	Members of APDK, County planning officers and consultants reporting on the existence of accessibility county government capital grants to developers and how this affects accessibility to building infrastructure by PWMLs.	Interval Scale	Descriptive and Inferential Statistics	Regression
		• Loans and Mortgages	Members of APDK, County planning officers and consultants reporting on the existence of the existence of accessibility loans and mortgages and how these affect accessibility to building infrastructure by PWMLs.	Interval Scale	Descriptive and Inferential Statistics	Regression

		• County Government Funding	Number of Members of APDK, county planning officers and consultants reporting on the existence of accessibility county government funding and how this affects accessibility to building infrastructure by PWMLs.	Nominal Scale	Descriptive Statistics	Regression
		• Un-obstructed access routes	Number of Members of APDK, county planning officers and consultants reporting on the un-obstructed access routes constructed through county government funding and how this affects accessibility to building infrastructure by PWMLs.	Nominal Scale	Descriptive Statistics	Regression
To determine the effect of public awareness on accessibility of building infrastructure by physically handicapped persons in Meru town, Meru County.	<u>Independent Variable</u> Public Awareness	• Consultants' Training Workshops	Number of consultants reporting on the number of accessibility training workshops and how this affects accessibility to building infrastructure by PWMLs.	Nominal Scale	Descriptive Statistics	Coefficient
		• Traditional Media Campaigns	Number of Members of APDK, county planning officers and consultants reporting on the number of traditional media campaigns on accessibility and how these affect accessibility to building infrastructure by PWMLs.	Nominal Scale	Descriptive Statistics	Regression
		• Online Media Campaigns	Members of APDK, county planning officers and consultants reporting on the number of online media campaigns and how these affect the accessibility to building infrastructure by PWMLs.	Interval Scale	Descriptive and Inferential Statistics	Regression
		• Opinion Leaders Forums	Members of APDK and county planning officers reporting on opinion leaders forums held and how these affect the accessibility to building infrastructure by PWMLs.	Interval Scale	Descriptive and Inferential Statistics	Regression
		• Curb Cuts	Number of consultants reporting on the number of curb cuts installed on building infrastructure resulting from accessibility training workshops and how these affect accessibility to building infrastructure by PWMLs.	Nominal Scale	Descriptive Statistics	Coefficient

CHAPTER FOUR:
DATA ANALYSIS, INTERPRETATION AND PRESENTATION

4.1 Introduction

The chapter presents the results of the study finds which has been analyzed in line with study objectives based on thematic and sub-thematic areas as follows:

4.2 Questionnaire Return Rate

The study targeted a sample size of 128 respondents from which 108 filled in and returned the questionnaires making a response rate of 84.4 %. This response rate was satisfactory to proceed with the study as it acted as a representative. According to Mugenda and Mugenda (2003), a response rate of 50 % is adequate for analysis and reporting, a rate of 60% is good and a response rate of 70% and over is excellent. Based on the assertion, the response rate was excellent. This is presented in Table 4.1 on response rate.

Table 4.1: Response Rate

Category of Sample	**Targeted Sample Size**	**Response**	**Percentage**	**Composite Percentage**
Members of APDK Meru	100	85	79	84.4%
County Planning Officers	10	7	7	5.6%
Consultants	18	16	15	10.%
Total	**128**	**108**	**100**	**100**

4.3 General Information

This subsection of the study provided a broad overview on the respondents; Age and Level of education.

4.3.1 Distribution of Study Respondents by Age

The study sought to establish the age bracket of its respondents. This was sought in the understanding that understanding that respondents belonging to different age groups hold varying opinions on deferent matters. Results are presented in Table 4.2

Table 4.2: Distribution of respondents by Age

Age distribution	Frequency	Percentage
20 to 29 years	20	18.5
30 to 39 years	23	21.3
40 to 49 years	28	25.9
50 years and Above	37	34.3
Total	**108**	**100.0**

Results obtained show that out of the 108 study participants 20 (18.5%) were in the age bracket of 20-29 years, 23 (21.3%), belonged to the age bracket of 30-39 years, 28 (25.9%) were in the age bracket of 40-49 years while 37 (34.3) were 50 years above and above. This is important because it shows that majority of the study's respondents 37 at 34.3% are 50 years and above and those that are in the age bracket of 40-49 years were 28 representing 25.9% are people that are looking for investment proposals or development projects in building infrastructure and regulations that guide these especially those touching on accessibility by physically handicapped persons. Those in the age bracket of 30-39 were average 21.3% because these represent people in their mid-life stage that are busy looking for money to meet basic needs such as food, shelter and education for their families while the youth age bracket 20-29 were the minority 18.5% as these are either busy in schools pursuing different levels of education or busy looking for jobs or are engaged in leisure that such research information on building infrastructure accessibility challenges faced by physically handicapped persons is not of importance to them. This also indicates that respondents were moderately distributed in terms of their age groups.

4.3.2 Distribution of respondents by Level of Education

The sought to determine the respondent's highest level of education attained. Results are presented in Table 4.3 on level of education

Table 4.3: Level of education of respondents

Level of Education	Frequency	Percentage
Certificate	21	19.4
Diploma	31	28.7
Bachelors Degree	27	25.0
Master and Above	29	26.9
Total	**108**	**100**

Out of the 108 participants who participated in the study 29 (26.9) % had Master degree, 27 (25.0%) had a bachelor degrees, 31 had attained diplomas while 21 (19.4%) had certificate qualifications. This is important because the level of education determines the degree of awareness thus determines the level of access to information which determines mobilization. From the research finds given that people with Bachelors degrees and Master level of education are the majority, one can deduce that this level of education equips them with the necessary power to know their rights thus increasing the level of awareness. They could also use this knowledge to sue the government for failing to uphold their rights or hold demonstrations in calls for accessible buildings. This also signifies that majority of the study participants were literate and which implies they had the capacity to give dependable information relating to this study. Further 70% of the respondents indicated that they had worked as a construction consultant for more than 6 years.

4.4 Built Environment and Accessibility of Building Infrastructure by Physically Handicapped

The study sought to investigate various built environment and accessibility that affect building infrastructure by physically handicapped person in the context of: reserved disabled parking, sanitary accommodation, vertical circulation and horizontal circulation. These are further discussed in the following sub-sequent sub-themes.

4.4.1 Built environment

The study sought to establish the extent to which attributes of outside built environment affect accessibility to buildings in Meru Town by physically handicapped persons.Results are presented in Table 4.4.

Table 4.4: Accessibility of Buildings in Meru Town by physically handicapped persons

Statement	not at all%	little extent%	moderate extent%	great extent %	very great extent%	**Mean**	**Std dev**
Curb Cuts	0	0	0	61.1	38.9	4.3889	0.48977
Reserved Disabled Car Park	0	7.4	11.1	37.0	44.4	4.1852	0.90840
Obstructed Access Routes	0	2.8	6.5	59.3	31.5	4.1944	0.67614
Entrance Stairway steps		6.5	13.0	44.4	36.1	4.1019	0.86402

From the research findings, greater number of study participants as represented by a 61.1% (Mean = 4.3889, std dev =.48977), agreed that the absence of Curb Cuts adversely affected accessibility of buildings by physically handicapped persons 59.3% of respondents (Mean =4.1944, std dev =.67614) felt that Obstructed Access Routes affected accessibility of buildings by physically handicapped persons, 44.4% (Mean = 4.1019, std dev =.86402) agreed that Entrance Stairway steps affected accessibility of buildings by physically handicapped persons while only 37.0% (Mean =4.1852, std dev =.90840) of respondents felt that Reserved Disabled Car Park affected accessibility of buildings in Meru Town by physically handicapped persons. This essentially means that a vast majority of respondents 61.1% attached greater importance to the construction of Curb Cuts as a measure of enhancing accessibility of building infrastructure by physically handicapped persons, most of respondents 59.3% also recognized the need to build Obstructed Access Routes as a measure of improving accessibility of buildings, while a significant number of respondents 44.4% felt that more friendly entrance stairway steps were necessary to improve the accessibility of buildings and a minimal number 37.0% attached the

importance of having reserved disabled car parks to accessibility of buildings by physically handicapped persons.

4.4.2 Sanitary Accommodation

The study sought to establish the degree to which following attributes of toilets affect accessibility to physically handicapped persons in buildings in Meru Town. The results are presented in Table 4.5.

Table 4.5: Sanitary Accommodation

Statement	1	2	3	4	5	Mean	Std dev
Grab/ Hand Rails	0	0	0	24.1	75.9	4.8981	0.30386
Spacious Sliding Doors	2.8	5.6	5.6	13.9	72.2	4.6019	1.01337
Centrally placed toilet	0	0	0	30.6	69.4	4.8889	0.31573
Spacious for Wheelchair	4.6	9.3	9.3	20.4	56.5	4.2963	1.23242

Respondents agreed to a great extent that Grab/ Hand Rails Mean =4.8981, std dev =.30386), Spacious Sliding Doors (Mean =4.6019, std dev =1.01337), Centrally placed toilet (Mean =4.8889, std dev =.31573), Spacious for Wheelchair (Mean =4.2963, std dev =.1.23242), affected accessibility by physically handicapped persons in buildings in Meru Town. This essentially means that a vast majority of respondents 75.9% attached greater importance to the installation of Grab/Hand rails as a measure of enhancing sanitary accommodation in building infrastructure for physically handicapped persons, most of respondents 72.2 % felt that spacious sliding doors were necessary in improving the sanitation accommodation for physically handicapped, while a significant number of respondents 69.4 % also recognized the need to build Centrally placed toilet as a measure of improving sanitation accommodation for physically handicapped, and a minimal number of respondents 56.5% attached the importance of having Spacious lavatories for Wheelchair for accessibility of buildings by physically handicapped persons.

4.4.3 Features in the Built Environment (Horizontal Circulation)

The study sought to establish the degree to which features in the built environment affect the horizontal circulation of physically handicapped persons in building infrastructure in Meru Town. Results are presented in Table 4.6.

Table 4.6: Features in the Built Environment (Horizontal Circulation)

Statement	1	2	3	4	5	Mean	Std dev
Un-obstructed Indoor Access Routes	0	0	0	24.1	75.9	4.8981	0.30386
Sliding doors	0	7.4	11.1	37.0	44.4	4.1852	0.90840
Narrow Aisles	0	2.8	6.5	59.3	31.5	4.1944	0.67614
Slippery Floors	0	0	0	30.6	69.4	4.8889	0.31573

Based on the study's findings, a greater number of study participants agreed that Un-obstructed Indoor Access (Mean =4.8981, std dev =.30386), Sliding doors (Mean =4.1852, std dev =.90840), Narrow Aisles (Mean =4.1944, std dev =.67614) and Slippery Floors (Mean = 4.8889, std dev =.31573) affect the horizontal circulation of physically handicapped persons in building infrastructure in Meru Town. This is important as it means that a vast majority of respondents 75.9% attached greater importance to the provision of un-obstructed indoor access routes as a measure of enhancing accessibility of building infrastructure by physically handicapped persons, most of respondents 69.4% also recognized the need to address the issue of slippery floors as a measure of improving accessibility of building infrastructure by physically handicapped persons, while a significant number of respondents 44.4% felt that installing sliding doors was necessary in improving accessibility of building infrastructure by physically handicapped persons, and a minimal number of respondents 31.5% attached the importance of addressing the issue of narrow aisles as necessary in dealing with accessibility issues of buildings by physically handicapped persons.

4.4.4 Features in the built environment (vertical circulation)

The study sought to establish the degree to which features in the built environment affect the vertical circulation of physically handicapped persons in building infrastructure in Meru Town. The findings are presented in Table 4.7.

Table 4.7: Features in the Built Environment (Vertical Circulation)

Statement	1	2	3	4	5	Mean	Std. Deviation
Elevators	4.6	14.8	14.8	28.7	37.0	3.7870	1.22322
Wheelchair Ramps	4.6	9.3	7.4	29.6	49.1	4.0926	1.16440
Steep Stairs	0	3.7	5.6	39.8	50.9	4.3796	0.75773
Escalator	0	3.7	8.3	41.7	46.3	4.2991	0.77963

Based on the findings respondents agreed to a great extent that Elevators, Wheelchair Ramps, Steep Stairs and Escalator affect the vertical circulation of physically handicapped persons in building infrastructure in Meru Town with (Mean =3.7870 , std dev =1.22322), (Mean =4.0926 , std dev =1.16440), (Mean = 4.3796, std dev =.75773) and (Mean =4.2991 , std dev =.77963) respectively. This essentially means that a vast majority of respondents 50.9 % attached greater importance to addressing the issues of steep stairs as a measure of enhancing vertical circulation in building infrastructure for physically handicapped persons, most of respondents 49.1 % felt that the construction of wheelchair ramps was necessary in improving accessibility of buildings by physically handicapped persons through vertical circulation, while a significant number of respondents 46.3 % also recognized the need to install escalators as a measure of improving vertical circulation in building infrastructure by physically handicapped, and a minimal number of respondents 37.0% attached the importance of having elevators to enhance vertical circulation of buildings by physically handicapped persons.

4.5 Building Regulations and Accessibility of Building Infrastructure by Physically Handicapped

The study sought to establish the degree to which study participants agreed with the following statements relating to building regulations and accessibility to building infrastructure by physically handicapped.

4.5.1 Public Housing

The study sought to establish the extent to which respondents agreed with the following statements relating to Building Regulations and public housing in Meru town. The results are presented in Table 4.8.

Table 4.8: Public Housing

Statement	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Mean	Std deviation
There exists building regulations on provision of wheelchair ramps in public housing in Meru Town.	4.6	9.3	7.4	29.6	49.1	4.2710	0.73421
Building regulations on provision of grab rails in toilets in public housing does not exist in Meru Town.	0	3.7	5.6	39.8	50.9	4.5370	3.93029
There exists building regulations on provision of wide aisles in public housing in Meru Town.	0	2.8	6.5	59.3	31.5	4.1481	0.82519
Building regulations on provision of light doors in public housing does not exist in Meru Town.	0	6.5	13.0	44.4	36.1	4.8148	0.49574

Based on the research findings, majority of the respondents agreed that there exists building regulations on provision of wheelchair ramps in public housing in Meru Town(Mean =4.2710 ,

std dev =.73421), Building regulations on provision of grab rails in toilets in public housing does not exist in Meru Town (Mean = 4.5370, std dev =3.93029), There exists building regulations on provision of wide aisles in public housing in Meru Town(Mean =4.1481, std dev =.82519) and Building regulations on provision of light doors in public housing does not exist in Meru Town (Mean = 4.8148, std dev =.49574). These findings are important as they mean that a vast majority of respondents 50.9 % recognized the importance of enacting regulations that requires the installation of Grab/Hand rails in lavatories as a measure of enhancing sanitary accommodation in public building infrastructure for physically handicapped persons, most of respondents 49.1 % have knowledge on the existence of building regulations on the provision of wheelchair ramps in public housing and they can therefore use this knowledge to challenge the non-provision of these physically handicapped persons accessibility features in public housing, while a significant number of respondents 36.1% also have knowledge on the non-existence of regulations requiring the installation of light doors in public housing and can use these knowledge to engage in advocacy either at the devolved or the national level for the provision of these physically handicapped persons accessibility features in public housing, and a minimal number of respondents 31.5% had knowledge on the existence of building regulations on the provisions of wide aisles public housing and they could use this knowledge either to petition the devolved units to provide this accessibility feature or engage in advocacy at the national level or hold demonstrations calling for the provision of this accessibility feature in public housing.

4.5.2 Education Facilities

Further the study sought to establish the degree to which study participants agreed with the following statements: On a scale of 1-5 where 1= strongly disagree, 2= disagree, 3= neutral, 4= agree and 5 = strongly agree. The results are presented in Table 4.9.

Table 4.9: Education Facilities

Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean	Std Deviated

There exists building regulations on provision of wheelchair ramps in education facilities in Meru Town.	0	2.7	6.4	59.4	31.6	4.1944	1.07180
Building regulations on provision of spacious lavatory in education facilities does not exist in Meru Town.	0	6.2	13.3	44.1	36.5	3.8333	1.11489
There exists building regulations on provision of curb cuts in education facilities in Meru Town.	0	2.8	6.5	59.3	31.5	3.9252	1.13021
Building regulations on provision of wide aisles in education facilities does not exist in Meru Town.	0	6.5	13.0	44.4	36.1	4.2685	1.11579

Based on the research findings, majority of the respondents agreed that there exists building regulations on provision of wheelchair ramps in education facilities in Meru Town(Mean =4.1944 , std dev =1.07180), Building regulations on provision of spacious lavatory in education facilities does not exist in Meru Town (Mean =3.8333 , std dev =1.11489), there exists building regulations on provision of curb cuts in education facilities in Meru Town (Mean = 3.9252, std dev =1.13021) and building regulations on provision of wide aisles in education facilities does not exist in Meru Town (Mean = 4.2685, std dev =1.11579). These findings essentially mean that a vast majority of respondents 59.4 % were equipped with knowledge on the existence of building regulations requiring that education facilities in Meru town had provided wheelchair ramps to enhance accessibility of physically handicapped persons and they can therefore use this knowledge to challenge the non-provision of these physically handicapped persons accessibility features in these academic institutions, most of respondents 59.3 % have knowledge on the

existence of building regulations on the provision of curb cuts in education facilities and they can therefore use this knowledge to challenge the non-provision of these physically handicapped persons accessibility features in these academic institutions, while a significant number of respondents 44.4% also have knowledge on the non-existence of regulations requiring the provision of wide aisles in education facilities and can use these knowledge to engage in advocacy either at the devolved or the national level or petition both levels of government for the provision of these physically handicapped persons accessibility features in these academic institutions, and a minimal number of respondents 44.1% were equipped with knowledge on the non-existence of building regulations on the provisions of spacious lavatory in education facilities and they could use this knowledge either to petition the devolved units to provide this accessibility feature or engage in advocacy at the national level or hold demonstrations calling for the provision of this sanitary accommodation feature in academic institutions. This could also mean very few people place importance on spacious lavatories in academic institutions.

4.5.3 Health Care and Recreation Facilities

The study sought to establish the degree to which study participants agreed with the following statements relating to building regulation, Health Care and Recreation Facilities. The results are presented in Table 4.10.

Table 4.10: Health Care and Recreation Facilities

Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean	Std Deviated
There exists building regulations on provision of wheelchair ramps in health care facilities in Meru Town.	4.1	14.8	14.8	28.7	37.5	4.8796	0.32691
Building regulations on provision of disabled car	4.0	9.6	7.7	29.0	49.7	4.6204	0.89357

parks in recreation facilities does not exist in Meru Town.							
There exists building regulations on provision of un-obstructed access routes in recreation facilities in Meru Town.	0	14.8	14.8	28.7	41.6	3.4074	1.43414
Building regulations on provision of elevators in recreation facilities does not exist in Meru Town.	0	0	7.4	38.9	53.7	4.1944	1.10613

Based on the research findings, a greater number of study participants agreed that there exists building regulations on provision of wheelchair ramps in health care facilities in Meru Town (Mean =4.8796 , std dev =.32691), building regulations on provision of disabled car parks in recreation facilities does not exist in Meru Town (Mean = 4.6204, std dev =.89357), there exists building regulations on provision of un-obstructed access routes in recreation facilities in Meru Town (Mean = 3.4074, std dev =1.43414) and that building regulations on provision of elevators in recreation facilities does not exist in Meru Town (Mean = 4.1944, std dev =1.10613). Based on the research findings, a greater number of study participants agreed that there exists building regulations on provision of wheelchair ramps in public housing in Meru Town(Mean =4.2710 , std dev =.73421), Building regulations on provision of grab rails in toilets in public housing does not exist in Meru Town (Mean = 4.5370, std dev =3.93029), There exists building regulations on provision of wide aisles in public housing in Meru Town(Mean =4.1481, std dev =.82519) and Building regulations on provision of light doors in public housing does not exist in Meru Town (Mean = 4.8148, std dev =.49574). These findings are important as they mean that a vast majority of respondents 53.7 % were equipped with knowledge on the non-existence of building regulations on the provisions of elevators in recreation facilities and they could use this knowledge either to petition the devolved units to provide this accessibility feature or engage in advocacy at the national level or hold demonstrations calling for the provision of this

accessibility features, most of the respondents 49.7 % have knowledge on the non-existence of building regulations on the provision of reserved disabled car parks and they can therefore use this knowledge to challenge the non-provision of these physically handicapped persons accessibility features in recreation facilities, while a significant number of respondents 41.6% also have knowledge on the existence of regulations requiring the provision of un-obstructed access routes in recreation facilities and can use these knowledge to engage in advocacy either at the devolved or the national level for the provision of these physically handicapped persons accessibility features in public housing, and a minimal number of respondents 37.5% had knowledge on the existence of building regulations on the provisions of wheelchair ramps in health care facilities in Meru Town and they could use this knowledge to either petition the devolved units to provide this accessibility feature or engage in advocacy at the national level or hold demonstrations calling for the provision of this accessibility feature in health care facilities in Meru Town.

4.6 Financial Resources and Accessibility of Building Infrastructure by Physically Handicapped

The study sought to establish respondent's opinion on financial resources and accessibility to building infrastructure by physically handicapped. The results are shown in Table 4.11.

Table 4.11: Financial Resources

Opinion	Frequency	Percentage
Yes	64	59.3
No	44	40.7
Total	**108**	**100**

Based on the research findings, a greater number of study participants (59.3%) agreed that accessibility government funds were available while 40.7% indicated otherwise. This is means that majority of people equipped with this knowledge could use it to either petition the devolved units (Meru County Assembly) or engage in advocacy at the national level or hold demonstrations calling for the efficient utilization of these funds for the provision of physically handicapped persons' accessibility features in building infrastructure in Meru Town.

4.6.1 Governments Funds

The study sought to establish the degree to which study participants agreed with the following statements relating to accessibility governments funds given to developers to improve accessibility of old building infrastructure and how the funds affect improved accessibility to building infrastructure by physically handicapped persons in Meru town. The results are presented in Table 4.12.

Table 4.12: Governments Funds

Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean	Std Deviated
There exists a county government accessibility fund for the provision of access routes to building infrastructure in Meru Town.	0	0	30.0	45.1	24.9	4.8981	0.30386
Accessibility government funds for the provision of disabled car parks in the built environment do not exist in Meru Town.	2.8	5.5	5.0	33.9	52.8	4.8981	0.30386
There exists an accessibility grant for the provision of spacious lavatories in building infrastructure in Meru Town.	4.0	9.6	7.7	29.0	49.7	4.6019	1.01337
Loans and mortgages are	0	8.4	25.6	23.9	42.2	4.8889	0.3157

extended to owners of buildings for the provision of wheelchair ramps in old buildings in Meru Town.		3

Based on the research findings, a greater number of study participants agreed that there exists a county government accessibility fund for the provision of access routes to building infrastructure in Meru Town (Mean =4.8981 , std dev =.30386), Accessibility government funds for the provision of disabled car parks in the built environment do not exist in Meru Town (Mean =4.8981 , std dev =.30386), There exists an accessibility grant for the provision of spacious lavatories in building infrastructure in Meru Town (Mean = 4.6019, std dev =1.01337) and that loans and mortgages are extended to owners of buildings for the provision of wheelchair ramps in old buildings in Meru Town (Mean = 4.8889, std dev =.31573). This is important as is means that a vast majority of respondents 52.8 % were equipped with knowledge on the non-existence of government accessibility funds for the provisions of reserved disabled car parks in the built environment and they could use this knowledge either to petition the devolved units to use these funds to provide this accessibility feature or engage in advocacy at the national level or hold demonstrations calling for the use of funds for the provision of this accessibility features, most of the respondents 49.7 % have knowledge on the existence of an accessibility grant for the provision of spacious lavatories in building infrastructure and they can therefore use this knowledge to challenge the non-provision of these sanitation accommodation feature physically handicapped persons in building infrastructure in Meru Town, while a significant number of respondents 42.2% also have knowledge on the existence of loans and mortgages extended to building owners on the provision of wheelchair ramps in old buildings and can use these knowledge to challenge the non-provision of these physically handicapped persons accessibility features in old buildings in Meru town, and a minimal number of respondents 24.9% had knowledge on the existence of a county government accessibility fund on the provision of access routes to building infrastructure in Meru Town and this could mean the provision this accessibility feature for physically handicapped persons is at risk.

4.6.2 Capital Grants

The study sought to investigate the degree to which study participants agreed with the following statements on capital grants. Use a scale of 1-5 where 1= strongly disagree, 2= disagree, 3= neutral, 4= agree and 5 = strongly agree. The results are presented in Table 4.13.

Table 4.13: Capital Grants

Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean	Std Deviated
There exists government accessibility funding for the provision of wide aisles in building infrastructure in Meru Town.	0	6.2	13.3	44.1	36.5	4.6944	0.57125
Accessibility county government funds for the provision of sliding light doors in building infrastructure do not exist in Meru Town.	0	6.5	13.0	44.4	36.1	4.7593	0.56155
There exists an accessibility grant for the provision of elevators in building infrastructure in Meru Town.	0	2.8	6.5	59.3	31.5	4.8529	0.45374
Loans and mortgages are extended to owners of buildings for the provision of escalators in old buildings infrastructure in	0	6.5	13.0	44.4	36.1	3.5278	1.53134

Meru Town.

From the research findings, a greater number of study participants agreed that There exists government accessibility funding for the provision of wide aisles in building infrastructure in Meru Town (Mean =4.6944 , std dev =.57125), Accessibility county government funds for the provision of sliding light doors in building infrastructure do not exist in Meru Town (Mean =4.7593 , std dev =.56155), There exists an accessibility grant for the provision of elevators in building infrastructure in Meru Town (Mean = 4.8529 , std dev =.45374) and that Loans and mortgages are extended to owners of buildings for the provision of escalators in old buildings infrastructure in Meru Town (Mean = 3.5278, std dev =1.53134). This is important as is means that a vast majority of respondents 59.3% were equipped with knowledge on the existence of an accessibility grant for the provisions of elevators in building infrastructure in Meru Town and they could use this knowledge either to petition the devolved units to use these grants to provide this accessibility feature or engage in advocacy at the national level or hold demonstrations calling for the use of grants by building owners for the provision of this accessibility features, most of the respondents 44.4 % were equipped with the knowledge on the existence of loans and mortages for the provision of escalators in old building infrastructure and they can therefore use this knowledge to challenge the owners of these buildings to provide these accessibility feature in building infrastructure in Meru Town, while another 44.4% are also equipped with knowledge that there is a non-existence of a county government funds for the provision of sliding light doors to enhance accessibility of building infrastructure and they can use these knowledge to petition the devolved unit to enact laws that provide such funds and a minimal number of respondents 44.1% had knowledge on the existence of a government accessibility fund on the provision of wide aisles in building infrastructure in Meru Town and this could mean the provision this accessibility feature for physically handicapped persons is at risk.

4.7 Public Awareness and Accessibility of Building Infrastructure by Physically Handicapped

The study sought to establish degree to which study participants agreed with the following statements. The results are presented in Table 4.14.

Table 4.14: Public Awareness

Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean	Std Deviated
There exist traditional media campaigns for the provision of access routes to building infrastructure in Meru Town.	0	2.8	6.5	59.3	31.5	4.1204	0.48964
Opinion leaders' forums on the provision of accessible toilets in building infrastructure in Meru Town do not exist.	0	6.5	13.0	44.4	36.1	4.2093	0.92196
There exists an online campaign provision of disabled car parking outside of building infrastructure in Meru Town.	4.6	9.3	7.4	29.6	49.1	4.2500	0.77490
Traditional media campaigns on of buildings for the provision of curb cuts in old buildings in Meru Town exists.	0	3.7	5.6	39.8	50.9	3.8889	1.09658

Based on the research findings, majority of the respondents agreed that there exist traditional media campaigns for the provision of access routes to building infrastructure in Meru Town (Mean = 4.1204, std dev =.48964). they also agreed to a great extent that opinion leaders' forums on the provision of accessible toilets in building infrastructure in Meru Town do not exist (Mean

=4.2093 , std dev =.92196), there exists an online campaign provision of disabled car parking outside of building infrastructure in Meru Town (Mean = 4.2500, std dev =.77490). Further the respondents agreed that traditional media campaigns on of buildings for the provision of curb cuts in old buildings in Meru Town (Mean = 3.8889, std dev =1.09658). This is important as is means that a vast majority of respondents 59.3% acknowledged that traditional media campaigns on the provision of access routes in building infrastructure in Meru Town exists and therefore this shows public awareness on the importance of access routes to building infrastructure is high and it also means that the public can always hold government both national and county when these accessibility features are at risk, most of the respondents 44.4 % acknowledged that opion leaders forums on the provision of accessible toilets in building infrastructure do not exist and they can therefore use this knowledge to organize forums on important issue that would address sanitary accommodation for physically handicapped persons in building infrastructure in Meru Town, while a significant number of respondents 39.8% are also acknowledged that traditional media campaigns on the provision of Curb Cuts in building infrastructure in Meru Town exists and which shows the importance attached to this particular accessibility feature and a minimal number of respondents 29.6% acknowledged the existence of an online media campaigns on the provision of reserved disabled car parks in building infrastructure in Meru Town exists and this could both mean that very few of the respondents are exposed online media and that the provision this accessibility feature for physically handicapped persons is at risk.

The study also sought to establish the extent to which respondents agree with the following statements Using a scale of 1-5 where 1= strongly disagree, 2= disagree, 3= neutral, 4= agree and 5 = strongly agree. The results are presented in Table 4.15.

Table 4.15: Public Awareness

Statement	**1**	**2**	**3**	**4**	**5**	**Mean**	**SD**
Traditional media campaigns on provision of wheelchair ramps in old buildings in Meru Town.	0	3.7	5.6	39.8	50.9	3.8889	1.09658
There exist opinion leaders' forums on the provision of	0	7.4	44.4	37.0	11.1	4.1852	0.90840

elevators in building infrastructure in Meru Town.							
Online campaigns on the provision of escalators in old building infrastructure in Meru Town.	0	2.8	6.5	59.3	31.5	4.1944	0.67614
There exist traditional media campaigns on the provision of less steep stairs in building infrastructure in Meru Town.	0	6.5	13.0	44.4	36.1	4.1019	0.86402

Respondents agreed that Traditional media campaigns on provision of wheelchair ramps in old buildings in Meru Town (Mean = 4.2500, std dev =.77490). There exist opinion leaders' forums on the provision of elevators in building infrastructure in Meru Town (Mean = 4.2500, std dev =.77490). Online campaigns on the provision of escalators in building infrastructure in Meru town and There exist traditional media campaigns on the provision of less steep stairs in building infrastructure in Meru Town (Mean = 4.2500, std dev =.77490).

This is important as is means that a vast majority of respondents 59.3% acknowledged that online media campaigns on the provision of escalators in old building infrastructure in Meru Town exists and this therefore means a greater number of people who have attached greater importance on this accessibility feature to building infrastructure and it also means that the people have embraced ICT skills can always use this for advocacy on accessibility of building infrastructure by physically handicapped persons both national government and county levels when these accessibility features are at risk, most of the respondents 44.4 % acknowledged that there exists traditional media campaigns on the provision of less steep stairs in building infrastructure and they can use this knowledge to either organize demonstrations or petition the government both at the devolved level and at the national level on the provision of this accessibility feature for physically handicapped persons in building infrastructure in Meru Town, while a significant number of respondents 39.8% are also acknowledged that traditional media

campaigns on the provision of wheelchair ramps in building infrastructure in Meru Town exists and which shows the importance they attach to this particular accessibility feature and a minimal number of respondents 37.0% acknowledged the existence of an opinion leaders forums on the provision of elevators in building infrastructure in Meru Town exists and this could both mean that not many opinion leaders are interested in the accessibility challenges of building infrastructure physically handicapped persons face due to the absence of this particular accessibility feature and it could also be pointer to lack of public communication on the existence of this forums or lack of unity among opinion on this particular issues that is central to accessibility of building infrastructure by physically handicapped persons.

The study also sought to investigate whether respondents had installed curb cuts to enhance accessibility from knowledge acquired from consultants' accessibility trainings and how do these affect accessibility to building infrastructure by physically handicapped persons in Meru town. The results are presented in Table 4.16.

Table 4.16: Installation of curb cuts to enhance accessibility from knowledge acquired from consultants' accessibility trainings

Opinion	Frequency	Percentage
Yes	64	59.26
No	44	40.74
Total	**108**	**100**

Based on the finding the study established that majority (59.26%), had installed curb cuts to enhance accessibility from knowledge acquired from consultants' accessibility trainings and how do these affect accessibility to building infrastructure by physically handicapped persons in Meru town while 40.74% had not. This is important as is means that a vast majority of respondents 59.26% have been exposed to building infrastructure accessibility trainings especially through the installation of Curb Cuts which also shows that both the county government of Meru and the national government places greater emphasis on training and less emphasis on implementation. On the contrary a significant number of study participants 40.74% had not attended any building infrastructure accessibility training through installation of Curb Cuts which means that there exists poor communication on the existence of such training opportunities and it could also mean

that these particular group of construction consultants have minimal interest on this particular building infrastructure accessibility feature.

4.8 Inferential Statistics

4.8.1 Pearson Correlation Analysis

Correlation is a way to index the degree to which two or more variables are associated with or related to each other. The most widely used bi-variant correlation statistics is the Pearson product-movement coefficient, commonly called the Pearson correlation which was used in this study. Correlation coefficient between two variables ranges from +1 (i.e. perfect positive relationship) to -1 (i.e. perfect negative relationship).

Pearson correlation analysis was also conducted to show a linear relationship between the predictor variable and explanatory variables. It, thus, help in determining the strengths of association in the model, that is, which variable best explained the factors affecting accessibility of building infrastructure by physically handicapped persons in Meru Town, Meru County, Kenya. The results are presented in Table 4.17.

Table 4.17: Correlations table

	Accessibility Of Building Infrastructure		Building Regulations	Public Awareness	Financial Resources	Built Environment
Accessibility Of Building Infrastructure	Pearson Correlation	1		.		
	Sig. (2-tailed)					
Building Regulations	Pearson Correlation	0.822	1			
	Sig. (2-tailed)	0.009				
Public Awareness	Pearson Correlation	0. 793	0.028	1		
	Sig. (2-tailed)	0.007	0.145			
Financial Resources	Pearson Correlation	0.666	0.010	0.026	1	
	Sig. (2-tailed)	0.005	0.244	0.360		

Built Environment	Pearson Correlation	0.766	0.075	0.094	0.065	1
	Sig. (2-tailed)	0.007	0.207	0.115	0.251	

Source: Research findings (2016)

From the findings on the correlation analysis, the researcher conducted a Pearson Product Moment correlation. The correlation analysis between various factors affecting accessibility of building infrastructure by physically handicapped persons in Meru Town, Meru County, Kenya was conducted. The study found a strong positive correlation between Building Regulations and accessibility of building infrastructure as shown (r=.822, Sig. =.009). In addition the study found a strong positive correlation between Public Awareness and accessibility of building infrastructure (r=0.793, Sig. =.007). Further the study found a strong positive correlation between Financial Resources and accessibility of building infrastructure (r=.666, Sig. =.005). The study found a strong positive correlation between Built Environment and accessibility of building infrastructure (r=.766, Sig. =.007). In addition, independent variables are correlated among themselves.

In their study Columna, Yang, Arndt and Lieberman (2009) observed that there existed a positive relationship between the creation of disability awareness through the use of online media and the existence of positive attitudes towards the accessibility by physically handicapped persons to building infrastructure. They further argued that the more the people that the use of online disability awareness videos reached, the more the buildings with accessibility features such as ramps were constructed (Columna, et al., 2009).

4.7.2 Regression Analysis

The study, undertook a multiple regression analysis for evaluation of the influence among predictor variables. Statistical Package for Social Sciences (SPSS V 21.0) was used to code, enter and compute the measurements of the multiple regressions. The model summaries are presented in the Table 4.18;

4.3.2.1 Model Summary

Table 4.18: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.818[a]	0.669	0.6134	0.32344

Source: Research data, (2016)

R is the correlation coefficient which shows the relationship between the study variables, from the findings shown in the table above there was a strong positive relationship between the study variables as shown by 0.818. Adjusted R squared is coefficient of determination which tells us the variation in the dependent variable due to changes in the independent variable. From the findings in the above table the value of adjusted R squared was 0.669 indications that there was only a variation of 66.9 percent on accessibility of building infrastructure by physically handicapped persons are due to changes in Building Regulations, Public Awareness, Financial Resources and Built Environment at 95 percent confidence interval. This shows that 66.9 percent changes in on accessibility of building infrastructure by physically handicapped persons could be accounted to changes in Building Regulations, Public Awareness, Financial Resources and Built Environment.

4.3.2.3 ANOVA[a]

Table 4.19: ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	6.78	3	2.26	6.91593	0.002[b]
	Residual	625.2	40	15.63		
	Total	631.98	43			

Source: Research findings (2016)

F critical = 2.66

Based on the ANOVA statistics, the study determined that the regression model had a significance level of .002 signifying that the data could be modeled for the formulation of a

conclusion on the population parameters as the value of significance (p-value) were less than 5%. On the F test the computed value was greater than the critical value (6.91593>2.66) signifying Building Regulations, Public Awareness, Financial Resources and Built Environment all have a significant effects on level of accessibility of building infrastructure by physically handicapped persons. The significance value was less than 0.05 indicating that the model was significant.

4.3.2.3 Coefficients

The following table gives the coefficients which helps in establishing the regression line

Table 4.20: Table of Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	0.422	0.1388		0.32891	0
	Building Regulations,	0.0288	0.0041	0.02655	0.14236	0.015
	Public Awareness,	0.0489	0.0097555	0.03968	0.19918	0.01
	Financial Resources	0.0405	0.005634	0.0030176	0.13904	0.001
	Built Environment	0.0478	0.0097555	0.03968	0.19918	0.01

Source: Research findings (2016)

The established regression equation was

$\mathbf{Y} = -0.422 + 0.0288\ X_1 + 0.0489\ X_2 - 0.0405\ X_3 + 0.0478 x_4$

From the regression model obtained above, a unit change in Building Regulations cause an increase in accessibility of building infrastructure by physically handicapped persons by a factor of 0.0288, a unit change in Public Awareness cause an increase in accessibility of building infrastructure by physically handicapped persons by a factor of 0.0489, also a unit change in Financial Resources cause an increase in accessibility of building infrastructure by physically handicapped persons by a factor of 0.0405. a unit change in Built Environment cause an increase in accessibility of building infrastructure by physically handicapped persons by a factor of 0.0405. The study's analysis was conducted at 5% significance level. The obtained probability

value and α=0.05 was employed as the benchmark for collating whether the predictor variables were significant in the model. In the event that the probability value was less than α, then the predictor variable was significant otherwise it wasn't. For this study however, all the independent variables were significant in the model because their probability values were less than α=0.05.

Chan, Lee and Chan, (2009) found evidence that most public housing estates buildings had very limited provision for accessibility by physically handicapped persons. They further contend that most of these buildings in Hong Kong had no ramps for wheelchair users a factor that limited both the horizontal and vertical circulation of physically handicapped persons and aisles were not wide enough to allow their horizontal mobility (Chan, et. al., 2009). Further, in their study Kadir and Jamaludin, (2012) found evidence on a strong positive relationship between certain barriers in the built environment and the inaccessibility of public buildings by physically handicapped persons in Malaysia. They also demonstrate that the absence of ramps did in particular limit the vertical circulation of wheelchair users, the presence of heavy doors and uneven pedestrian pathways made horizontal circulation difficult and therefore denying them access to public services in these buildings (Kadir & Jamaludin, 2012). Similarly in his study Evcil, (2009) found evidence pointing to the fact that the nature of the built environment was significantly positively correlated with the accessibility of public buildings in Istanbul. He further contends that the presence of heavy doors and narrow doorways limited the horizontal circulation of wheelchair users while the limited presence of ramps and physically challenged persons elevators limited their vertical circulation all these denying them equal enjoyment of state opportunities offered in these public buildings (Evcil, 2009). Baris and Uslu, (2009) also observed that there was a significant positive relationship between barriers existing in the built environment and accessibility of buildings by physically handicapped persons in Ankara. They further demonstrated that steep gradient ramps, narrow aisles, uneven curb cuts, minimal parking spaces dedicated for PWML and heavy doors were all barriers to the accessibility of building infrastructure by physically handicapped persons (Baris & Uslu, 2009).

CHAPTER FIVE:
SUMMARY OF FINDINGS, DISCUSSIONS, CONCLUSIONS AND RECOMMENDATIONS

5.1: Introduction

This chapter presents the summary of the findings, conclusions, recommendations and ends with suggestions for further study.

5.2 Summary of the Findings

The study targeted a sample size of 128 respondents from which108 filled in and returned the questionnaires making a response rate of 84.4 %. This response rate was satisfactory to make conclusions for the study as it acted as a representative. According to Mugenda and Mugenda (2003), a response rate of 50 % is adequate for analysis and reporting, a rate of 60% is good and a response rate of 70% and over is excellent. Based on the assertion, the response rate was excellent. Results obtained show that majority of the respondents 34.3% were aged above 50 years. From the research finding, the study revealed that 28.7% of the respondents held Diploma.

5.2.1 Built Environment and Accessibility of Building Infrastructure by Physically Handicapped

From the research findings, greater emphasis was placed on Grab/Hand rails and Un-obstructed access routes both at 75.9% is the major accessibility features of building infrastructure by physically handicapped persons in Meru town. This is because majority of the respondents 61.1% agreed that Curb Cuts which are major accessibility features of building infrastructure by physically handicapped persons affect accessibility; they also agreed that Reserved Disabled Car Park, Obstructed Access Routes and Entrance Stairway steps affected accessibility to buildings in Meru Town by physically handicapped persons. Respondents agreed to a great extent that Grab/ Hand Rails at 75.9% were very important for sanitary accommodation of physically handicapped persons in building infrastructure. They also agreed that Spacious Sliding Doors, Centrally placed toilet, Spacious for Wheelchair, affected accessibility by physically handicapped persons in buildings in Meru Town and in particular sanitary accommodation. Further, majority of the respondents 75.9% agreed that Un-obstructed Indoor Access Routes

negatively affect the horizontal circulation of physically handicapped persons in building infrastructure in Meru Town, a sizeable number agreed Sliding doors, Narrow Aisles and Slippery Floors negatively affect the horizontal circulation of physically handicapped persons in building infrastructure in Meru Town. Based on the findings respondents agreed to a great extent also agreed that Elevators, Wheelchair Ramps, Steep Stairs and Escalator affect the vertical circulation of physically handicapped persons in building infrastructure in Meru Town.

5.2.2 Building Regulations and Accessibility of Building Infrastructure by Physically Handicapped

From the research findings, greater emphasis 59.4 % was placed on the existence of building regulations requiring that education facilities in Meru town had provided wheelchair ramps to enhance accessibility of physically handicapped persons and these respondents 59.4 % can use this knowledge to challenge the non-provision of these physically handicapped persons' accessibility features in these academic institutions. A sizeable number of respondents agreed that Building regulations on provision of grab rails in toilets in public housing does not exist in Meru Town, there exists building regulations on provision of wide aisles in public housing in Meru Town and Building regulations on provision of light doors in public housing does not exist in Meru Town. Majority of the respondents also agreed that there exists building regulations on provision of wheelchair ramps in education facilities in Meru Town, Building regulations on provision of spacious lavatory in education facilities does not exist in Meru Town, there exists building regulations on provision of curb cuts in education facilities in Meru Town and building regulations on provision of wide aisles in education facilities does not exist in Meru Town. From the research findings, majority of the respondents agreed that there exists building regulations on provision of wheelchair ramps in health care facilities in Meru Town building regulations on provision of disabled car parks in recreation facilities does not exist in Meru Town, there exists building regulations on provision of un-obstructed access routes in recreation facilities in Meru Town, and that building regulations on provision of elevators in recreation facilities does not exist in Meru Town.

5.2.3 Financial Resources and Accessibility of Building Infrastructure by Physically Handicapped

From the research findings, greater emphasis 59.3% was placed on the existence of an accessibility grant for the provisions of elevators in building infrastructure in Meru Town and these respondets could use this knowledge either to petition the devolved units to use these grants to provide this accessibility feature or engage in advocacy at the national level or hold demonstrations calling for the use of grants by building owners for the provision of this accessibility features. Other respondents agreed that there exists a county government accessibility fund for the provision of access routes to building infrastructure in Meru Town, 52.8 % respondents were equipped with knowledge on the accessibility government funds for the provision of disabled car parks in the built environment do not exist in Meru Town, There exists an accessibility grant for the provision of spacious lavatories in building infrastructure in Meru Town and that loans and mortgages are extended to owners of buildings for the provision of wheelchair ramps in old buildings in Meru Town.

From the research findings, other respondents agreed that There exists government accessibility funding for the provision of wide aisles in building infrastructure in Meru Town, Accessibility county government funds for the provision of sliding light doors in building infrastructure do not exist in Meru, There exists an accessibility grant for the provision of elevators in building infrastructure in Meru Town and that Loans and mortgages are extended to owners of buildings for the provision of escalators in old buildings infrastructure in Meru Town.

The Government of the Republic of Kenya through the Ministry of Education was committed to support inclusive education and health of Physically Handicapped as it was the main financier of the programme. However, its financial support was viewed as inadequate and delayed remittance was reported implying financial constraints. To meet the deficit, stakeholders such as Non Governmental Organizations, Parents Teachers Association, Business Community and individuals of good will were reported to give a hand.

5.2.4 Public Awareness and Accessibility of Building Infrastructure by Physically Handicapped

From the research findings, greater emphasis 59.3% was placed on both traditional media campaigns and online media campaigns on the provision of access routes in building

infrastructure in Meru Town and on the provision of escalators in old building infrastructure in Meru Town respectively. These respondents could use this knowledge either to petition the devolved units to use these grants to provide access routes or engage in advocacy at the national level or hold demonstrations calling for the use of grants by building owners for the provision of this accessibility features and it also means that a greater number of people have attached greater importance on escalators as major accessibility features of building infrastructure and it also means that the people have acquired ICT skills can always use this for advocacy on accessibility of building infrastructure by physically handicapped persons both at national government and county levels when these accessibility features are at risk.

Based on the finding the study established that majority (59.26%), had installed curb cuts to enhance accessibility from knowledge acquired from consultants' accessibility trainings and how do these affect accessibility to building infrastructure by physically handicapped persons in Meru town while 40.74% had not.

5.3 Discussions

This section focuses on the discussion of the findings relative to what previous researchers have found on the study variables. It correlates the findings with those of the previous literature and establishes where they are in agreement or they contradicted.

5.3.1 Built Environment and Accessibility of Building Infrastructure by Physically Handicapped

From the research findings, majority of the respondents agreed that Curb Cuts Reserved Disabled Car Park, Obstructed Access Routes and Entrance Stairway steps affected accessibility to buildings in Meru Town by physically handicapped persons. The findings are in line with the research by Sawyer and Bright, (2007) that the built environment does present barriers for the accessibility of building infrastructure especially for physically handicapped persons or People with Mobility Limitations (PWMLs). According to Sawyer and Bright (2007) characteristics of the built environment such as; size and space for approach and use, tolerance for error, equitable use and flexibility of use have a significant relationship with the accessibility or inaccessibility of building infrastructure by physically handicapped persons.

Respondents agreed to a great extent that Grab/ Hand Rails, Spacious Sliding Doors, Centrally placed toilet, Spacious for Wheelchair, affected accessibility by physically handicapped persons in buildings in Meru Town. These findings are in line with Chan, Lee and Chan, (2009) who found evidence that most public housing estates buildings had very limited provision for accessibility by physically handicapped persons. Kadir and Jamaludin, (2012) also found evidence on a strong positive relationship between certain barriers in the built environment and the inaccessibility of public buildings by physically handicapped persons in Malaysia. Further, in her study Banda-Chalwe, (2012) observed that barriers related to the built environment did have a significant relationship with the accessibility of public buildings by PWMLs in Zambia.

Further, majority of the respondents agreed that Un-obstructed Indoor Access Routes, Sliding doors, Narrow Aisles and Slippery Floors negatively affect the horizontal circulation of physically handicapped persons in building infrastructure in Meru Town. The findings are in line with the research by Tungaraza, (2010) who noted that features in the built environment such as; steep stairways, slippery floors and limited number of ramps were major barriers to the accessibility to building infrastructure in a public university by PWMLs students.

Based on the findings respondents agreed to a great extent also agreed that Elevators, Wheelchair Ramps, Steep Stairs and Escalator affect the vertical circulation of physically handicapped persons in building infrastructure in Meru Town. These findings are supported by Asfaw, Azage and Gebregergs (2016) who found evidence that exhibited a significant positive relationship between features in the built environment and the accessibility of lavatories by PWMLs in public buildings in Ethiopia. They further observed that features such as; narrow doors, absence of grab rails, elevated foot rests and the distance of the lavatories did make them inaccessible to PWMLs.

5.3.2 Building Regulations and Accessibility of Building Infrastructure by Physically Handicapped

From the research findings, majority of the respondents agreed that there exists building regulations on provision of wheelchair ramps in public housing in Meru Town, Building regulations on provision of grab rails in toilets in public housing does not exist in Meru Town, there exists building regulations on provision of wide aisles in public housing in Meru Town and

Building regulations on provision of light doors in public housing does not exist in Meru Town. The findings agree with those of the research by Kane, (2009) who found a significant positive relationship between adherence to ADA in a local university and accessibility to university buildings by physically handicapped students (PWMLs) in the U.S. In another study Ward, Franz and Adkins (2013) had found evidence of a positive relationship between adherence to DDDA and accessibility to public housing estates in Australia. They further noted that adherence to the DDDA had resulted to the construction of accessible lavatories completely fitted with grab rails, the installation of staircases that were friendly to crutch users and ramps that made the houses accessible to wheelchair users.

Majority of the respondents also agreed that there exists building regulations on provision of wheelchair ramps in education facilities in Meru Town, Building regulations on provision of spacious lavatory in education facilities does not exist in Meru Town, there exists building regulations on provision of curb cuts in education facilities in Meru Town and building regulations on provision of wide aisles in education facilities does not exist in Meru Town. The findings agree with those of the research by Parker, (2011) observed that the lack of enough federal funding for the construction of affordable accessible housing did create scarcity of accessible building infrastructure in The U.S. Similarly, Liebermann, (2013) found evidence that exhibited that lack of funding as the dominant influence leading to the shortage of accessible buildings in the U.S. She further argued lack of enough federal funding and grants created a situation in which developers accessed mortgages and loans from banks whose cost limited the number of accessibility features such as elevator lifts and adversely sliding doors adversely affecting the accessibility to this building infrastructure by PWMLs (Liebermann, 2013).

From the research findings, majority of the respondents agreed that there exists building regulations on provision of wheelchair ramps in health care facilities in Meru Town building regulations on provision of disabled car parks in recreation facilities does not exist in Meru Town, there exists building regulations on provision of un-obstructed access routes in recreation facilities in Meru Town, and that building regulations on provision of elevators in recreation facilities does not exist in Meru Town. The findings are in line with the research by Lee, (2011) observed that the Building and Construction Authority (BCA) provides $40-million Accessibility Fund to improve the accessibility of existing private buildings in Singapore. He however noted

that these funds are for buildings constructed before the implementation of mandatory requirements as per the Code on Barrier- Free Accessibility in Buildings (1990) and that they are limited to the construction of Ramps/Lifts for improving accessibility in building's first floor and accessible toilet in building's first floor or entrance level (Lee, 2011).

5.3.3 Financial Resources and Accessibility of Building Infrastructure by Physically Handicapped

From the research findings, a greater number of the study's participants agreed that there exists a county government accessibility fund for the provision of access routes to building infrastructure in Meru Town, Accessibility government funds for the provision of disabled car parks in the built environment do not exist in Meru Town, There exists an accessibility grant for the provision of spacious lavatories in building infrastructure in Meru Town and that loans and mortgages are extended to owners of buildings for the provision of wheelchair ramps in old buildings in Meru Town. The findings are in line with the research by Banda-Chalwe M., (2014) who noted that lack of enough government funding for public buildings did result to the construction of building infrastructure that lacked accessibility features such as disabled reserved car parking.

From the research findings, majority of the respondents agreed that There exists government accessibility funding for the provision of wide aisles in building infrastructure in Meru Town, Accessibility county government funds for the provision of sliding light doors in building infrastructure do not exist in Meru, There exists an accessibility grant for the provision of elevators in building infrastructure in Meru Town and that Loans and mortgages are extended to owners of buildings for the provision of escalators in old buildings infrastructure in Meru Town. The findings are in line with the research by Banda-Chalwe, (2014) who contends that the unavailability of accessibility funds resulted to the absence of wheelchair ramps, absence grab rails in toilets adversely affecting the accessibility to these building infrastructures by physically handicapped persons (PWMLs).

The Government of the Republic of Kenya through the Ministry of Education was committed to support inclusive education and health of Physically Handicapped as it was the main financier of the programme. However, its financial support was viewed as inadequate and delayed remittance was reported implying financial constraints. To meet the deficit, stakeholders such as Non

Governmental Organizations, Parents Teachers Association, Business Community and individuals of good will were reported to give a hand.

5.3.4 Public Awareness and Accessibility of Building Infrastructure by Physically Handicapped

From the research findings, a greater number of the respondents agreed that there exist traditional media campaigns for the provision of access routes to building infrastructure in Meru Town. They also agreed to a great extent that opinion leaders' forums on the provision of accessible toilets in building infrastructure in Meru Town do not exist, there exists an online campaign provision of disabled car parking outside of building infrastructure in Meru Town.

The findings are in line with the research by Gleeson, (2006) that public disability consciousness contributes to the public a sympathetic appreciation of the challenges physically handicapped persons (PWMLs) deal with. According to Prince, (2009) disability movements were using various models to create public awareness on issues affecting PWMLs such as accessibility to building infrastructure in Canada. Plantier-Royon, (2009) demonstrated that there existed a positive relationship between disability awareness raising stakeholder trainings and changes in the way building infrastructure was designed and constructed.

Further the respondents agreed that traditional media campaigns on of buildings for the provision of curb cuts in old buildings in Meru Town. Respondents agreed that Traditional media campaigns on provision of wheelchair ramps in old buildings in Meru Town. There exist opinion leaders' forums on the provision of elevators in building infrastructure in Meru Town. Online campaigns on the provision of escalators in building infrastructure in Meru town and There exist traditional media campaigns on the provision of less steep stairs in building infrastructure in Meru Town. Based on the finding the study established that majority (59.26%), had installed curb cuts to enhance accessibility from knowledge acquired from consultants' accessibility trainings and how do these affect accessibility to building infrastructure by physically handicapped persons in Meru town while 40.74% had not.

5.4 Conclusions of the Study

Based on research study findings several conclusions were arrived at;

5.4.1 Objective 1

Whilst failure to sufficiently attend to the health needs of physically challenged persons is deemed to be inexorable granted finite resources and spiralling health-care costs, it is also not clear whether the current technique is the best one in the long run given the barriers discussed in this study. In my opinion, to eradicate access obstacles and accommodate the needs of people with physical impairments in an effective and sustainable approach, will require innovative thinking and input from those intimately familiar with and affected by prevailing barriers.

5.4.2 Objective 2

The Disability Discrimination Act (DDA) of 1995 in the United Kingdom (U.K) and Equal Opportunities (Persons with Disability) Act (EOA) in Malta were important milestones in buildings accessibility legislation for PWMLs. They also argued that this created cordial partnerships and arrangements to institute the principle of acceptable modifications to improve access to modern and old buildings through the installation of ramps, access routes and PWMLs friendly toilets especially in government funded entities such as; academic institutions, hospitals and public housing estates. This could be applicable in Kenya and specifically in Meru town. The study also concludes that there exists failure on the supervisory role of National Construction Authority (NCA) in enforcement of building regulations especially on provision of wheelchair ramps in public housing because despite the existence of these regulations most buildings don't have these accessibility facilities.

5.4.3 Objective 3

While the government efforts in improving the access of building infrastructure by physically handicapped persons through legislation can be appreciated the same can not be said on the provision of financial resources to enhance the construction of unobstructed access routes and wide aisles. From the present research findings one can conclude that both the national and county governments don't lay much emphasis on the importance of these accessibility features adversely affecting the accessibility of building infrastructure by physically handicapped persons in Meru Town, Meru County.

5.4.4 Objective 4

It can also be concluded that, the existence of traditional media campaigns for the provision of access routes to building infrastructure and online campaigns provision of disabled car parking outside of building infrastructure in Meru Town could play a significant function in the improved accessibility of these buildings by physically handicapped persons.

In conclusion, the synopsis provides recommendations on the urgency for practical leadership on establishing and discharging pragmatic, viable, and affordable accessibility solutions. This research project reports anticipates contributing to this goal.

5.5 Recommendations

Based on the present findings and analysis, the study recommends an enforcement of Article 54 of the 2010 Constitution of Kenya and The Persons with Disability Act of 2003 both of which require that buildings housing education facilities and other buildings providing housing for other facilities are accessible by physically handicapped persons by authorities charged with construction supervisory roles such as the National Construction Authority (NCA).

Further, based on the findings the study also recommends that the government with the help other development partners should provide funding and capital grants to construct unobstructed access routes, spacious lavatories, grab/handrails and wheelchair ramps that would both improve accessibility of building infrastructure and sanitation accommodation for physically handicapped persons.

From the finds the study also recommends that effective advocacy either through traditional media, online and or through opinion leaders forums on accessibility of building infrastructure by physically handicapped that would improve public awareness on accessibility, enactment of relevant building regulations and provision of financial resources should be strengthened in developing countries like Kenya through devolved units.

5.6 Area for Further Study

The current study investigated the the factors affecting accessibility of building infrastructure by physically handicapped persons only in Meru Town, Meru County, Kenya. Research could be done on similar topic on in all major towns in Kenya including: Nairobi, Mombasa, Kisumu,

Nakuru and possibly rural towns such as: Isiolo Town, Machakos, Kakamega for comparison and generalization purposes.

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APPENDICES

Appendix I: Letter of Introduction

James Gituma Mwirigi,
P.O BOX 212 -60200,
MERU.

Dear Respondent,

FACTORS AFFECTING ACCESSIBILITY OF BUILDING INFRASTRUCTURE BY PHYSICALLY HANDICAPPED PERSONS THE CASE OF MERU TOWN MERU COUNTY KENYA

I am a student at the University of Nairobi-Meru Extra Mural Centre and currently pursuing a course of study for the degree in Master of Arts Degree in Project planning and Management. Pursuant to the pre-requisite course work, I am currently carrying out a research project on the factors affecting accessibility of building infrastructure by physically handicapped persons. The focus of my research will be building infrastructure in Meru town and this will involve use of questionnaires administered to members of the Association of Physically Handicapped of Kenya-Meru Branch, County Planning Officers and Consultants in the construction industry.

There are no correct and wrong answers to these statements and they are intended just to obtain opinions, views feelings. Kindly provide data which I require for this study through the provided study instrument. The data you provide will be used for research purpose only and your identity will be held confidential.

Thank you for your cooperation.

Yours faithfully,

James Gituma Mwirigi
Researcher
L50/76306/2014

Appendix II

Members of APDK Questionnaire

This questionnaire is to collect data for purely academic purposes. You are kindly requested to answer the questions as sincerely as possible. The information you will give will only be used for research purposes and your identity will be treated with confidentiality.

Fill the questionnaire by putting a tick √ in the appropriate box or by writing your response in the provided spaces.

PART A: PERSONAL INFORMATION

1. Please indicate your age?

   20-29 ☐ 30-39 ☐ 40-49 ☐ 50 and above ☐

2. Indicate your Gender.

   Male ☐ Female ☐

3. What is your level of education?

   Certificate ☐ Diploma ☐ Degree ☐ Masters and Above ☐

   Any other please specify

   _____

4. How long have you been a member of the APDK-Meru Branch? Please write down in the space provided?

   _____

PART B: BUILT ENVIRONMENT AND ACCESSIBILITY TO BUILDING INFRASTRUCTURE BY PHYSICALLY HANDICAPPED

5. To what extent do the following attributes of outside built environment affect accessibility to buildings in Meru Town by physically handicapped persons? Use a scale of 1-5 where 1= very great extent, 2= great extent, 3= moderate extent, 4= little extent and 5 = not at all

Statement	**1**	**2**	**3**	**4**	**5**
Curb Cuts					
Reserved Disabled Car Park					
Obstructed Access Routes					

Entrance Steep stairs					

6. To what extent do the following attributes of toilets affect accessible to them by physically handicapped persons in buildings in Meru Town? Use a scale of 1-5 where 1= very great extent, 2= great extent, 3= moderate extent, 4= little extent and 5 = not at all

Statement	**1**	**2**	**3**	**4**	**5**
Grab/ Hand Rails					
Spacious Sliding Doors					
Centrally placed toilet					
Spacious for Wheelchair					

7. To what extent do features in the built environment affect the horizontal circulationof physically handicapped personsin building infrastructure in Meru Town? Use a scale of 1-5 where 1= very great extent, 2= great extent, 3= moderate extent, 4= little extent and 5 = not at all

Statement	**1**	**2**	**3**	**4**	**5**
Un-obstructed Indoor Access Routes					
Sliding doors					
Narrow Aisles					
Slippery Floors					

8. To what extent do features in the built environment affect the vertical circulation of physically handicapped persons in building infrastructure in Meru Town? Use a scale of 1-5 where 1= very great extent, 2= great extent, 3= moderate extent, 4= little extent and 5 = not at all

Statement	**1**	**2**	**3**	**4**	**5**
Elevators					
Wheelchair Ramps					
Steep Stairs					
Escalator					

9. Suggest measures that can be put in place to improve built environment features to make building infrastructure more accessible by physically handicapped persons?

_____
_____
_____
_____

PART C: BUILDING REGULATIONS AND ACCESSIBILITY TO BUILDING INFRASTRUCTURE BY PHYSICALLY HANDICAPPED

10. To what extent do you agree with the following statements? Use a scale of 1-5 where 1= strongly disagree, 2= disagree, 3= neutral , 4= agree and 5 = strongly agree

Statement	**1**	**2**	**3**	**4**	**5**
There exists building regulations on provision of wheelchair ramps in public housing in Meru Town.					
Building regulations on provision of grab rails in toilets in public housing does not exist in Meru Town.					
There exists building regulations on provision of wide aisles in public housing in Meru Town.					
Building regulations on provision of light doors in public housing does not exist in Meru Town.					

11. To what extent do you agree with the following statements? Use a scale of 1-5 where 1= strongly disagree, 2= disagree, 3= neutral , 4= agree and 5 = strongly agree

Statement	**1**	**2**	**3**	**4**	**5**
There exists building regulations on provision of wheelchair ramps in health care facilities in Meru Town.					
Building regulations on provision of disabled car parks in health care facilities does not exist in Meru Town.					
There exists building regulations on provision of un-obstructed access routesin health care facilities in Meru Town.					
Building regulations on provision of light doors in healthcare facilities does not exist in Meru Town.					

12. To what extent do you agree with the following statements? Use a scale of 1-5 where 1= strongly disagree, 2= disagree, 3= neutral , 4= agree and 5 = strongly agree

Statement	**1**	**2**	**3**	**4**	**5**
There exists building regulations on provision of wheelchair ramps in education facilities in Meru Town.					
Building regulations on provision of spacious lavatory in education facilities does not exist in Meru Town.					
There exists building regulations on provision of curb cuts in education					

facilities in Meru Town.					
Building regulations on provision of wide aisles in education facilities does not exist in Meru Town.					

13. To what extent do you agree with the following statements? Use a scale of 1-5 where 1= strongly disagree, 2= disagree, 3= neutral , 4= agree and 5 = strongly agree

Statement	**1**	**2**	**3**	**4**	**5**
There exists building regulations on provision of wheelchair ramps in health care facilities in Meru Town.					
Building regulations on provision of disabled car parks in recreation facilities does not exist in Meru Town.					
There exists building regulations on provision of un-obstructed access routes in recreation facilities in Meru Town.					
Building regulations on provision of elevators in recreation facilities does not exist in Meru Town.					

14. Suggest measures that can be put in place to expedite the enactment of building regulations that enhance accessibility to building infrastructure by physically handicapped persons in Meru Town?

_____

_____

_____

_____

PART D: FINANCIAL RESOURCES AND ACCESSIBILITY TO BUILDING INFRASTRUCTURE BY PHYSICALLY HANDICAPPED

15. Are there accessibility government funds and how do these affect improved accessibility to building infrastructure by physically handicapped persons in Meru town?

    Yes. ☐ No. ☐

    Explain your answer.

    _____

    _____

    _____

16. To what extent do you agree with the following statements? Use a scale of 1-5 where 1= strongly disagree, 2= disagree, 3= neutral , 4= agree and 5 = strongly agree

Statement	**1**	**2**	**3**	**4**	**5**
There exists a county government accessibility fund for the provision of access routes to building infrastructure in Meru Town.					
Accessibility government funds for the provision of disabled car parks in the built environment do not exist in Meru Town.					
There exists an accessibility grant for the provision of spacious lavatories in building infrastructure in Meru Town.					
Loans and mortgages are extended to owners of buildings for the provision of wheelchair ramps in old buildings in Meru Town.					

17. To what extent do you agree with the following statements? Use a scale of 1-5 where 1= strongly disagree, 2= disagree, 3= neutral , 4= agree and 5 = strongly agree

Statement	**1**	**2**	**3**	**4**	**5**
There exists government accessibility funding for the provision of wide aisles in building infrastructure in Meru Town.					
Accessibility county government funds for the provision of sliding light doors in building infrastructure do not exist in Meru Town.					
There exists an accessibility grant for the provision of elevators in building infrastructure in Meru Town.					
Loans and mortgages are extended to owners of buildings for the provision of escalators in old buildings infrastructure in Meru Town.					

18. How many un-obstructed access routes have been constructed through county government funding and how do these affect accessibility to building infrastructure by physically handicapped persons in Meru town?

Explain your answer.

_____

_____

_____

_____

PART E: PUBLIC AWARENESS AND ACCESSIBILITY TO BUILDING INFRASTRUCTURE BY PHYSICALLY HANDICAPPED

19. To what extent do you agree with the following statements? Use a scale of 1-5 where 1= strongly disagree, 2= disagree, 3= neutral , 4= agree and 5 = strongly agree

Statement	**1**	**2**	**3**	**4**	**5**
There exist traditional media campaigns for the provision of access routes to building infrastructure in Meru Town.					
Opinion leaders' forums on the provision of accessible toilets in building infrastructure in Meru Town do not exist.					
There exists an online campaign provision of disabled car parkingoutside of building infrastructure in Meru Town.					
Traditional media campaigns on of buildings for the provision of curb cuts in old buildings in Meru Town.					

20. To what extent do you agree with the following statements? Use a scale of 1-5 where 1= strongly disagree, 2= disagree, 3= neutral , 4= agree and 5 = strongly agree

Statement	**1**	**2**	**3**	**4**	**5**
Traditional media campaigns on provision of wheelchair ramps in old buildings in Meru Town.					
There exist opinion leaders' forums on the provision of elevators in building infrastructure in Meru					

Town.					
Online campaigns on the provision of escalators in building infrastructure in Meru Town.					
There exist traditional media campaigns on the provision of less steep stairs in building infrastructure in Meru Town.					

21. To what extent do you agree with the following statements? Use a scale of 1-5 where 1= strongly disagree, 2= disagree, 3= neutral , 4= agree and 5 = strongly agree

Statement	**1**	**2**	**3**	**4**	**5**
There exist traditional media campaigns on provision of non-slippery floors in building infrastructure in Meru Town.					
Opinion leaders' forums on the provision of light sliding doors in building infrastructure in Meru Town do not exist.					
There exist online campaigns on the provision of wide aisles in building infrastructure in Meru Town.					
Traditional media campaigns on the provision of un-obstructed indoor access routes in building infrastructure in Meru Town do not exist.					

22. Has the Association of Physically Handicapped persons (APDK) Meru branch held opinion leaders forums on accessibility and how do these affect accessibility to building infrastructure by physically handicapped persons in Meru town?

    Yes. ☐ No. ☐

    Explain your answer.

    _____

    _____

    _____

23. Suggest public awareness measures targeting developers that can be adopted to improve accessibility to building infrastructure by physically handicapped persons?

    _____

    _____

    _____

    _____

Appendix III

County Planning Officers' Questionnaire

This questionnaire is to collect data for purely academic purposes. You are kindly requested to answer the questions as sincerely as possible. The information you will give will only be used for research purposes and your identity will be treated with confidentiality.

Fill the questionnaire by putting a tick √ in the appropriate box or by writing your response in the provided spaces.

PART A: PERSONAL INFORMATION

1. Please indicate your age?

   20-29 ☐ 30-39 ☐ 40-49 ☐ 50 and above ☐

2. Indicate your Gender.

   Male ☐ Female ☐

3. What is your level of education?

   Certificate ☐ Diploma ☐ Degree ☐ Masters and Above ☐

Any other please specify

_____

4. How long have you worked as a county planning officer? Please write down in the space provided?

_____

PART B: BUILT ENVIRONMENT AND ACCESSIBILITY TO BUILDING INFRASTRUCTURE BY PHYSICALLY HANDICAPPED

5. To what extent do the following attributes of outside built environment affect accessibility to buildings in Meru Town by physically handicapped persons? Use a scale of 1-5 where 1= very great extent, 2= great extent, 3= moderate extent, 4= little extent and 5 = not at all

Statement	**1**	**2**	**3**	**4**	**5**
Curb Cuts					
Reserved Disabled Car Park					
Obstructed Access Routes					

Entrance Steep stairs					

6. To what extent do the following attributes of toilets affect accessible to them by physically handicapped persons in buildings in Meru Town? Use a scale of 1-5 where 1= very great extent, 2= great extent, 3= moderate extent, 4= little extent and 5 = not at all

Statement	**1**	**2**	**3**	**4**	**5**
Grab/ Hand Rails					
Spacious Sliding Doors					
Centrally placed toilet					
Spacious for Wheelchair					

7. To what extent do features in the built environment affect the horizontal circulation of physically handicapped persons in building infrastructure in Meru Town? Use a scale of 1-5 where 1= very great extent, 2= great extent, 3= moderate extent, 4= little extent and 5 = not at all

Statement	**1**	**2**	**3**	**4**	**5**
Un-obstructed Indoor Access Routes					
Sliding doors					
Narrow Aisles					
Slippery Floors					

8. To what extent do features in the built environment affect the vertical circulation of physically handicapped persons in building infrastructure in Meru Town? Use a scale of 1-5 where 1= very great extent, 2= great extent, 3= moderate extent, 4= little extent and 5 = not at all

Statement	**1**	**2**	**3**	**4**	**5**
Elevators					
Wheelchair Ramps					
Steep Stairs					
Escalator					

9. Suggest measures that can be put in place to improve built environment features to make building infrastructure more accessible by physically handicapped persons?

_____
_____
_____
_____

PART C: BUILDING REGULATIONS AND ACCESSIBILITY TO BUILDING INFRASTRUCTURE BY PHYSICALLY HANDICAPPED

10. To what extent do you agree with the following statements? Use a scale of 1-5 where 1= strongly disagree, 2= disagree, 3= neutral , 4= agree and 5 = strongly agree

Statement	**1**	**2**	**3**	**4**	**5**
There exists building regulations on provision of wheelchair ramps in public housing in Meru Town.					
Building regulations on provision of grab rails in toilets in public housing does not exist in Meru Town.					
There exists building regulations on provision of wide aisles in public housing in Meru Town.					
Building regulations on provision of light doors in public housing does not exist in Meru Town.					

11. To what extent do you agree with the following statements? Use a scale of 1-5 where 1= strongly disagree, 2= disagree, 3= neutral , 4= agree and 5 = strongly agree

Statement	**1**	**2**	**3**	**4**	**5**
There exists building regulations on provision of wheelchair ramps in health care facilities in Meru Town.					
Building regulations on provision of disabled car parks in health care facilities does not exist in Meru Town.					
There exists building regulations on provision of un-obstructed access routes in health care facilities in Meru Town.					
Building regulations on provision of light doors in healthcare facilities does not exist in Meru Town.					

12. To what extent do you agree with the following statements? Use a scale of 1-5 where 1= strongly disagree, 2= disagree, 3= neutral , 4= agree and 5 = strongly agree

Statement	**1**	**2**	**3**	**4**	**5**
There exists building regulations on provision of wheelchair ramps in education facilities in Meru Town.					
Building regulations on provision of spacious lavatory in education facilities does not exist in Meru Town.					
There exists building regulations on					

provision of curb cuts in education facilities in Meru Town.					
Building regulations on provision of wide aisles in education facilities does not exist in Meru Town.					

13. To what extent do you agree with the following statements? Use a scale of 1-5 where 1= strongly disagree, 2= disagree, 3= neutral , 4= agree and 5 = strongly agree

Statement	**1**	**2**	**3**	**4**	**5**
There exists building regulations on provision of wheelchair ramps in health care facilities in Meru Town.					
Building regulations on provision of disabled car parks in recreation facilities does not exist in Meru Town.					
There exists building regulations on provision of un-obstructed access routes in recreation facilities in Meru Town.					
Building regulations on provision of elevators in recreation facilities does not exist in Meru Town.					

14. Suggest measures that can be put in place to expedite the enactment of building regulations that enhance accessibility to building infrastructure by physically handicapped persons in Meru Town?

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PART D: FINANCIAL RESOURCES AND ACCESSIBILITY TO BUILDING INFRASTRUCTURE BY PHYSICALLY HANDICAPPED

24. Are there accessibility government funds and how do these affect improved accessibility to building infrastructure by physically handicapped persons in Meru town?

    Yes. ☐ No. ☐

    Explain your answer.

    _____

    _____

    _____

25. To what extent do you agree with the following statements? Use a scale of 1-5 where 1= strongly disagree, 2= disagree, 3= neutral , 4= agree and 5 = strongly agree

Statement	**1**	**2**	**3**	**4**	**5**
There exists a county government accessibility fund for the provision of access routes to building infrastructure in Meru Town.					
Accessibility government funds for the provision of disabled car parks in the built environment do not exist in Meru Town.					
There exists an accessibility grant for the provision of spacious lavatories in building infrastructure in Meru Town.					
Loans and mortgages are extended to owners of buildings for the provision of wheelchair ramps in old buildings in Meru Town.					

26. To what extent do you agree with the following statements? Use a scale of 1-5 where 1= strongly disagree, 2= disagree, 3= neutral , 4= agree and 5 = strongly agree

Statement	**1**	**2**	**3**	**4**	**5**
There exists government accessibility funding for the provision of wide aislesin building infrastructure in Meru Town.					
Accessibility county government funds for the provision of sliding light doors in building infrastructure do not exist in Meru Town.					
There exists an accessibility grant for the provision of elevators in building infrastructure in Meru Town.					
Loans and mortgages are extended to owners of buildings for the provision of escalators in old buildings infrastructure in Meru Town.					

27. How many un-obstructed access routes have been constructed through county government funding and how do these affect accessibility to building infrastructure by physically handicapped persons in Meru town?

Explain your answer.

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PART E: PUBLIC AWARENESS AND ACCESSIBILITY TO BUILDING INFRASTRUCTURE BY PHYSICALLY HANDICAPPED

28. To what extent do you agree with the following statements? Use a scale of 1-5 where 1= strongly disagree, 2= disagree, 3= neutral , 4= agree and 5 = strongly agree

Statement	**1**	**2**	**3**	**4**	**5**
There exist traditional media campaigns for the provision of access routes to building infrastructure in Meru Town.					
Opinion leaders' forums on the provision of accessible toilets in building infrastructure in Meru Town do not exist.					
There exists an online campaign provision of disabled car parking outside of building infrastructure in Meru Town.					
Traditional media campaigns on of buildings for the provision of curb cuts in old buildings in Meru Town.					

29. To what extent do you agree with the following statements? Use a scale of 1-5 where 1= strongly disagree, 2= disagree, 3= neutral , 4= agree and 5 = strongly agree

Statement	**1**	**2**	**3**	**4**	**5**
Traditional media campaigns on provision of wheelchair ramps in old buildings in Meru Town.					
There exist opinion leaders' forums on the provision of elevators in					

building infrastructure in Meru Town.					
Online campaigns on the provision of escalators in building infrastructure in Meru Town.					
There exist traditional media campaigns on the provision of less steep stairs in building infrastructure in Meru Town.					

30. To what extent do you agree with the following statements? Use a scale of 1-5 where 1= strongly disagree, 2= disagree, 3= neutral , 4= agree and 5 = strongly agree

Statement	**1**	**2**	**3**	**4**	**5**
There exist traditional media campaigns on provision of non-slippery floors in building infrastructure in Meru Town.					
Opinion leaders' forums on the provision of light sliding doors in building infrastructure in Meru Town do not exist.					
There exist online campaigns on the provision of wide aisles in building infrastructure in Meru Town.					
Traditional media campaigns on the provision of un-obstructed indoor access routes in building infrastructure in Meru Town do not exist.					

31. Suggest public awareness measures targeting developers that can be adopted to improve accessibility to building infrastructure by physically handicapped persons?

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Appendix IV
Construction Consultants' Questionnaire

This questionnaire is to collect data for purely academic purposes. You are kindly requested to answer the questions as sincerely as possible. The information you will give will only be used for research purposes and your identity will be treated with confidentiality.

Fill the questionnaire by putting a tick √ in the appropriate box or by writing your response in the provided spaces.

PART A: PERSONAL INFORMATION

1. Please indicate your age?

   20-30 ☐ 30-39 ☐ 40-49 ☐ 50 and above ☐

2. Indicate your Gender.

   Male ☐ Female ☐

3. What is your level of education?

   Certificate ☐ Diploma ☐ Degree ☐ Masters and Above ☐

   Any other please specify

   _____

4. How long have you worked as a construction consultant? Please write down in the space provided?

   _____

PART B: BUILT ENVIRONMENT AND ACCESSIBILITY TO BUILDING INFRASTRUCTURE BY PHYSICALLY HANDICAPPED

5. To what extent do the following attributes of outside built environment affect accessibility to buildings in Meru Town by physically handicapped persons? Use a scale of 1-5 where 1= very great extent, 2= great extent, 3= moderate extent, 4= little extent and 5 = not at all

Statement	**1**	**2**	**3**	**4**	**5**
Curb Cuts					
Reserved Disabled Car Park					
Obstructed Access Routes					
Entrance Stairway steps					

6. To what extent do the following attributes of toilets affect accessible to them by physically handicapped persons in buildings in Meru Town? Use a scale of 1-5 where 1= very great extent, 2= great extent, 3= moderate extent, 4= little extent and 5 = not at all

Statement	**1**	**2**	**3**	**4**	**5**
Grab/ Hand Rails					
Spacious Sliding Doors					
Centrally placed toilet					
Spacious for Wheelchair					

7. To what extent do features in the built environment affect the horizontal circulation of physically handicapped persons in building infrastructure in Meru Town? Use a scale of 1-5 where 1= very great extent, 2= great extent, 3= moderate extent, 4= little extent and 5 = not at all

Statement	**1**	**2**	**3**	**4**	**5**
Un-obstructed Indoor Access Routes					
Sliding doors					
Narrow Aisles					
Slippery Floors					

8. To what extent do features in the built environment affect the vertical circulation of physically handicapped persons in building infrastructure in Meru Town? Use a scale of 1-5 where 1= very great extent, 2= great extent, 3= moderate extent, 4= little extent and 5 = not at all

Statement	**1**	**2**	**3**	**4**	**5**
Elevators					
Wheelchair Ramps					
Steep Stairs					
Escalator					

9. Suggest measures that can be put in place to improve built environment features to make building infrastructure more accessible by physically handicapped persons?

_____
_____
_____
_____

PART C: BUILDING REGULATIONS AND ACCESSIBILITY TO BUILDING INFRASTRUCTURE BY PHYSICALLY HANDICAPPED

10. To what extent do you agree with the following statements? Use a scale of 1-5 where 1= strongly disagree, 2= disagree, 3= neutral , 4= agree and 5 = strongly agree

Statement	**1**	**2**	**3**	**4**	**5**
There exists building regulations on provision of wheelchair ramps in public housing in Meru Town.					
Building regulations on provision of grab rails in toilets in public housing does not exist in Meru Town.					
There exists building regulations on provision of wide aisles in public housing in Meru Town.					
Building regulations on provision of light doors in public housing does not exist in Meru Town.					

11. To what extent do you agree with the following statements? Use a scale of 1-5 where 1= strongly disagree, 2= disagree, 3= neutral , 4= agree and 5 = strongly agree

Statement	**1**	**2**	**3**	**4**	**5**
There exists building regulations on provision of wheelchair ramps in health care facilities in Meru Town.					
Building regulations on provision of disabled car parks in health care facilities does not exist in Meru Town.					
There exists building regulations on provision of un-obstructed access routes in health care facilities in Meru Town.					
Building regulations on provision of light doors in healthcare facilities does not exist in Meru Town.					

12. To what extent do you agree with the following statements? Use a scale of 1-5 where 1= strongly disagree, 2= disagree, 3= neutral , 4= agree and 5 = strongly agree

Statement	**1**	**2**	**3**	**4**	**5**
There exists building regulations on provision of wheelchair ramps in education facilities in Meru Town.					
Building regulations on provision of spacious lavatory in education facilities does not exist in Meru Town.					
There exists building regulations on provision of curb cuts in education					

facilities in Meru Town.					
Building regulations on provision of wide aisles in education facilities does not exist in Meru Town.					

13. To what extent do you agree with the following statements? Use a scale of 1-5 where 1= strongly disagree, 2= disagree, 3= neutral , 4= agree and 5 = strongly agree

Statement	**1**	**2**	**3**	**4**	**5**
There exists building regulations on provision of wheelchair ramps in health care facilities in Meru Town.					
Building regulations on provision of disabled car parks in recreation facilities does not exist in Meru Town.					
There exists building regulations on provision of un-obstructed access routes in recreation facilities in Meru Town.					
Building regulations on provision of elevators in recreation facilities does not exist in Meru Town.					

14. Suggest measures that can be put in place to expedite the enactment of building regulations that enhance accessibility to building infrastructure by physically handicapped persons in Meru Town?

_____

_____

_____

_____

PART D: FINANCIAL RESOURCES AND ACCESSIBILITY TO BUILDING INFRASTRUCTURE BY PHYSICALLY HANDICAPPED

15. Are there accessibility governments funds given to developers to improve accessibility of old building infrastructure and how do these affect improved accessibility to building infrastructure by physically handicapped persons in Meru town?

    Yes. ☐ No. ☐

    Explain your answer.

    _____

    _____

    _____

16. To what extent do you agree with the following statements? Use a scale of 1-5 where 1= strongly disagree, 2= disagree, 3= neutral , 4= agree and 5 = strongly agree

Statement	**1**	**2**	**3**	**4**	**5**
There exists a county government accessibility fund for the provision of access routes to building infrastructure in Meru Town.					
Accessibility government funds for the provision of disabled car parks in the built environment do not exist in Meru Town.					
There exists an accessibility grant for the provision of spacious lavatories in building infrastructure in Meru Town.					
Loans and mortgages are extended to owners of buildings for the provision of wheelchair ramps in old buildings in Meru Town.					

17. To what extent do you agree with the following statements? Use a scale of 1-5 where 1= strongly disagree, 2= disagree, 3= neutral , 4= agree and 5 = strongly agree

Statement	**1**	**2**	**3**	**4**	**5**
There exists government accessibility funding for the provision of wide aisles in building infrastructure in Meru Town.					
Accessibility county government funds for the provision of sliding light doors in building infrastructure do not exist in Meru Town.					
There exists an accessibility grant for the provision of elevators in building infrastructure in Meru Town.					
Loans and mortgages are extended to owners of buildings for the provision of escalators in old buildings infrastructure in Meru Town.					

18. How many un-obstructed access routes that have been constructed through county government funding and how do these affect accessibility to building infrastructure by physically handicapped persons in Meru town?

Explain your answer.

_____

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PART E: PUBLIC AWARENESS AND ACCESSIBILITY TO BUILDING INFRASTRUCTURE BY PHYSICALLY HANDICAPPED

19. How many accessibility training workshops targeting consultants and developers have you attended and how do these affect accessibility to building infrastructure by physically handicapped persons in Meru town?

    Explain your answer.

    _____

    _____

    _____

20. To what extent do you agree with the following statements? Use a scale of 1-5 where 1= strongly disagree, 2= disagree, 3= neutral , 4= agree and 5 = strongly agree

Statement	**1**	**2**	**3**	**4**	**5**
There exist traditional media campaigns for the provision of access routes to building infrastructure in Meru Town.					
Opinion leaders' forums on the provision of accessible toilets in building infrastructure in Meru Town do not exist.					
There exists an online campaign provision of disabled car parking outside of building infrastructure in Meru Town.					
Traditional media campaigns on of buildings for the provision of curb cuts in old buildings in Meru Town.					

21. To what extent do you agree with the following statements? Use a scale of 1-5 where 1= strongly disagree, 2= disagree, 3= neutral , 4= agree and 5 = strongly agree

Statement	**1**	**2**	**3**	**4**	**5**
Traditional media campaigns on provision of wheelchair ramps in old buildings in Meru Town.					
There exist opinion leaders' forums on the provision of elevators in building infrastructure in Meru Town.					
Online campaigns on the provision of escalators in building infrastructure in Meru Town.					
There exist traditional media campaigns on the provision of less steep stairs in building infrastructure in Meru Town.					

22. To what extent do you agree with the following statements? Use a scale of 1-5 where 1= strongly disagree, 2= disagree, 3= neutral , 4= agree and 5 = strongly agree

Statement	**1**	**2**	**3**	**4**	**5**
There exist traditional media campaigns on provision of non-slippery floors in building infrastructure in Meru Town.					
Opinion leaders' forums on the provision of light sliding doors in building infrastructure in Meru Town do not exist.					

There exist online campaigns on the provision of wide aisles in building infrastructure in Meru Town.					
Traditional media campaigns on the provision of un-obstructed indoor access routes in building infrastructure in Meru Town do not exist.					

23. Have you installed curb cuts to enhance accessibility from knowledge acquired from consultants' accessibility trainings and how do these affect accessibility to building infrastructure by physically handicapped persons in Meru town?

Yes. ☐ No. ☐

Explain your answer.

_____

_____

_____

24. Suggest public awareness measures targeting developers that can be adopted to improve accessibility to building infrastructure by physically handicapped persons?

_____

_____

_____

_____