UNIVERSITY OF CAPE COAST

MANAGEMENT OF PEDESTRIAN WALKWAYS IN ACCRA METROPOLIS

CLIFFORD KORANTENG

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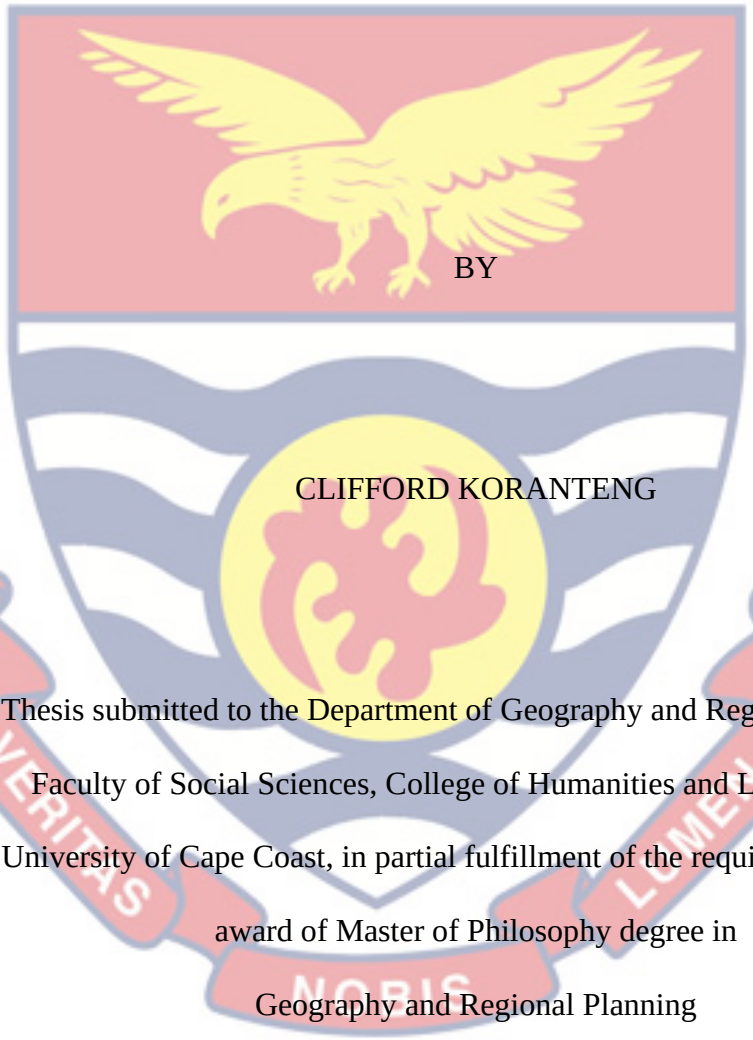

BY

CLIFFORD KORANTENG

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DECLARATION

Candidate's Declaration

I hereby declare that this thesis is the result of my own original research and that no part pf it has been presented for another degree in this university or elsewhere.

Candidate's Signature ……..……... Date ……

Name: Clifford Koranteng

Supervisor's Declaration

We hereby declare that the preparation and presentation of the thesis were supervised in accordance with the guidelines on supervision of thesis laid down by the University of Cape Coast.

Name of Supervisor: Dr. (Mrs.) Regina Obilie Amoako-Sakyi

Signature..... Date.....

ABSTRACT

Walking is a sustainable and basic mode of transport worldwide. In developing countries, it is a crucial means of transportation. Walkways provide the main infrastructure that affords pedestrians the ability to manoeuvre safely through the built environment. Faced with rapid motorization and increased congestion, government investments have focused more on vehicular infrastructure expansion at the expense of pedestrians in Accra, Ghana. Available spaces for pedestrians have also been found to be inadequate, highly encroached and obstructed, and poorly maintained. Thus, there is a need to assess the management of pedestrian walkways and sidewalks in Accra Metropolis. The study adopted a sequential explanatory mixed-methods design, drawing on the model of public space management. A mixed sampling technique was used to sample 239 everyday users and 7 institutional heads. Data was obtained from the field using a questionnaire, an interview guide, and a field auditing scheme. Simple regression, PCA, and MAXQDA were used to analyse the results. The results of the study revealed that the existing conditions of pedestrian walkways within the metropolis were poor. The results also suggest that organisational practises in the management of pedestrian walkways were unsatisfactory. The challenges confronting institutions mandated with the management of pedestrian walkways and sidewalks border on issues such as political interference, institutional inadequacies in enforcement, lack of funds, lack of skilled staff and logistics, poor institutional and departmental coordination, and a lack of policy direction. The study recommends that institutions and departments should be adequately resourced in their undertakings. A policy on design and standards should be developed to manage non-motorised facilities like walkways and sidewalks to ensure their sustainability.

KEY WORDS

Management

Ordinal Regression

PCA

Pedestrian

Walkways

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DEDICATION

To my mother Elizabeth Agyemang

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LIST ACRONYMS

AARP	American Association of Retired Persons
AASHTO	American Association of State Highway and Transportation Officials
AMA	Accra Metropolitan Assembly
BRT	Bus Rapid Transit
EFA	Exploratory Factor Analysis
FHWA	Federal Highway Administration
GSS	Ghana Statistical Service
IRAP	International Road Assessment Program
ITE	Institute of Transportation Engineers
KMO	Kaiser Meyer Olkin
L.I.	Legislative Instrument
NMT	Non-Motorised Transport
NRSC	National Road Safety Commission
ODK	Open Data Kit
PCA	Principal Component Analysis
PNDC	Provisional National Defence Council
PWD	Persons with Disability
SPSS	Statistical Package for Social Sciences
TRB	Transportation Research Board
U.S.	United States
UK	United Kingdom
UN	United Nations
UNDP	United Nations Development Programme

UNEP	United Nations Environment Programme
W.H. O	World Health Organisation

CHAPTER ONE

INTRODUCTION

Background to the Study

Over the years, academic disciplines such as geography, cultural studies, criminology, planning, and architecture have expressed significant and rising concerns about the role of public spaces in urban life. The definition and role of public spaces have been explored to ascertain and understand current changes and their consequences. The recent interest can be partly attributed to the lack of concern for the subject among policy communities around the globe (Carmona, De Magalhaes, & Hammond, 2008). Current studies indicate that "people often place the quality of their local environment high on the agenda of issues that concern them and most need improving, and often higher than the "headline" public services such as education and health" (MORI, 2002, as cited in Carmona et al. 2008, p. 3).

Public spaces are owned by the entire public and act as the originators of socio-cultural interactions. Patterns of human conduct define how to use space. Consequently, the success of an urban design is based on how well it satisfies human principles and expectations (Movahed, Azad, & Zakeri, 2012). The world's population is rapidly urbanising. It is projected that by 2050, 70 percent of the world's population will be urbanised. Africa and Asia have been earmarked as the fastest-growing continents, with figures standing at 12 percent and 51 percent, respectively. By 2050, these figures are projected to increase to 20 percent for Africa and 55 percent for Asia (UN-Habitat, n.d.). Urbanisation has been identified as a powerful driver for economic, social, political, and cultural transformation. However, the prosperity of nations is intimately linked

to the prosperity of their cities and, most importantly, their public spaces, as these spaces play a vital role in the lives of cities (UN-Habitat, 2013). Defining the term "public space" seems like an almost impossible task. The subject has been variously defined, both broadly and narrowly. Borrowing the definition proposed by Carmona et al. (2008),

"*Public space (broadly defined) relates to all those parts of the built and natural environment, public and private, internal and external, urban and rural, where the public have free, although not necessarily unrestricted, access. It encompasses: all the streets, squares and other rights of way, whether predominantly in residential, commercial or community/civic uses; the open spaces and parks; the open countryside; the 'public/private' spaces both internal and external where public access is welcomed – if controlled – such as private shopping centres or rail and bus stations; and the interiors of key public and civic buildings such as libraries, churches, or town halls*"- (Carmona et. al 2008: p.4-5).

On the other hand, Carmona et al., (2008) narrowly define public space as "all those parts of the built and natural environment where the public has free access. It encompasses: all the streets, squares and other rights of way, whether predominantly in residential, commercial or community/ civic uses; the open spaces and parks; and the 'public/private' spaces where public access is unrestricted (at least during daylight hours). It includes the interfaces with key internal and external and private spaces to which the public normally has free access". (Carmona et. al 2008: p.4-5)

Within the context of this work, public spaces are operationalised as commercial areas, community centres, parks, and walkways. With an increase

in the acquisition and use of motor vehicles and their associated usage, separation of pedestrian paths from vehicles is deemed inevitable in order to ensure pedestrian safety (Movahed et al., 2012). Separated spaces for pedestrians to walk have been in existence for thousands of years. This infrastructure system is regarded as a key element that performs certain vital societal and economic functions (Sousa, Coutinho-Rodrigues, & Natividade-Jesus, 2017). Walkways may be seen as the "portion of the public right-of-way that provides a separate area for people travelling on foot" ("A Pedestrian Facility Design," 1996, p. 42). Walkways are designed fundamentally to ensure safe pedestrian movement separated from the moving traffic. They may be regarded as ambiguous zones between public and personal areas (Bloomberg, Burden, Burney, Farley, & Sadik-Khan, 2013). Sousa et al. (2017) say that pedestrian walkways are an important part of urban transportation infrastructure because they are the main ways that people walk as a form of transportation.

Walkways provide essential networks of public open spaces that afford pedestrians the opportunity to manoeuvre through the built environment safely away from moving traffic. This simultaneously contributes to a healthy and active lifestyle. Although walkways are regarded as places of personal interaction and engagement, they may as well act as avenues to see and be seen, places to engage in economic trade, among other services they may provide. We are all pedestrians, and walking as a mode of transportation is a common means of commuting worldwide. Almost all trips start and terminate with walking. Walking may encompass the whole trip (whether a lengthy hike or quick stroll to the store), or a pedestrian could walk for one or even more parts of a trip (e.g., walking to and from bus stops with a bus trip in between). Walking is an all-

important means of transportation in less developed and developing nations, although it may be regarded as a leisure activity in developed nations with a greater dependence on motor vehicles [World Health Organization (WHO), 2013].

Walking has been shown to have several health and environmental advantages. It includes improved human health, reduced air pollution, carbon dioxide emissions, reduced congestion, noise, traffic hazards, and other negative effects connected with vehicle usage. Walking is thus an environmentally sustainable form of transport, and several countries have enacted policies that seek to promote and prioritise walking as a form of transportation (WHO, 2013).

Problem Statement

The pedestrian environment is known in the literature to affect the pedestrian's decision to commute (Murwadi & Dewancker, 2017). Some studies have concluded that the quality of the footpath, path durability, aesthetics, path continuity, cleanliness, and condition of the facility have the capacity to influence one's decision to walk or not. Walking forms an integral part of transport in Ghana and among residents in Accra Metropolis (Abane, Amoako-Sakyi, Agyemang, Odame, & Owusu, 2019). Data available indicates that over 70 percent of residents in AMA walk for at least some part of their daily trips. An evaluation exercise undertaken by the International Road Assessment Programme (iRAP) on portions of three major roads in the Accra Metropolitan Assembly—N1, N4 and N6—found very poor conditions for pedestrians on these major roads, reflected in ratings of 1-2 stars (AMA, 2017). Lack or poor pedestrian facilities pose a great challenge to the public and have been ranked

among the nine most common infrastructural deficiencies of congested roads by experts around the world (Jones, Moura, & Domingos, 2014; as cited in Agyapong & Ojo, 2018).

Faced with rapid rates of motorisation and the need to accommodate growing congestion, many countries like Ghana tend to make investments in vehicular infrastructure at the expense of pedestrians (Cities Alliance, 2017; Krambeck, 2006b). As noted by Amoako, Cobbinah, and Niminga-Beka (2014), the infrastructure needs of pedestrians are often not integrated into road designs. Further, with what little paved surfaces are available in cities, there is little allocation of resources to regulate and maintain them, which results in a highly chaotic pedestrian environment where the deteriorating walking spaces are encroached upon by traders, parked vehicles, and makeshift structures (Alemgena et al., 2018; Cities Alliance, 2017; Duho, 2017; Krambeck, 2006a). Although studies about pedestrian facilities are not a new subject, few have been done in Ghana. For example, Amoako, Cobbinah, and Niminga-Beka's (2014) study on urban infrastructure design and pedestrian safety in the Kumasi Central Business District found that infrastructure for pedestrian safety was ignored in the design of central business districts (CBDs), was inadequate, poorly sited, and poorly managed. Again, a study by Odame (2016) on the mobility of persons with disabilities at the University of Cape Coast revealed that the predominant pedestrian infrastructure was the walkway; however, this facility was encumbered with hindering structures such as cracks and utility lines. Similarly, a study conducted by Amoako-Sakyi (2016) on school path walkability found that, facilities for walking were woefully inadequate and unfriendly for walking.

Many questions remain unanswered and gaps are present in the research relative to the management of pedestrian facilities, specifically walkways in the Accra Metropolis. Without empirical testing, pedestrian walkway management in Accra Metropolis will continue to be speculative and chiefly unguided by evidence. Therefore, the research sought to assess the management of urban walkways in Accra Metropolis and answer the following questions:

i. What factors account for the conditions of urban walkways?
ii. How does organisational arrangements affect the management of urban walkways?
iii. What challenges confront responsible agencies in the management of walkways?
iv. To what extent are the local people involved in the management of urban walkways?
v. What factors account for the level of participation in walkway management?

Purpose of the Study

The purpose of the study is to assess the management of pedestrian walkways in the Accra Metropolis.

Objectives of the study.

- Explore the factors that account for the conditions of walkways in the Accra Metropolis.
- Assess the organisational practices in the management of walkways in Accra Metropolis.
- Explore the challenges faced by responsible agencies in the management of walkways within urban neighbourhoods in Accra Metropolis.

- Evaluate community participation in the management of walkways in Accra Metropolis.
- Determine the factors that affect people's willingness to participate in walkways management in Accra Metropolis.

Significance of the Study

The implications of the work are viewed along three strands: research, practice, and policy. In the first place, it would add to the canon of knowledge by assessing the management of walkways in Ghana and the Accra Metropolis in particular. Furthermore, stakeholders and individuals will find this study beneficial in that it will help them appreciate the moral obligations behind walkways and the benefits associated with their management. Lastly, it will help the government in the formulation of its policy decisions on walkway design manuals and the management of walkways.

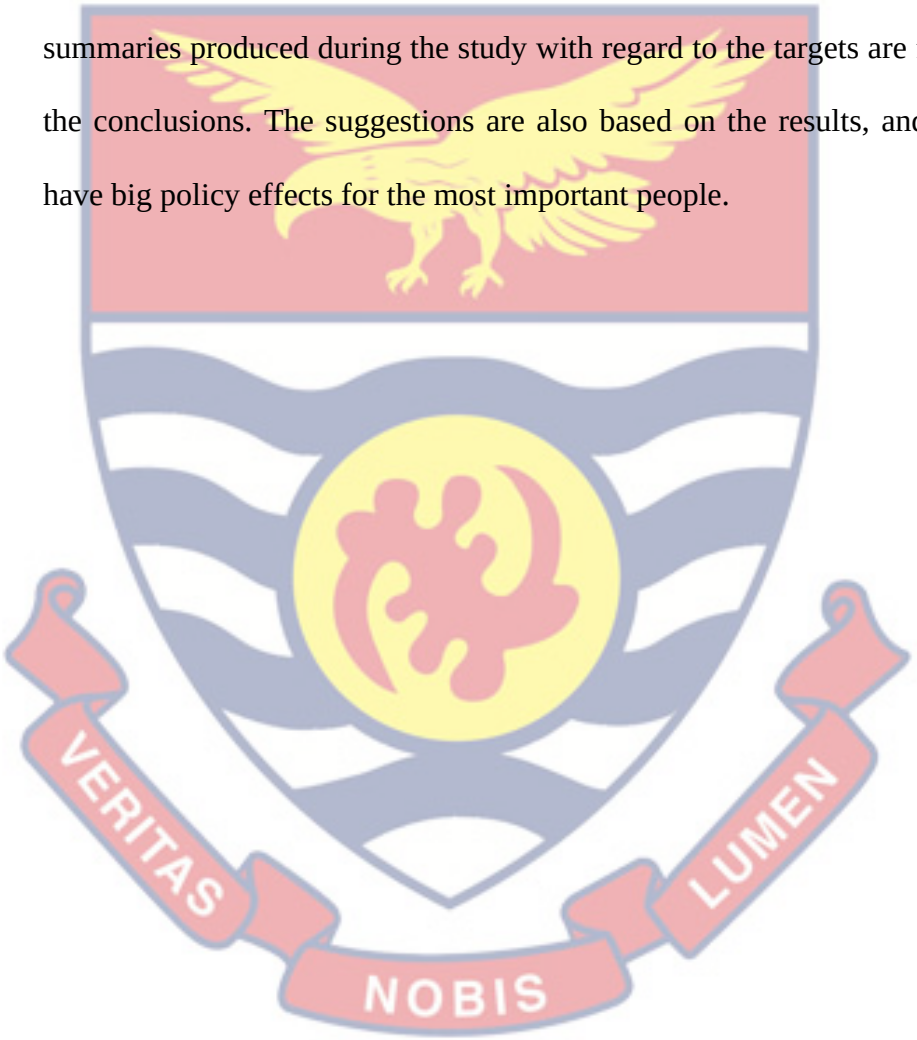
Limitations and Delimitations of the Study

First, this thesis is restricted to the Accra Metropolis. It may thus be wrong to generalise the results to other districts, metropolises, and municipalities in the country. Further, as a cross-sectional investigation, changes over time cannot be measured, and evaluations of how quickly study measures might respond to any changes cannot be delivered. Similarly, organisations change in addition to the systems and conditions surrounding them.

Organisation of the Study

The study is divided into five chapters. The first chapter presents the research subject, describes the research challenge, and outlines the study's objectives. The second chapter examines relevant literature on pedestrian

walkways, factors that affect their quality, challenges facing responsible organisations in managing the facility, and community participation. The methodology of the study is covered in Chapter 3. It also defines the research topic, how the research was conducted, and the methodologies used to gather, analyse, and present the results. The fourth chapter covers the findings. The study's results and conclusions are presented in Chapter 5. The primary summaries produced during the study with regard to the targets are featured in the conclusions. The suggestions are also based on the results, and they will have big policy effects for the most important people.



CHAPTER TWO

LITERATURE REVIEW

Introduction

This chapter reviews existing literature relevant to the present study. It reviews relevant topics such as walkways and their evolution, walkways' characteristics, guidelines, basic requirements, and best practices, non-motorised infrastructure development in Ghana, as well as management models for walkways. The various objectives are also examined and reviewed.

Evolution of Walkways

Throughout the latter parts of the eighteenth century, as the construction of walkways became more common in urban areas, they were typically associated with adjacent uses among buildings. The task of construction and maintenance of walkways resided with home and property owners, and since the paving was typically cheaper, this enhanced its distinction from the moving traffic. Over time, building users blurred the boundary between public and personal space. Walkways became an extension of one's personal space, where walkways or sidewalks became physical extensions of business outlets and social extensions of one's living room. Walkways are an active and important component of towns and cities that give a neighbourhood its identity.

With urbanisation increasing by the late nineteenth century and a corresponding rise in vehicles and people populating the streets, walkways then became more crucial and a primary means of public circulation. Municipalities, therefore, increased their jurisdiction over them determining how they might be used. So, laws and rules were made about what could extend onto the walkway

space and how far it could go. This was done because some people had claimed the wrong part of the walkway.

With rising personal transport use within the twentieth century, residential developments began to sprawl outward from town and city centres. Walkways were often considered not necessary or as hindrances to vehicle traffic flow, and pedestrians were usually seen as slowing down traffic and getting into the path of vehicles. As vehicles became the main means of transportation, attention to the infrastructure for walking diminished. Walkways were no longer prioritised as crucial components of the neighbourhood.

Today, it is widely understood that walkways are important parts of urban areas that have to balance the necessity of effectively permitting pedestrian circulation with the will to promote safe, active, and fascinating public areas that entice individuals to use them. Reprioritising the planning of walkways in communities could be an avenue for reaffirming the importance of the pedestrian as a key street user. Enhancing walkways can improve the built environment and public health in an urbanising world (Bloomberg, Burden, Burney, Farley, & Sadik-Khan, 2013).

Walkways

Facilities or infrastructure that aid the pedestrian in manoeuvring through the built environment exist in many forms; a crosswalk is an example. Fundamentally, pedestrian facilities can be categorised into interrupted (crosswalks) and uninterrupted (walkways). Litman (as cited in Mateo-Babiano, 2003) classified uninterrupted pedestrian facilities as walkways, public paths, courtyards, hallways, sidewalks, trails, pedestrian streets, and plazas. Walkways are important components of the streetscape and roadway where pedestrians

need to experience safety, comfort, accessibility, and efficient mobility (Hawaii Department of Transportation, n.d.). The state of Hawaii Statutes defines a "walkway" as the portion of the street between the curb lines, or lateral lines of a roadway, and adjacent property lines, intended for use by pedestrians (Hawaii Department of Transportation, n.d.).

Again, walkways represent the portion of the public right-of-way that provides a separate area for people travelling on foot ("A Pedestrian Facility Design," 1996). Walkways are designed fundamentally to allow safe pedestrian movement separated from moving traffic. They may further be regarded as ambiguous zones between public and personal areas (Bloomberg, Burden, Burney, Farley, & Sadik-Khan, 2013) and a fundamental urban transportation infrastructure because they provide the main guideway for walking as an important transportation mode (Sousa et al., 2017). Some social, economic, health, and environmental benefits are associated with walkways.

According to a study conducted by the American Association for Retired Persons, people are 50 percent more likely to be active, not less than 30 minutes a day, where walkways are available ("AARP liveability factsheet—sidewalks," 2014). For example, in 2015, the Surgeon General's call to action to promote walking and walkable communities in the U.S., dubbed "Step It Up," was launched with the sole purpose of encouraging more walking to help decrease the growing case of chronic diseases in the United States (U.S. Department of Health and Human Services, 2015).

Walkways are also found to increase the safety of pedestrians, especially children, the elderly, persons with disabilities (PWDs), and pregnant women, and reduce emissions into the atmosphere. Buildings situated in areas boasting adequate and well-maintained walkways have been known to sell more and have high economic values (McLaren, 2016).

Characteristics of walkways/ Guidelines/ Basic requirements and best practices for pedestrian walkways.

No single street design element is enough to ensure the attractiveness of the street environment. The ideal environment for walking makes use of several design elements (street trees, separation from traffic, lighting, seating areas, pavement design, etc.) to create ideal streets that feel right to pedestrians (Federal Highway Administration [FHWA] 2008). Other proposed principles include "*The 8 Principles of Sidewalks"* and its elements (which look at proper sizing, universal accessibility, safe connections, clear signage, attractive spaces, permanent security, quality surfaces, and efficient drainage) (Santos et al., 2019).

An active pedestrian requires some amount of commuter space. This space is a crucial aspect because it determines the speed of the trip and the number of pedestrians able to pass a point at any given period (Transportation Research Board [TRB], 2000). According to the TRB, to avoid collision between two pedestrians, each should have an allowable space of 0.8 m walkway width. While walkways are made of concrete, less costly walkways may be constructed using asphalt, crushed stone, or other materials if they are properly maintained and accessible ("A Pedestrian Facility Design," 1996).

The length of a walkway can be approximately equal to the length of an urban street. The Federal Highways Administration stipulates that all urban walkways require the following basic features to ensure their success: an appropriate width of the travel lane, a buffer from the travel lane and private property (frontage), curbing, a minimum width, a gentle cross-slope of two percent or less, adequate sight distances around corners and at driveways, a clear and free path for travel, continuity, well-maintained conditions, and a shy distance from walls, among other requirements (FHWA, 2008).

The American Association of State Highway and Transportation Officials (AASHTO) and The Institute of Transportation Engineers (ITE) recommend that clear sidewalk width be 1.5 m (5 feet) minimum for a walkway that allows two persons to pass comfortably or be able to move side-by-side. A width below the stipulated minimum does not meet the minimum required space for persons with disabilities. Although the minimum width for any walkway is 5 feet if set back from the curb and 6 feet if set at the curb, some jurisdictions, such as school zones, sporting complexes, parks, and shopping precincts, may require a minimum width of 2.4 metres (8 feet) or greater (TRB, 2000). However, indicated, this allowable width varies across space; for example, some districts require 12, 20, 30, and 40 feet of width to accommodate the volumes of pedestrian traffic. So, urban planners and designers must pay close attention to minimums and use variations when necessary (FHWA, 2008).

- A buffer zone of 1.2 to 1.8 metres (4-6 feet) is necessary and should be considered to separate pedestrians from the street. According to Steiner and Butler (2007), walkway width affects pedestrian movement rates and volumes. To them, walkway width is influenced by pedestrian

travelling tendencies, and though guidelines specify a minimum width of 5 ft, a larger width can accommodate more pedestrians and improve ease of access, creating what they termed “effective width." To achieve this, obstructions and other characteristics of the walking environment, such as shy distances and pedestrian walking behaviours, must be acknowledged.

UNDP Malaysia (2010) argues that safety of movement is crucial for individuals to utilise public transportation and mobility. Pedestrian facilities must be clear, uninterrupted, secure, accessible, and appealing. Accordingly, walkways should be comprehensive and cater to the journey. To address common barriers such as bad surface quality and obstructions (poles, kerbs, parked vehicles, or traders) and provide adequate facilities, the following best practises and considerations for pedestrian walkways should be considered.

- ***Surface quality:*** *Surfaces should be solid and smooth for persons who use walking canes, walkers, or strollers, as well as those who have trouble walking.*
- ***Slope****: This should only be supplied if it is highly crucial for drainage. Where it is required, it should never be steeper than 2.5 percent.*
- ***Size:*** *In regions with moderate to heavy pedestrian activity, footways and walkways should preferably be at least 2 meters broad. The absolute minimum width at obstacles and pinch points should be 1 meters.*
- ***Height****: A minimum 2100mm allowances should be given to protect visually challenged people from colliding with overgrown branches or signage.*

- ***Layout simplicity****: Footways should be constructed as straightforward and uncomplicated as feasible, with seats, poles, trash cans, and other obstructions placed to the side and be out of the way.*
- ***Tactile guideways and tactile surfacing****: People with visual impairments require direction in a pedestrian area, particularly if the path spans wider open spaces. This guidance can be provided by a continuous tactile guideway in the direction of travel.*
- ***Gradient:*** *A total maximum gradient of 8 per cent may be employed in pedestrian zones; a minimum of 5 per cent is desirable.*
- ***Maintenance:*** *The sidewalk must be kept free of debris, sand, road repairs, parked automobiles, and other impediments.*
- ***Rest stops:*** *Furniture or other places to rest must be placed at set intervals, often at 50m, along heavily utilized pedestrian routes.*

Walkway/Sidewalks design and best practices (African context)

According to Murguía (2012), in Share the Road: Design Guidelines for Non-Motorised Transport in Africa, the design of NMT infrastructure must follow network (origin and destinations) and facility (road sections, intersections, and road surface) and the principles of universal accessibility, complete streets, and incremental learning.

Sidewalks basic requirements

Frontage: This is referred to as the "death width" or "shy distance" from a fence or wall. The minimum width of 0.30 to 0.50 metres must be observed when constructing sidewalks, whereas in commercial streets, a minimum of 1.0 metres is adequate to prevent window shoppers from obstructing walkways.

Effective walkway: this is the actual area used for walking and must be continuous and free from any obstruction both horizontally and vertically. A zone measurement of 2.40m high and 1.80m wide should be free from any obstruction.

Planting zone: This serves as a buffer. It acts as a protective area separating cars and pedestrians. The planting zone requires an ideal width of 1.80 m; however, street types must be considered. For local streets, a minimum width of 0.60 m to 1.20 m and 1.20 m to 1.80 m for arterial roads is required.

Sidewalks designs and principles (South Africa)

The pedestrian and bicycle facility guidelines policy of the national department of transport in South Africa identifies that a sidewalk or a walkway is an important facility needed by pedestrians because it is critically accompanied by a substantial reduction in commuter collisions and promotes safe travel (National Department of Transport South Africa, 2003). The policy provides basic guidelines for designing walkways and describes what a 'good' sidewalk should be.

Attributes of a good sidewalk

The following elements: security (making persons feel secure), safety (sidewalks must be free of hazards), traffic safety (protection from traffic), accessibility (general accessibility to all users), convenience (a fast, direct, continuous, convenient route), comfort (steepness, paving, adequate width, a buffer), environment (attractiveness), and economy (maximum benefit) should be considered when planning and constructing walkways.

Design requirements

According to the National Department of Transport South Africa (2003), a sidewalk width of 1.2 metres is inadequate to accommodate two people walking side-by-side. It recommends a minimum width of 1.5 m and 1.8 m for desirability. For people with disabilities, 1.5 metres is acceptable under normal considerations so that two wheelchair users can pass and make a u-turn. However, a width of 1.8 m is more desirable in places with a significant number of disabled people, and a 1.2 m diameter is better for short distances with inadequate space.

Definition	Requirements
Sidewalks/walkways with buffer strip	
Minimum width	1.5
Desirable width	1.8
Buffer strip width	0.6
Sidewalks/walkways without buffer strip	1.8
Sidewalks in Business Centres	2.5 – 3.5m

Source: National Department of Transport South Africa (2003).

Vertical clearance: an interval of 2.1 m should be provided for elements overhanging the sidewalk.

Protruding objects: It is advised that no item other than railings should extend more than 100 metres laterally into the sidewalk or pedestrian space to enable blind people who use a cane for navigation.

Cross fall: In the design of pedestrian walkways, cross-falls must not exceed two percent (2%) to make it easily accessible to PWDs and for easy drainage.

Gradient: The recommended slope for sidewalks is five percent (5%).

Definition	Specification
Sidewalk slope Road slope < 5 percent Road slope > 5 per cent	Max 5% Road gradient
Transition sections (e.g. kerb ramps)	8.3% (1:12)

Source: National Department of Transport South Africa (2003).

Paving: The paving of pedestrian paths must be done with a hard-surface material. Paving must be steady and stable, fall-resistant, with good drainage and be free of irregularities and obstructions.

Review of NMT Infrastructure development in Ghana

There are insufficient structures for NMT in urban areas and around schools. Safety measures for IMT [immediate modes of transport] operators, hawkers, and others who make use of the few facilities available are also lacking. However, the country has taken measures to develop a non-motorized transport strategy in recent years, although the NMT strategy is spread across a number of policy documents with several organisations mandated with the rollout and delivery of NMT infrastructure (UN Environment, 2016).

The National Transport Policy 2008 is one of several policy documents that explicitly identifies the value of NMT as a means that "alleviates congestion, cuts travel time, increases low-cost mobility, promotes fitness, and is environmentally friendly" (Ministry of Transport, 2008, p. 36; UNEP, 2016, p. 45). The policy in a chapter dedicated to NMT development posits that: "NMT infrastructure is to be developed to improve urban and rural community affordability and accessibility, targeting 10 percent of the movement of passengers." Drivers and people who might use NMT were made more aware

of it, user needs were analysed, rules were made, NMT facilities and bicycle credit systems were set up, and safety was enforced more strictly.

Ghana's proposed vision for urban transportation is “an affordable, secure, and efficient urban transport system that supports the urban area's overall development and competitiveness” (UNEP, 2016, p. 45). There are also a number of policy statements supporting NMT as part of this policy. The National Road Safety Policy emphasises the importance of safety for vulnerable road users, including cyclists, children, and the elderly and pregnant women, among others (UNEP, 2016).

Ghana's Ministry of Transport and the National Road Safety Commission initiated a stakeholder’s open dialogue in October 2015 to develop a standalone national NMT policy. Local governments in Accra, Tema, Ashaiman, Sekondi-Takoradi, and Sekondi-Takoradi have also made plans for active transportation (UN Environment, 2016).

Ghana NMT strategy 2019-2028

The National NMT Strategy seeks to provide significant investment in sustainable modes to improve access in urban centres. The focus hinges on issues of safety, efficient use of road space, universal access, gender-sensitive design, and participation among stakeholders. The initiatives include providing pedestrian networks, bicycle networks, a greenway network, child mobility and health, intersection improvements, bike sharing, vendor management, and parking management.

Regulations on Non-Motorised Transport in Ghana

The major means of transport in Ghana is still road transport; however, road transport is saddled with many safety challenges. Thus, Ghana has

established road traffic laws and regulations to define the extent of our behaviour as road users and control the use of motorised vehicles and the general environment of the road. Under L.I. 2180 Regulation 117 Sub-regulation 1(a)(b) states that a "person shall not sell, display, offer for sale, or deliver pursuant to a sale of goods on or along a road; on a pedestrian walkway" (L.I. 2180). The Ghana Highway Code has a portion dedicated to the safety of pedestrians at a crossing. On the local level, the AMA's bylaws 2017 on cleaning, sub-regulation 2(a), states, "A person shall not park a vehicle, goods, or other things in a public pathway or pavement." These regulations, among others, exist to regulate pedestrian spaces for safety, convenience, and accessibility.

Road infrastructure delivery in Accra Metropolitan Assembly

Accra is earmarked as a major regional trading and transportation hub (AMA, 2019). The transport sector plays a critical and strategic role in the economy as road transport is the predominant mode of transportation. It accounts for 94 and 97 percent of freight and all traffic movements within the country (Farvacque-Vitkovic et al. 2008). Despite the growing economic importance of the city of Accra, major parts of the city are not adequately served with access to good roads. The transport environment of the city of Accra is faced with several challenges in delivery ranging from heavy congestion, low vehicle usage, weak implementation of traffic management measures coupled with inadequate pedestrian and bicycle facilities, poor road safety arrangements, and high incidents of road accidents (AMA, 2019).

According to the AMA (2019), transportation policies both at the national and local level have largely focused on motorised transport, with special emphasis on the realisation of the Bus Rapid Transit (BRT) system. On the needs of pedestrians within urban Accra, policies on transportation and planning in Ghana to date have not adequately addressed the needs of pedestrians and the safety of the road environment (AMA, 2019; World Health Organization, 2015).

Investment in road infrastructure tends to be skewed towards the main arteries, failing to address the requirements and needs of local access (Cities Alliance, 2017). According to the report by Cities Alliance, the needs of pedestrians and cyclists are given the least consideration, which has a devastating effect on pedestrian casualty rates. Again, the maintenance of urban roads was poor.

Management of Walkways

According to Carmona and De Magalhães (2009), all public spaces, regardless of their inclusiveness or how open and democratic they may be, require a certain level of management to satisfy their requirements and their position properly. Different actors with different aspirations and demands are connected to the multiplicity of functions of public spaces. Over time, the management of these spaces has not been explicitly stated as to whose duty it is to handle them.

Recent urban policies and concepts in public spaces have focused on environmental sustainability, social exclusion, economic productivity, city identity, culture, gender, and race. These policies reveal an increasing awareness of our understanding of the roles of the built environment and public

spaces in particular and a renewed interest in the quality of public spaces. One key issue that emanates is that the framework for open space management as entrenched in many Western countries by the mid-twentieth century is still relevant and a sure way to achieve the various roles attributed to these spaces (Carmona, Magalhães, and Hammond 2008).

A search through literature and trends observed in the UK reveals three popular models concerned with the governance of public places that seek to address issues of maintenance, investment, regulation, and coordination (Carmona, Magalhães, and Hammond 2008). These models, according to Carmona & De Magalhães (2009), are generally restrictive, and localities and services have employed a mix of them, depending on legislative objectives, the power of diverse social actors concerned about open spaces, and the complexity of the managerial issues at stake. These are:

- The state-centred model
- Market-centred model } Mixed model
- Community-centred model }

The state-centred model

This model of managing public space places emphasis on state provision. In most twentieth-century countries, this form of management was the dominant form of providing public services. This paradigm relies on public entities to plan and execute the variety of services required for open space management. The essential characteristic of this form of public space management is that it makes limited use of contributions from private contractors or the volunteer sector;

- hierarchical planning and delivery systems;

- established vertical lines of responsibilities, both upwards to policymakers and downwards to constituents;
- a distinct difference between service and usage;
- a public-service culture based on officers' objectivity and devotion to the public good.

This framework is seen as static, and a sequel to the conventions and ethos of public space management developed over decades. With this model, some weaknesses have been identified, such as service specialisation resulting from departmental values and bureaucracy, the distinction between policy design and service supply, rigidity in dealing with different contexts, the disjuncture between public perception on issues and those relating to specialised service delivery, cost problems and cutbacks, and the inability to adapt to changing demands and specifications. Nevertheless, the main strengths of this model include broad and visible accountability lines and a clear demarcation between, among others, the public and private spheres (Carmona, Magalhães, and Hammond 2008; Carmona & De Magalhães, 2009).

Mixed models

These models of open space management simply imply the shifting of the tasks of providing and running public spaces from the domain of government to different social actors. Rather than transferring ownership over these spaces, as seen in the case of the United Kingdom and the United States of America, these models are characterised by a shift of the obligation of regulating, maintaining, investing in resources, and coordinating the processes of managing public open spaces to other public space actors who have a stake in these spaces.

Market-centred model

This is the most common type of devolved framework for managing public open spaces. In this model, the rights of obligation to manage public open spaces and, in some instances, the authority to set targets for management are transferred to private entities. The transfer is done either directly through service delivery contracts or via development agreements. Some notable references are the street cleaning services found in the UK and the state-market ownership of spaces in the US. According to Sullivan and Skelcher (2002), contracts are an important aspect of the processes and are explicitly articulated within the context of principal-agent relationships.

The community-centred model

The community-centred model is the third and final model for managing public spaces. Community organizations, associations of users of public space, and interest groups on public space issues assume the responsibility of caring for these spaces. Community organisations involved in this model are distinct since they are not organised in step with market principles of gain and competition.

The emergence of this model is partly due to the economic restructuring in the mid-1970s and perhaps a shift in the tendency to co-produce essential services with beneficiaries (Rhodes, 1994; DTLR, 2001; Sullivan & Skelcher, 2002, cited in Carmona et al., 2008). The framework is also a rediscovery and expansion of a long-standing legacy of charities and volunteering in social assistance. As noted by Goss (2001), co-production or user engagement is seen as an effective means of tackling diversified and complex demands resulting

from increased wealth, needs, and lifestyles. Figure 1 provides a summary of the models of public management.

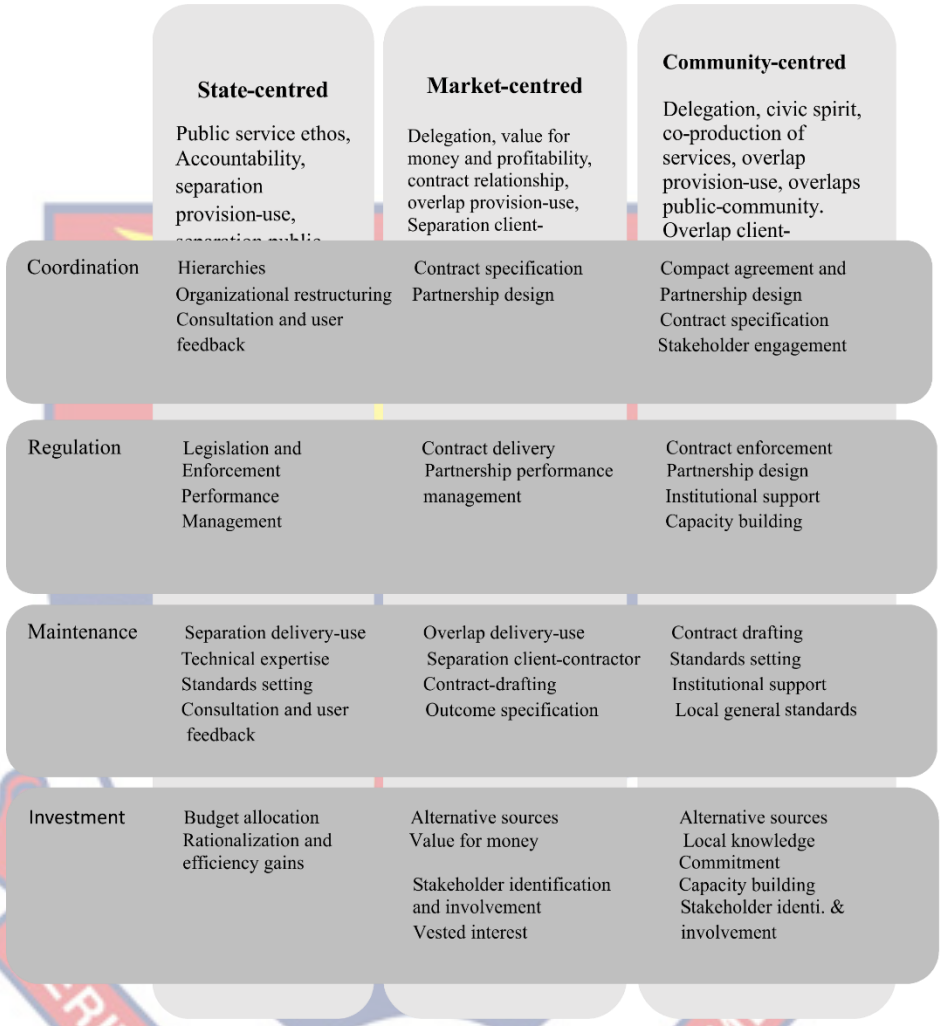


Figure 1: Models of public space management

Carmona and De Magalhães (2008)

Managing public spaces in both grey and green areas is quite complicated, as it is not clear whose duty it is to maintain those spaces. As noted in Hitchikers Guide to the Galaxy, the public domain is frequently regarded as the problem of someone else (SEP), influencing its usage and management considerably. Not only do users expect someone to clean up for them after use,

but also it is also unclear to local authorities whose role, duty, and mandate it is to maintain them (Carmnona, Magalhães, & Hammond 2008; Adams, 1984).

Whereas building owners and adjacent building occupants had the responsibility of constructing and maintaining walkways, property developers and building owners were also entrusted with creating and maintaining walkways. Over time, however, the duty and care for these spaces have transitioned from being exclusively the task of one entity to three: government, private, and community (Carmona, Magalhães & Hammond, 2008; Chitrakar et al., 2017).

Carmona, Magalhães, and Hammond (2008) conceptualised the management of public spaces as a form of governance sphere where interested parties' demands and objectives are integrated into a set of methods and actions. Considering the multi-purpose nature of such spaces and the various number of persons with vested interests, it is clear that their management is a dynamic task that transcends the control entities; public, private, or community organisations appointed to handle those spaces. To these writers, the management of these spaces is an interplay between four interconnected mechanisms, as seen in Figure 2.

- Regulations of usage and conflicts of interest
- Maintenance practices
- Investments into public spaces
- Coordination of interventions

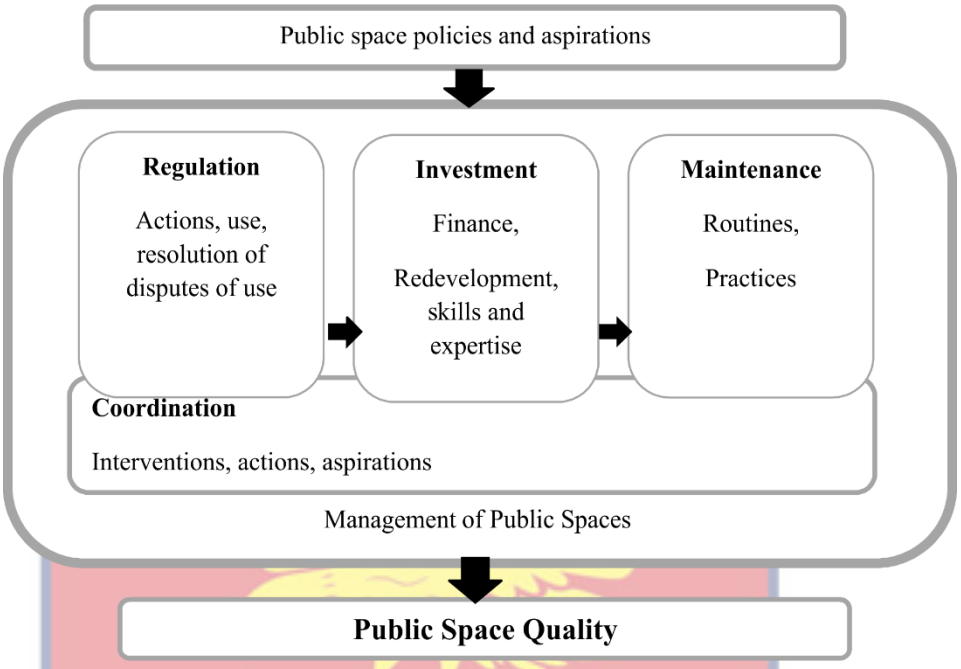


Figure 2: Public space management dimensions

Source : Carmona et al. (2008)

- *The regulation of use and conflicts of uses.* This dimension sets out legislation on how to use public facilities, defines a structure for resolving disputes over usage, establishes access criteria, and defines appropriate and unacceptable actions. The use of spaces has long been regulated (Deacon, 2013). A great body of regulation exists in the form of physical, programmatic, and social regulations for walkways. Physical regulations are set to control the size, materiality, and permissible objects in the walkway and streetscape dimensions. Other regulations surround behaviour and social use to control actions, activities, and patterns of everyday behaviour via social norms and patterns. It is critical to address how walkways are used and planned through quality enforcement.
- *The maintenance routines.* This principally ensures that the goal of "fitness for purpose" is achieved. Public infrastructure, equipment,

and facilities require maintenance to perform. Maintenance services include all activities that guarantee that public places are accessible, clutter-free, tidy, and secure, as well as a variety of amenities; they reduce whatever may undermine or damage the meaning attached to them, and sometimes they involve capital-intensively replacing sections of the public sphere.

- *Investments and resourcing*—to achieve the goal of regulating uses and disputes and preserving the public realm—involve inputs both monetary and material. The extent of effectiveness of instruments of regulation and repair practises is related to the quantum of resources dedicated to those activities. For public spaces to last (Chitrakar et al., 2017; Carmona et al., 2008), they need to be redesigned and redeveloped on a regular basis, which costs money.
- *The coordination of interventions:* Because supervision, maintenance, and investments are likely to involve an array of individuals and entities, either directly or indirectly, there is a need to organise processes to guarantee that the actors responsible for such tasks are moving in the same direction (Chitrakar et al., 2017; Carmona et al., 2008).

The above-aforementioned dimensions of managing public spaces (e.g., walkways) apply whether primarily the public, private, or voluntary or community organisations undertake such activities. Figure 3 below presents the final model adapted for the study. The four components were modified to reflect the aims and objectives of the study. Specifically, the modifications reflected the introduction of key words such as consultations and user feedback,

legislation, performance management, budget allocation, and standard setting, among others, as seen.

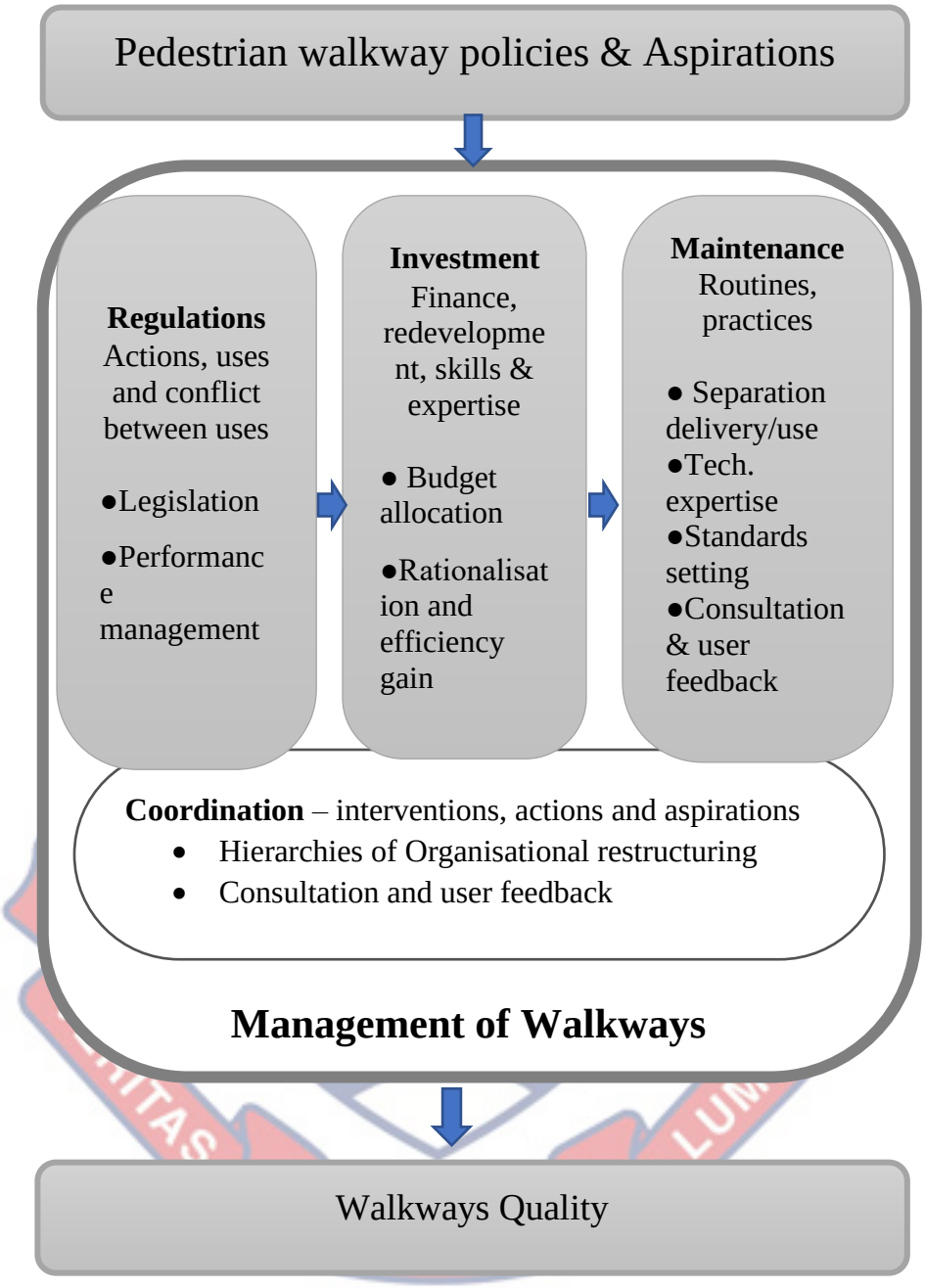


Figure 3: Public Space and its key dimension

Source: Adapted from Carmona et al., (2008)

Importance

The supply and design of public spaces, as well as their management model and degree, have an impact on their quality. It has been argued, "any

public space, no matter how egalitarian, democratic, and transparent, needs some sort of management so that it can effectively serve its various roles" (de Magalhães & Carmona, 2009: p. 112).

Managing public spaces helps to realise their purpose as a place for group interactions through routine maintenance and the enforcement of regulations, thus keeping them clean and welcoming for users. Most scholars accept that in modern cities there is a decline of the public sphere, which has been attributed to a lack of public space management (Banerjee, 2001; Gehl & Gemzoe, 2001; Jacobs, 1961; Newman, 1973; Tibbalds, 2001; Trancik, 1986), as cited in Chitrakar, Baker, & Guaralda (2017).

Dempsey and Burton (2012) observed that in many urban centres in which public open areas are susceptible to poor facility management practises, this results in a loss of convenience and protection while in use. Tibbalds (2001) acknowledges the importance of public space management and the duty of established organisations in caring for the neglected space. Undoubtedly, the importance of public space management has recently grown as "a critical examination of public space-forming management regimes" and "their use has been added to the design and ownership concerns that have dominated much of the debate so far" (Carmona & de Magalhães, 2009, p. 111). Scholars are agreeing more and more that smart management of public spaces can meet the needs of modern life and help build smart urban communities (Al-Hagla, 2008).

Factors that affect the conditions of urban walkways

Studies on public space and urban walkways have been extensively done. Psychosocial researchers highlighting the importance and influence on health, the environment, society, and to some extent local economies have

looked into the benefits associated with these spaces. Current research studies and observations have pointed to the fact that urban spaces are facing decline, deterioration, encroachments, filth, and dirt. Thus, reducing the quality of these spaces. Whereas some scholars have attributed the decline of these spaces to over management, others have attributed it to under management of these spaces (Carmona et al., 2008).

Empirical evidence has highlighted several factors and activities known to affect pedestrians when assessing walkways as well as the quality of these infrastructures. Broadly, these factors can be categorised into three main themes: human, environmental, and institutional. The activities of man are a key contributing factor that affect the quality of walkways.

Amoako, Cobbinah, and Niminga-Beka (2014) investigated the quality of pedestrian protection in Kumasi's core business district and discovered that walkways are insufficient, poorly sited, and badly maintained. In addition, the available infrastructure is further deteriorated by careless uses (selling, parking) by pedestrians and motorists, which leads to their deterioration.

Alemgena, Emer, Quezon, and Kumela (2018), in their study, investigated pedestrian safety problems and their countermeasures. A case in Nekeme City (Ethiopia) revealed that walkways are heavily encroached for activities such as selling, vulcanizing points, parking of vehicles, and dumping of illegal construction materials, and this affects their quality, making the walkways non-user-friendly. Again, their study showed that pedestrian facilities were not good enough and didn't have the right management or maintenance.

In the same vein, Duho (2017) notes that PWDs face challenges due to a lack of walkways and impediments on routes. She concludes that pedestrian walkways are insufficient and burdened with obstacles such as poles, gaping holes from construction work, benches or seats on pavements, and laying cables, all of which lead to the destruction of this infrastructure, which affects people, particularly pedestrians with disabilities.

Corazza, Di Mascio, and Moretti, (2018) reported that poor walking surfaces are a result of irregular maintenance services. To these writers, unsuitable surfaces for walking prevail due to shock damages, weather conditions, poor maintenance, and the setup of inappropriate urban equipment, substandard implementation, low-quality materials, and other influencing variables. Tree roots have also been added as a significant contributing factor leading to the destruction of pedestrian walkways (McDonough, 2014; Murguía, 2012; UNDP Malaysia, 2010; Voorhees & Carmalt, 2006).

Organisational practices in the management of walkways

Institutions signify rules in the form of social structures made up of laws, regulations, and their enforcement, as well as agreements and procedures. The term "institutional arrangement" is:

"*The delegation, distribution, or sharing of power related to growth management decision-making and implementation authority"* (UN-GGIM, 2017).

The UNDP also offers an in-depth explanation of what is regarded as an institutional arrangement. The UNDP defines the term as "*the policies, systems, and processes that organisations use to legislate, plan, and manage their activities efficiently and to effectively coordinate with others in order to fulfil their mandate"* (UNDP, 2017). From the definitions, institutional arrangements are deduced to encompass involved and responsible organisations, their human resources, funds, logistics, leadership effectiveness, and communication links that exist among organisations.

Organisational structure impacts

Organizational structure and practises are central to the management and maintenance of facilities. Be it from the planning, implementation, construction, and maintenance standpoints, the role of responsible agencies cannot be overlooked. Policies relating to the transport industry have been developed to deal with the socio-economic and environmental effects associated with increased movements (Banister, 2000, as cited in Marsden & May, 2006). Literature suggests that regulations play a significant role in the management and maintenance of spaces, as reported by Chitrakar et al. (2017). Chitrakar et al. assert that regulation is one of the primary concerns of managing public open space due to limited accessibility due to control and commercialization, a lack of regular maintenance, and weak urban governance.

Challenges to institutional arrangements

On a global scale, there are a considerable amount of challenges associated with managing public spaces that face institutions and local authorities. These challenges are classified under three broad themes: investment, regulation, and maintenance, with the coordination of these

concerns seen as a general concern (Carmona et al., 2008). Nour (2011) argues that the challenge of providing adequate services cannot be met through investment alone but through the efficient organisation of the delivery of services and the best use of the material and human resources available, which is essentially a matter of management.

A study on institutional change and framework efficacy for transport policy conducted by Marsden and May (2006) discovered that differences in assigned roles affect the extent to which transport policies perform effectively. Again, the fact that there are multiple lines of authority and a lot of interactions between sector bodies makes it harder to put the best transportation plans into action.

In the Accra Metropolitan Area, the planning, construction, maintenance, and management of public spaces lie within the confines of the Accra Metropolitan Assembly. According to the Ministry of Transport (2008), the infrastructure for non-motorized transport in Ghana, especially in urban centers, is inadequate. There are also lacks of safety measures; hawkers and others encroach on the little facilities; and, more importantly, there is no appropriate regulation on NMT operations.

It has been found that the majority of local governments frequently lack a specific and precise plan for managing their public areas. As an alternative, these local authorities employ what is termed the "broad motherhood style" in managing changes occurring within the sphere of public space management (Carmona et al., 2008).

Community participation in management

Until the 1970s, many governments, particularly in developing countries, had centralised authority over the process of planning development programmes and operations. Because the central planning system failed to accomplish the desired progress, policymakers and planners embraced a decentralised planning and delivery strategy (Rondinelli & Cheema, 1983). According to UN-2010, this planning regime represents a change from "planning for" the citizenry to "planning with" the community. The United Nations (UN) Agenda 21 from the 1992 Rio Earth Summit emphasised that participation is key to achieving sustainable development. This owes to the fact that community participation helps to address issues ranging from socio-economic to environmental challenges in an effective manner (United Nations, 1992).

Participation has been variously defined. Hart (1992), cited in Wetzelhütter and Bacher (2015), defines the term as a "process of sharing decisions that affect one's life and the life of the community in which one lives" (p. 113). Thus, participation is a process of collective decision-making. Participation is always associated with participant empowerment (Smith, 2006, cited in Nour, 2011).

Community participation in urban planning is essential because such participation helps to address different needs in framing land-use plans and communities' challenges and goals to reach better outcomes. It also helps to gather relevant information and gain insights into community issues that local people can best provide (Mahjabeen et al., 2009; Sarker et al., 2008; Shrestha & McManus, 2005; Brody et al., 2003; Margerum, 2002; Healey, 1998; cited in

Adjei Mensah et al., 2017). Loosely, the term is defined to mean the involvement of community members in projects to solve their problems.

According to Nour (2011), fostering community participation and multi-stakeholder partnerships is important, without which no attempts at achieving remarkable and sustainable impacts will fail. According to Kumar (2002), this partnership offers a framework for prospective resource recipients to engage in the development, execution, and appraisal of activities to increase the responsiveness, sustainability, and efficiency of such resources.

Worpole and Knox (2007) argue that individual participation is important in that individuals make spaces more than places make people. This is to say that public spaces are co-produced, and the people adopting and using them activate their lives. This often leads to the association of certain spaces with a group of people or ethnic group, for example “Zongo Lane." To Worpole and Knox, the success of any public space is not entirely the responsibility of the experts and technocrats; it also lies on the people using, adopting, and managing the spaces. Worpole and Knox admit that the success, management, and sustainability of any public space are a shared responsibility.

Efforts have been made to enhance local participation in Africa, particularly in Nigeria, Kenya, South Africa, Uganda, and Ghana (Wilson et al., 2015; Okpala, 2009, cited in Adjei-Mensah et al., 2017). Enactments such as the Provisional National Defence Council [PNDC] Local Government Law 207, the 1992 National Constitution, the Local Government Law 1993 (Act 462), and the National Development Planning System Act 1994 (480) have all been established to actively engage local people in planning decisions in Ghana.

Some empirical evidence suggests that in some selected Mexican cities, some local residents were found to be at the centre of advancing certain programmes, such as building community playgrounds that improve green areas in their neighbourhoods (Bonilla, 2013). Shackleton, Campbell, Wollenberg, and Edmunds (2002), on the contrary, observed in eight African countries that the central government had assumed dominance and control over environmental projects, with the local people having little or no rights of involvement. Similarly, Selman (2004) asserted that in landscape development in many developing countries, indigenous people or community members are mostly considered passive participants.

In the case of local participation in Ghana, Adjei-Mensah et al. (2017) found that participation is very low, characterised by poor consultation and empowerment of the local people and inefficiencies of the bodies responsible for organising and consultation. Despite various measures to ensure that communities participate in local decision-making, the implementation of such measures has been weak. Boadu (2010) also says that the government and the local people did not work well together on the Kumasi beautification project.

Factors that influence people's participation

The involvement of people in the management of resources in the community has been identified as a key instrument and approach in the management of such resources. Community and people's participation have been widely explored in various fields of academic discipline, be it health, agriculture, natural resource management, or planning. The findings from these studies suggest that a community, individual, or household's level and willingness of participation are affected by several socio-demographic and

economic factors such as sex, age, education, marital status, perceived cost, perceived benefits, perceived quality, household size, location, and duration of residence (Hassan & Mombo 2017; Mohammed, Osei-Fosu, & Yusif 2017; Roy & Jha 2012). It has been established that individuals or communities' perceptions of the importance of or benefits associated with conserving spaces influence their decision to participate in the management of such spaces. Similarly, the quality of urban spaces also affects one's participation level. A decline or improvement in the quality of spaces can influence decisions to either conserve or otherwise. This suggests that individuals are sensitive and concerned with the quality of spaces.

On the level and intensity of local participation, level of education, attitudes, environmental concerns, institutional frameworks, social, economic, and political affiliations were significant contributors (Samad, 2002; Gupte, 2004; Angba, Adesope, & Aboh, 2009). Level of education, according to Obadire, Mudau, Zuwarimwe, and Mensah (2014), is significantly associated with level of education. The number of years spent in formal education is one of the important determinants of high levels of participation. Other significant factors identified through literature that influence participation include changes in family traditions, societal influence, religiosity, and social relationships, among others (Ali, 2014).

Chapter Summary

This chapter reviewed literature on conceptual issues relating to pedestrian walkway management, institutional arrangements and challenges of managing walkways, community or stakeholder participation, and factors that influence stakeholder participation in the management of walkways. The review

is beneficial in the methods, analyses, presentation of findings, discussion, conclusions, and recommendation.

CHAPTER THREE

RESEARCH METHODS

Introduction

The chapter discusses the various approaches employed in the study. This includes the research philosophy, approach, design, study area, population, sources of data, techniques for sampling, research instruments, data collection methods, data analysis tools, as well as the justifications for selecting various approaches.

Research Philosophy

A research philosophy defines a researcher's standpoint on how a phenomenon is perceived in the world (Saunders, Lewis, & Thornhill, 2009; Yin, 2009, as cited by Ihuah & Eaton, 2014). It gives the underlying fundamentals of the methods of reasoning and viewpoint, theoretical considerations, and self-awareness, all of which are considered means of obtaining knowledge about real-life events (Spirkin, 1983, as cited by Moon & Blackman, 2014).

This enables the researcher to understand the research approach and the design to undertake. To understand this, research philosophy sets out to align to a particular perspective of research, whereas a paradigm is considered the initial and foremost undertaking for choosing other research choices and parameters (Ihuah & Eaton, 2014). Considering the fact that the research partly seeks to add to the body of existing knowledge, a systematic approach to obtaining scientific knowledge is adhered to. This is guided by the assumptions of these philosophical perspectives: ontology (understanding what exists in the

human world and being able to acquire knowledge) and epistemology (understanding how to create knowledge).

These philosophical perspectives serve as a guide in the choice of methods that validate the researcher's commitment to a particular perspective about reality and how this reality can be known, which further informs the research purpose, the design, methodology, and methods in data analysis and interpretation (Moon & Blackman, 2014). According to Creswell (2009), a philosophical perspective is shaped by several factors, including the researcher's beliefs, discipline, and experiences.

Pragmatism is adopted as the underlying paradigm or philosophy of this research thesis. Pragmatism considers "what works" to answer research questions as opposed to choosing between the positivist/post-positivist or interpretivism standpoints (Johnson & Onwuegbuzie, 2004; Onwuegbuzie & Johnson, 2006; cited by Brierley, 2017). It can therefore, be deduced that pragmatism combines these schools of thought to make meaning. Considering research paradigms as a continuum, positivists and post-positivists may be located at one end of the continuum, interpretivists and constructivists at the other end, and pragmatists in the middle (Teddlie & Tashakkori, 2006; as cited by Brierley, 2017).

Positivist philosophy states that authentic or reliable knowledge is the kind that is based on empirical and statistical evidence and is the application of natural science to a social phenomenon, whereas interpretivists seek to subjectively understand social phenomena (Uddin & Hamiduzzaman, 2009; Moon & Blackman, 2014). In studying a particular phenomenon, pragmatics contends for the application of multiple methods instead of a single method

(Creswell, 2009; Moon & Blackman, 2014), since this ensures that the weaknesses of both philosophies (positivist and interpretivism) are catered for by each other.

Therefore, in adopting the pragmatist philosophy, a mixed-method approach was employed as the research approach to ensure an open door to multiple methods, which include diverse forms of data collection and analysis as well as diverse worldviews and assumptions (Creswell & Creswell, 2018).

Research Design

The study adopted a mixed-method, sequential explanatory design. In this type of study design, both quantitative and qualitative data are collected, analyzed, and mixed or integrated at some point in the research process (Tashakkori & Teddlie, 2003; Creswell & Creswell, 2005). Six commonly used designs have been identified and subdivided into three concurrent and three sequential designs (Creswell, Plano Clark, Gutmann, & Hanson, 2003). Among these designs is the mixed-methods sequential explanatory design. With the mixed-methods sequential explanatory design (Creswell et al., 2003), the collection of quantitative data comes before the collection of qualitative data.

The implication is that the researcher collects and analyses quantitative data (numerical) first and then follows it up with qualitative data (text) to elaborate on the finding obtained (Tashakkori, Teddlie, & Teddlie, 1998; Creswell, 2005; Creswell et al., 2003). Whereas quantitative data gives a general understanding of the problem, qualitative data at the other end of the scale offers the opportunity to explore the voices and participants' explanations behind the statistical data. Thus, the sequential explanatory design offers a robust analysis.

The strengths and weaknesses of this mixed-methods design have been widely discussed in the literature (Creswell, Goodchild, & Turner, 1996; Creswell, 2005; Moghaddam, Walker, & Harre, 2003). Its advantages include straightforwardness and opportunities for the exploration of the quantitative results in more detail. This design can be especially useful when unexpected results arise from a quantitative study (Morse, 1991). The limitations of this design are lengthy time and feasibility of resources to collect and analyse both types of data.

Research Approach

Consistent with the stated objectives of the study, the mixed-method approach was identified as the appropriate paradigm for researching the pragmatist philosophy (Brierley, 2017). A mixed-methods approach employs a combination of both quantitative and qualitative analytical tools in making inferences (Johnson & Onwuegbuzie, 2004; Ivankova, Creswell, & Stick, 2006; Tashakkori & Creswell, 2007). Mixed methods research has the advantage of overcoming the weaknesses that are associated with a single method and addressing a range of research questions, which provides a complete knowledge base that, can enhance theory development and practise (Brierley, 2017).

The triangulation method of a mixed-method approach was adopted to offer the researcher the opportunity to use three or more instruments in collecting and analysing data, which helps achieve the various objectives of both qualitative and quantitative data analysis. The reasons above provide enough justification for the use of a mixed-methods approach, specifically triangulation, in this study.

The triangulation approaches adopted include analysis triangulation, data triangulation, and methodological triangulation. The methodological triangulation informs the types of data collection methods to use and occurs at the level of data collection. The analysis of both qualitative and quantitative approaches, which were conducted separately, integrated into the results, and discussed, was informed by the analysis triangulation approach, whereas the data triangulation approach informs sampling strategies in different social institutions.

Description of the Study Area

It is observed that most of the road networks within the Accra Metropolis have little provision for pedestrians. The available facilities are completely taken over by hawkers and traders and are saddled with obstructions, leaving little or no room for the pedestrian to find their way through the built environment. It is therefore easy to find both pedestrians and vehicles competing for the road. These pedestrians include the able and the vulnerable in society, such as the elderly, disabled, children, and pregnant women, who constitute the largest proportion of victims of road accidents.

Accra metropolis is one of the 216 MMDAs in Ghana. It was established by the Local Government Act of 1993 (Act 462) and Legislative Instrument 1615. The Accra Metropolis, according to the 2010 Population and Housing Census, is the most populated district with 1,665,086 residents, representing 42 percent of the population in the Greater Accra Region. The population of the metropolis comprises more females (51.9%) than males (48.1%). Using the population growth rate of 3.1 percent for Greater Accra, the 2018 population of Accra is estimated at 2,036,889 (AMA, 2019). The Metropolis is largely urban,

with a sex ratio of 92.7. The population is young and has a high dependency ratio of 48.5.

Accra Metropolis is further divided into three sub-metros: Okaikoi South, Ashiedu Keteke, and Ablekuma South Sub-Metros. According to the 2010 Population and Housing Census, the populations of the three (3) sub-metros were given as 121,718, 13,732, and 257,543, respectively. However, using the Greater Accra Regional growth rates, the populations of these sub-metros are estimated to be 148,897, 143,786 and 315,051 for Okaikoi South, Ashiedu Keteke, and Ablekuma South sub-metros, respectively (AMA, 2019).

The fertility rate stands at 2.2 percent less than the regional average of 2.6 percent (Accra Metropolitan Assembly, 2016). Accra metropolis has a household population of 1,599,914 and 450,748 households. The majority of the population is literate in English, Ghanaian, or French. Among the population, 49 percent have never married; 36.3 percent are formally married. About 90.0 percent of the population aged 11 years and older is literate (GSS, 2014).

The metropolis is the hub of economic activities in the region and the country as a whole, hosting a great number of educational institutions, financial institutions, industries, oil companies, telecommunications, and tourism, among others. Residents in the Metropolis are actively involved in all sectors of the economy, including trading, construction, manufacturing, and others. About 93 percent of that population is employed. Service and sales workers are the most common occupations, and females dominate them. The private sector (both formal and informal) is the main employer in the Metropolis (Ghana Statistical Service [GSS], 2014). According to estimates, two million people commute into

the city on a daily basis (AMA, 2019). More than 70 percent of the metropolis's population walks for at least part of their daily commute. In terms of modal share, 72.9 percent of inhabitants walk to school, 58 percent walk to access health care facilities, 47.4 percent walk to work, and 72.9 percent walk for the majority of their trips to shopping centres (AMA, 2019).

According to reports, the infrastructure provided for pedestrians to commute is insufficient (AMA, 2017; 2019). In a review of all road fatalities and serious injuries between 2011 and 2015, individuals walking accounted for 69 percent of all fatal accidents and 50 percent of all severe injuries. Between 2013 and 2015, pedestrian fatalities as a percentage of total road deaths climbed by 9 percent. (National Road Safety Report, 2015, as cited in AMA, 2017). Again, the International Road Assessment Program's [iRAP] road assessment of pedestrian facilities on important roads on the N1, N4, and N6 indicated unsatisfactory pedestrian travel conditions. Their evaluation gave these sections star ratings of 1 and 2, which means they are the least safe for pedestrians (AMA, 2017).

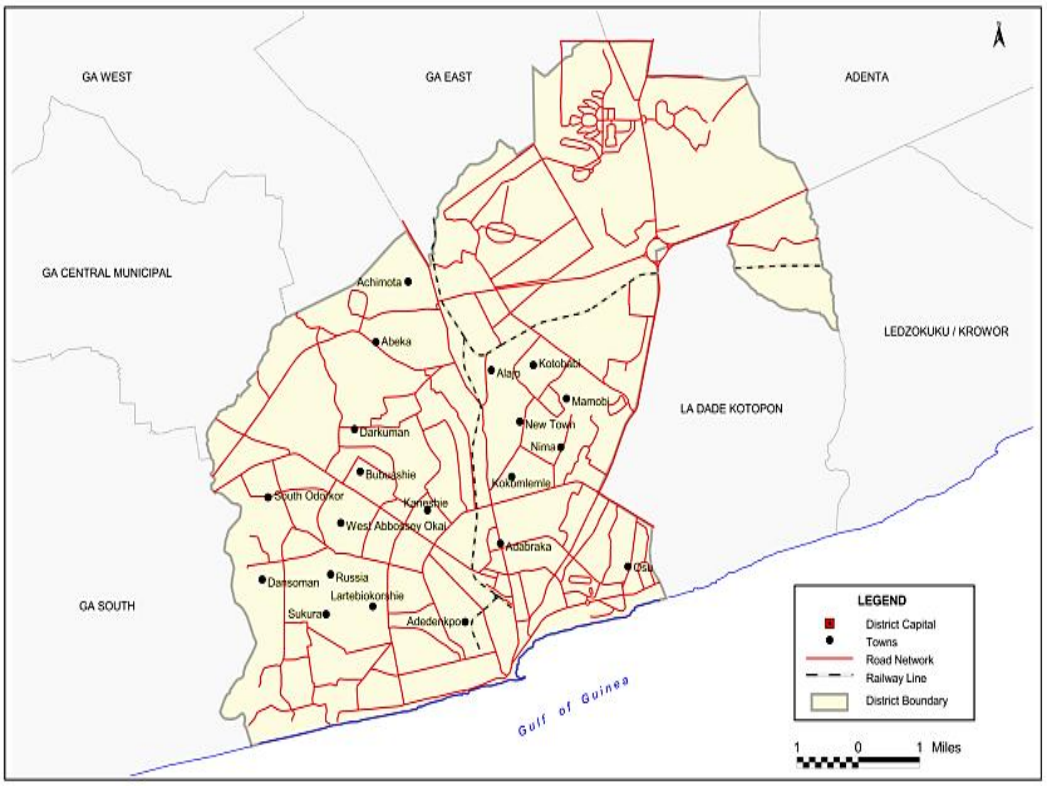


Figure 4: Map of the study
Source: (Ghana Statistical Service [GSS] 2014)

Population

The study's target population consists of managers and users of walkways, officials and heads of institutions mandated with the design, and pedestrians in Accra Metropolis. By definition, a population is "the total number or all elements that satisfy the criteria for a study from which data will be collected", (Parahoo, 1997:218; Burns & Grove, 2003:213). Creswell (2012) says that a target population is a group of people who are chosen for a study because they have similar traits or characteristics.

Sample Size determination and Sampling Procedure

The 2010 Population and Housing Census estimated the population for Accra Metropolis to be 1,665,086 (GSS, 2014). Following the tenets of the design adopted as well as ensuring credibility and truthfulness in the conduct of

any study, the act of obtaining a representative proportion of the target population becomes essential. From the specified population of this study, the sample size (a smaller group of elements) was obtained. To achieve a representative sample, a sample size of 253 respondents was used in this study. Two hundred and forty-six (246) are derived through quantitative computation, and seven (7) key stakeholders from the urban roads, transportation department, security, and sanitation/waste management departments were purposefully selected from both Accra Metropolis and Okaikoi North Municipal Assembly for this study.

The results were generalised to represent the views of the entire population of pedestrians. The Fisher, Laing, Stoeck, & Townsend (1998) formula for determining sample size was employed to determine the quantitative sample. The formula is given as follows:

$$n_f = \frac{n}{1+\frac{n}{N}}$$

Where;

n_f = sample size desired (when the population is less than 10,000)

n = the desired sample size (when population is greater 10,000)

N = estimated target population size

To obtain n, Fisher et al. (1998), provides another formula to derive n;

$$n = \frac{z^2pq}{d^2}$$

n = desired sample size (when population is greater than 10,000)

z = standard normal deviation, usually set at 1.96 corresponding to 95% confidence level;

p = proportion of the target population with peculiar characteristics;

q = 1.0-p and

d = degree of accuracy desired, usually set at 0.05

With (z) statistics set at (1.96), degree of accuracy (d) at 0.05 percent and the proportion of the target population with peculiar characteristic (p) at 80 percent equivalent to 0.80 and (q) 1-0.8, "n" is therefore:

$$n = \frac{(1.96)^2(0.80)(0.20)}{0.05^2}$$

Calculated n = 246

Kumekpor (2002) states that the sampling procedure is the appropriate method used in selecting a sample. Considering the research approach adopted, both study and non-probability sampling techniques were employed. In probability sampling, each unit or element stands an equal chance of being included in the sample. This sampling shows that the chosen sample is a good representation of the population being studied.

However, non-probability sampling is non-parametric sampling that uses non-randomized methods to determine the sample. The study adhered to the use of an intercept survey to recruit respondents for the study. The intercept survey is often used in pedestrian and bicycle surveys. The process involves intercepting people as they walk or cycle in a particular place. In simpler terms, the method looks at speaking to respondents on-site and trying to capture and understand how they use and feel about the spaces the researcher is evaluating (Forsyth, Agrawal, & Krizek, 2012).

Intercept surveys are either random or non-random. In order to generalise findings, an intercept survey employs random sampling to recruit respondents for the study, where the selection of the first respondent is done randomly. Forsyth et al. (2012) advocate that the subsequent selection of

respondents be done randomly by stopping every fifth or tenth person who passes, subject to the size of the population. This study adopted the strategy of stopping every 10th person that passed after the selection of the first respondents based on the size of the understudied population. This method was adopted in the study because it is a straightforward way of reaching participants or respondents and offers the best means of reaching users of a particular facility. The use of randomization helps to generalise results and findings to the population of users of pedestrian walkways in Accra Metropolis in that it affords every respondent or user of walkways an equal chance of being included in the study.

The study also adopted purposive sampling to select key participants for the study. In total, seven key participants were selected from the Accra Metropolitan Assembly and the Okaikoi North Municipal Assembly, respectively. Key participants or offices selected to participate in the study included the Departments of Urban Roads, the Department of Sanitation and Waste Management, the Security Department, and the Department of Transport.

Data Collection Instrument

Data collection instruments are viewed as strategies for fact-finding and may include questionnaires, interviews, observation, and reading (Annum, 2016). This study used a questionnaire, an interview guide, and an auditing scheme to gather data. The questionnaire was used to gather information on the following: factors that affect urban walkway quality; community participation; and factors that affect one's participation in the management of urban walkways from a managerial or organisational perspective.

The questionnaire was designed to consist of three sections. Section A sought information on respondents' characteristics, such as age, sex, employment, and marital status, among others. Sections B and C also contained questions on key issues such as the respondent's conceptualization of walkways and their management, challenges associated with the use of walkways, and their evaluation of the facility.

The interview guide, on the other hand, gathered data on objectives two and three, which sought to assess how organisational practises play a role in the management of urban walkways as well as explore the challenges these responsible organisations were confronted with in the management of urban walkways. The sections in the interview guide sought information on institutional roles, human resource arrangements, logistics, finance, collaborations, services rendered, and finally challenges facing the institutions. An auditing scheme measuring five indicators (obstruction, path continuity, physical conditions, encroachment, and path cleanliness) measured on a three- and four-point scale was used to ascertain the current situation of urban walkways (Shaaban, 2019).

In conducting the study, data was sourced from primary and available sources of information. The literature review was drawn from various available sources of information on issues of pedestrian walkways and their design, construction, and management available in books, journals, articles, previous studies, and media reports. Primary data was obtained from respondents in the field, constituting the opinions and views of users, beneficiaries, and managers of walkways in Accra Metropolis.

The data obtained in the field comprised respondents' and participants' background information, data on knowledge and views of what defines walkways, their purpose, and their usage, and identification of responsible organisations and their issues in the management of pedestrian walkways. In addition, information on community engagement, motives, and problems was sought to get a more comprehensive understanding of the idea of pedestrian walkways and their management at the community level.

Pilot test

Before collecting full-scale data, a pilot study was conducted for the present study during the month of July 2020. An ODK questionnaire was sent to 30 participants at the University of Cape Coast, and 25 responses were collected. The pilot study sought to assess the essential requirements during instrument purification, such as testing question wording, sequence, layout, familiarity with respondents, response rate, questionnaire completion time, and analysis process (Ticehurst & Veal, 2000). It was revealed that, on average, respondents took about 8–12 minutes to complete the survey instrument. The pre-testing revealed some issues in numbering, wording, and sequence. The changes were effected accordingly. Specifically, questions 2, 3, 8, and 16. Some questions were also omitted to facilitate understanding. A final pre-testing of instruments was conducted as part of the training of field assistants in Accra Metropolis along the Ofankor-Barrier stretch in the Ga-North Municipal Assembly. It was shown that on average, respondents took about 7–10 minutes to complete the survey questions.

Data Collection Procedure

Considering the diversity of culture, ethnicity, and age, consent was sought from all respondents before engaging them in the research. Respondents were briefed on the research and its objectives. Similarly, clarification was provided upon questioning to enhance the respondents' level of understanding. The survey was done between July and August 2020. As per the target population, the questionnaire was administered to pedestrians intercepted using the walkways with the help of four field assistants. Participation was voluntary, and respondents did not receive any incentive for it. In order to examine walking infrastructure, specifically walkways in the selected area of study, an auditing scheme or observational checklist was used to access these facilities at a 100-meter interval. This method of assessment is similar to determining and generating a walkability index and level of service for facilities (Amoako-Sakyi, 2016).

Data Processing and Analysis

The findings from the research were presented using frequencies, charts, percentages, and tables. Data obtained from interviews was first transcribed verbatim, after which it was coded using MaxQDA, a qualitative tool. The Statistical Package for Social Sciences (SPSS) version 26 was used to perform both descriptive and inferential analysis such as regression analysis, principal component analysis, and reliability analysis. For the purpose of analysis, the responses from the questionnaire were edited, coded, and entered into version 26 of the Statistical Package for Social Science (SPSS). Keywords in each question of the questionnaire were given an exclusive name and number assigned to them as codes. Codes were also assigned to the response categories

in the scale before data inputs. The data were screened to ensure that every piece of information was entered accurately. The other questions that were open-ended were analysed by listing all the essential responses given by the respondents. They were then considered based on their significance to the research.

The data was analysed and interpreted with descriptive statistics such as mean, frequency count, and percentages (Pallant, 2005). A test of reliability was also conducted to determine the internal consistency of the items in the questionnaire and the data. The data from the interview guide was transcribed and analysed according to themes. Exploratory factor analysis and ordinal regression analysis were employed to determine the interrelationships among variables used to assess the management of walkways in Accra Metropolis.

Exploratory Factor Analysis

Exploratory factor analysis (EFA) is a statistical process used to reduce a large number of observed variables to a small number of "factors or components" that indicate the similarities between clusters of variables. EFA identifies and transforms the correlation between a collection of observable variables into a limited number of related components. In a nutshell, EFA collects groupings of observed variables that regularly move together. Through factor extraction and factor rotation, the consistent motions of observable variables are found in this procedure. Because of this, EFA is a good way to look at how observable variables are related to a small number of underlying factors (Hadi, Abdullah, and Ilham, 2016).

To determine whether a given set of data is suitable for EFA, the adequacy of sampling and the strength of the relationship between variables are the first concerns to be taken into account (Pallant, 2013). The Kaiser Meyer Olkin (KMO) is used to test for the adequacy of sampling (Kaiser, 1974, as cited in Hadi, Abdullah, and Ilham 2016), while Bartlett's test of sphericity is used to test the strength of the relationship among variables (Bartlett, 1954, as cited in Hadi, Abdullah, and Ilham 2016). It should be noted that variables are measured at the interval level. If the value of KMO is greater than 0.5, the sampling is adequate or sufficient (Field, 2000). Confirming Field (2013), Pallant asserts that the value of KMO should be 0.6 and beyond. Kaiser (1974) offers that 0.5–0.7 is average, 0.7–0.8 is fair, 0.8–0.9 is excellent, and 0.9 and above is fantastic (Hutcheson & Sofroniou, 1999).

Bartlett's test of sphericity is a metric for determining the multivariate normality of a set of distributions. The null hypothesis that the underlined correlation matrix is an identity matrix is likewise tested by this technique. A significant result of less than 0.05 suggests that these data do not form an identity matrix and are thus suitable for further investigation (Pallant, 2013; Field, 2000).

Factor Extraction

Factor rotation is a method of defining a set of factors that can best represent the relationship among variables. Different strategies could be employed to assist in determining the minimal factor items that should be maintained. The procedures for factor extraction are as follows:

- Kaiser's criterion
- Scree test (Catell, 1996)
- Parallel Analysis (Horn, 1965)

The eigenvalue guideline, often known as Kaiser's criterion, is one of the most commonly used procedures. Components having eigenvalues greater than 1 are maintained, as are those that explain a total of 60 percent or more of the variance. The Scree plot involves designing and analysing the plot based on Catell's criteria while keeping all factors just above the elbow in mind. Likewise, Horn's parallel analysis is a method for extracting factors. The eigenvalues are compared with results derived from another statistical tool called Monte Carlo PCA for parallel analysis. This method of factor extraction keeps the factors whose exact eigenvalue from PCA is greater than the calculated value from Monte Carlo PCA (Hadi, Abdullah, and Ilham, 2016; Pallant, 2013).

Factor Rotation

Given the PCA requirement that the first factor or component accounts for the biggest part of the variance, it can be challenging to identify the components after extraction based on their factor loadings. It could be challenging to comprehend the variables. As a result, in order to interpret them, the factors are rotated because doing so aids in the process. Factor rotation changes the pattern of the unrotated factors (as shown in the component matrix) and improves knowledge of each factor (Pallant, 2013). It does this by showing the pattern of loadings in a way that is easier to understand.

Orthogonal and oblique rotations exist. Varimax orthogonal rotation was utilised. Orthogonal rotation methods were assumed to be ideal because they preserve the factor axes' original orientation while searching for new axes in the eigenvector space (Forina, Armanino, Lanteri, & Leardi, 1988). Under the assumption of independence, Varimax provides an idealised loading pattern

(Schmitt, 2011). This rotation assumes no relationship between extracted factors, despite considerable correlation. The orthogonal was deemed to be best because it maximises factor simplicity, variables, or objects permitting grouping at new axes (Forina et al., 1988).

Ordinal Regression Model

The ordinal regression method was used to model the relationship between the ordinal outcome variable (management), that is, the various levels of pedestrian satisfaction with overall walkway management, and the independent variables (regulation, maintenance, and coordination). The most important decisions in the model-building process for ordinal regression were deciding which independent variables should be included in the model and selecting the link function that demonstrated the model's appropriateness. In addition, the model fitting statistics, the accuracy of the classification results, and the validity of the model assumptions were all looked at to find the best model.

Ethical Considerations

The researcher obtained an introductory letter from the Department of Geography and Regional Planning at the University of Cape Coast to declare his intention to all appropriate institutions for approval. This was followed up with phone calls. The assembly, upon approval, assigned a staff member to assist with the process. Meetings with institutional personnel were scheduled and followed up until the final interview. The right to informed consent, the right to fair treatment, and the right to privacy are some of the ethics that are thought about.

Chapter Summary

This study adopted a mixed-method sequential explanatory design and a mixed-method approach. The target population consisted of users of pedestrian walkways and managers of public spaces in Accra Metropolis. A sample was drawn from the target population using proportionate, systematic, and convenience sampling techniques. Primary data were collected using an interview schedule. Validity, reliability, and ethical issues were observed in the data collection and analysis. SPSS was used in processing the data with descriptive statistics to analyse the field data, and exploratory factor analysis and regression analysis were employed to test the interrelationships of variables.

CHAPTER FOUR

RESULTS AND DISCUSSION

Introduction

This section covers and discusses the empirical data of the study. To begin, descriptive statistics are offered to help the reader better understand the characteristics of the respondents. The results are presented in tables, and detailed discussions are made before and after each table. The validity and reliability of the instrument are assessed.

Socio demographic characteristics of respondents

This section presents the data on the background of participants. This section presents data on the backgrounds of participants. Based on the sample size of 246 participants, 239 questionnaires were duly filled out and returned. This represents a 97% response rate. Table 1 presents the demographic characteristics of the respondents. As shown in Table 1, the sex distribution of the total number of respondents had female respondents as the dominant category with a representation of 52.3 percent. The data indicates that the majority of respondents (45.2 %) fall within the age bracket of 25-34 years. The 35-44 age group also accounted for 32.2percent, while other age groups such as 15-24 and 45-54 represented 10.9 and 9.6 percent, respectively. The data reveals that the population sampled for the study is youthful, as reported in the 2010 population and housing census, and district reports of Accra Metropolis (Ghana Statistical Service (GSS) 2010).

Table 1: ***Socio-demographic characteristics of respondents***

Variable	Description	Percentage
Sex	Male	47.7
	Female	52.3
Age of Respondents	15-24	10.9
	25-34	45.2
	35-44	32.2
	45-54	9.6
	55+	2.1
Marital status	Married	12.6
	Consensual Union	14.6
	Separated/Divorced	1.3
	Widowed	0.4
	Never married	71.1
Ethnicity	Akan	57.3
	Ga-Adangbe	9.2
	Ewe	24.3
	Guan	4.6
	Other	4.6
Educational Qualification	No formal education	1.3
	Basic	6.7
	Secondary	28.4
	Tertiary	63.6
Employment	Not employed	49.4
	Self-employed	17.2
	Employed (private)	1.3
	Employed (government)	5.9
	Others	26.2
Income		
	0-100 cedis	57.7
	101 – 1,000 cedis	18.0
	1,000 – 2,000 cedis	12.6
	2,001 – 5,000 cedis	10.9
	5,000+	0.8
N=239		

Source: Field Survey (2020)

Concerning marital status, the results showed that the majority of respondents sampled have never been married (71.1%), while 14.6 percent were

in a consensual union or living together and 12.6 percent were married. Akan represented the dominant ethnic group at 57.3 percent. The second were the Ewes with 24.3 percent, Ga-Dangbe with 9.2 percent, and Guan with 4.6 percent, and other ethnic groups also representing 4.6 percent. These were made up of ethnic groups such as the Gonja, Gurune, Kusasi, Sisala, Mande, Mole, and Igbo.

On the basis of the highest educational qualification of the respondents, the majority of the respondents were holders of tertiary degree certificates and comprised 63.6 percent. 28.4 percent had obtained a secondary education. Those with basic education represented 6.7 percent of the total sample, and 1.3 percent had no form of formal education. The data indicates high levels of literacy within the metropolis, and this confirms the findings of the population and housing census that 89 percent of the population aged 11 and above could read and write. (Ghana Statistical Service [GSS], 2014).

On employment, the data shows that 50.6 percent of respondents were employed or involved in some form of economic activity. Out of the total number, 17.2 percent were self-employed, 5.9 percent worked in government establishments, and 1.3 percent worked in the private sector. The other categories of workers included casual employees, contributing family workers, apprentices, salespersons, national service persons, etc., and this represented 26.4 percent of the total sample.

On the respondent's level of income, 57.7 percent are within the income range 0–100 cedis. Another 18.0 percent earned between 101 and 1000 cedis.

User perspectives on the conditions of existing urban walkways

The study intended to identify the factors that significantly affect the conditions and quality of pedestrian walkways in the study area. In a bid to fulfil this objective, the conditions of existing urban walkways were first assessed. This is partly because, individuals take into consideration the condition, level of accessibility, as well as the convenience level of walkways before using them, and where such requirements are impeded, one may resort to modal shifting, such as using the carriageway, which may be dangerous to one's well-being and safety. Dirty, rubbish-strewn, narrow, and poorly maintained walkways often present a feeling of neglect and inferiority to pedestrians (Tight et al., 2004). Pedestrian perspectives on the conditions and nature of walkways are presented in Figure 5.

From Figure 5 below, the state of walkways was assessed using a 4-point item scale from very bad, bad, good, and very good. It is observed that 46 percent of respondents identified walkways in the study areas as being in bad conditions, and 20 percent said walkways within the selected study areas were very bad. Respondents who otherwise assessed walkways to be in good condition were 29 percent, with 5 percent saying they were in very good condition. Although some respondents assessed their walkways to be in good condition, on average, 66 percent of the total respondents indicated that pedestrian walkways along selected routes in the AMA are not in good condition, which could significantly impair their mobility and their level of convenience in navigating the walking environment.

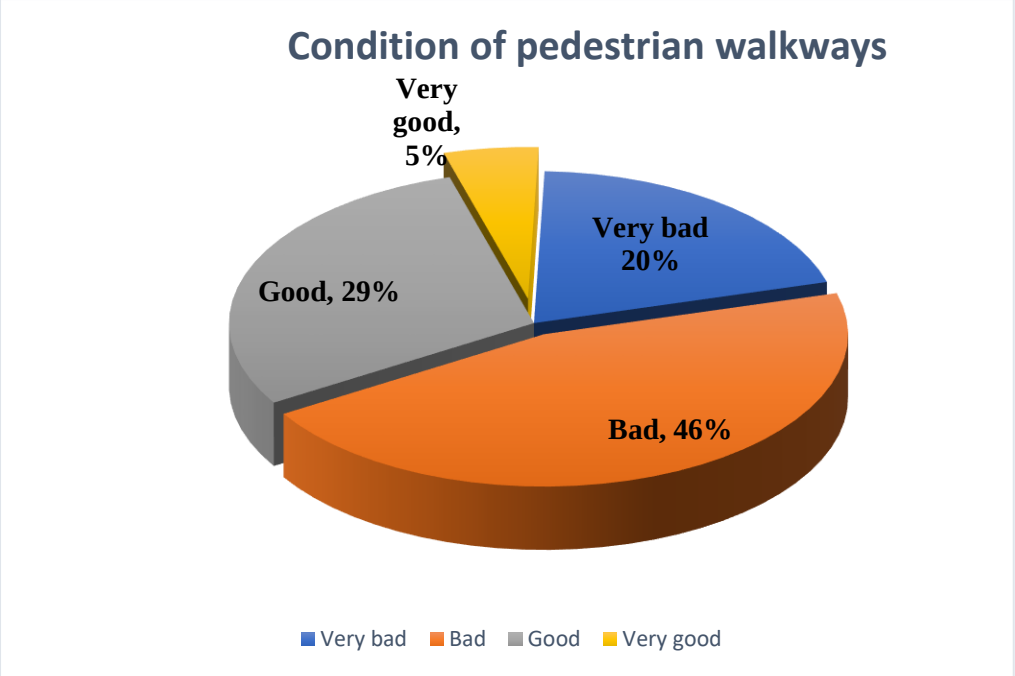


Figure 5: Assessment of conditions of urban walkways in Accra Metropolis

Source: Field Survey (2020)

A further analysis was carried out on specific walkways within the study areas to determine their conditions. As indicated in Figure 6, the general conditions of all select walkways were found not to be conducive for walking. The pedestrian environment's infrastructure availability and quality influence mobility. Clean, even, and well-paved surfaces influence walking. As posited by Alfonzo (2005), a pedestrian takes into account several personal factors such as their age, weight, safety, and comfort, among others, before deciding to walk. Pedestrians walk where they feel comfortable, and where they feel otherwise, they detour to use the roadway or other alternate routes, which often increases the potential for conflict with motor vehicles impacting their safety (Rahman et al., 2015). When people with special needs are involved, such bad conditions make it impossible for them to get where they need to go.

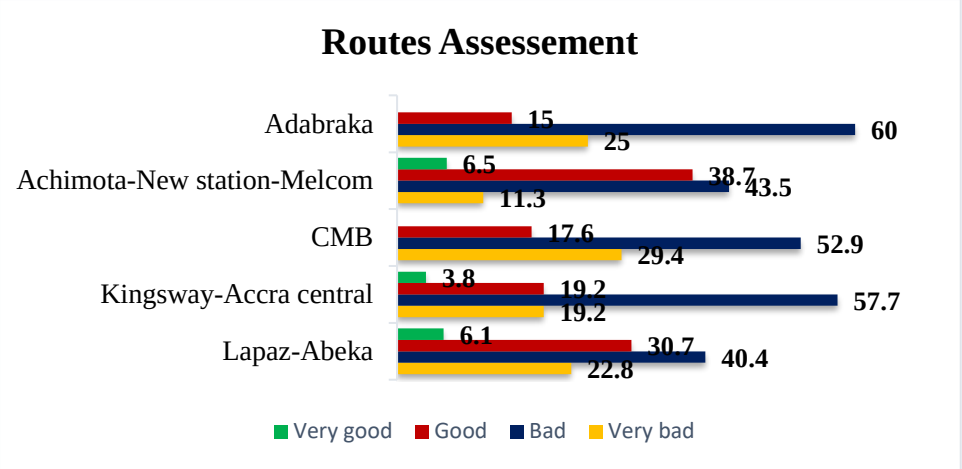


Figure 6: An assessment of pedestrian routes in Accra Metropolis

Sources: Field Survey (2020)

As reported in Figure 6, 85 percent of total respondents assessed walkways in Adabraka to be bad or very bad, whereas 15 percent said the conditions were good or very good. On the Achimota-New Station-Melcom route, 54.8 percent of respondents said the condition of the mapped routes was bad or very bad, whereas 45.2 percent said the conditions of walkways were good or very good. Generally, walkways along the CMB were assessed as "bad" or "very bad." Again, 17.6 percent of respondents said the conditions of existing walkways were good or very good. Pedestrian routes along the Kingsway-Accra central route were equally assessed. From the findings, 77 percent of respondents assessed the conditions of walkways in Kingsway-Accra central to be bad or very bad, whereas 23 percent said the conditions were good or very good.

It can be observed from Figure 6 that the majority of pedestrians (63.2 percent) assessed the walkways in Abeka-Lapaz to be bad or very bad, while 36.8 percent assessed them to be good or very good.

Activities that affected the conditions of walkways and affected pedestrian route choice were also assessed on the selected routes. Five major issues were considered in the analysis: restrictions or blockages on walkways, path discontinuity, path uncleanness, invasion of space, and the presence of cracks or potholes. The findings are presented in the figure below.

Three major issues were dominant among pedestrian responses. These issues relate to restrictions or blockages on walkways, invasion of space, and path uncleanness, as shown in Figure 7. Respondents were of the opinion that obstructions such as signposts, traffic signals, parked vehicles, and benches, among other obstructions, affected the surface quality of walkways and as well influenced their travel decisions. These obstructions served as impediments to walking by restricting movements and reducing the effective walkway width. The installation of signals and signposts on walkways often requires construction activities such as drilling and resurfacing, which often distort the surfaces. As reported by Duho (2017), installations of posts, benches, and other construction activities such as cable laying on sidewalks in Accra have affected these facilities, leaving gaping holes in them.

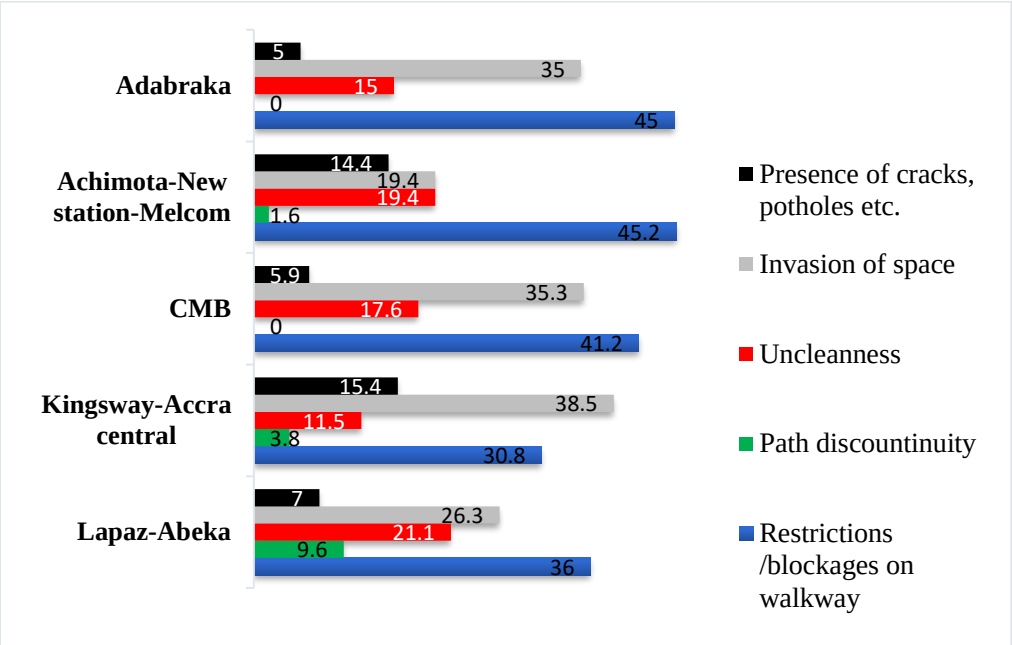


Figure 7: Factors that affect route choice and conditions of walkways

Source: Field Survey (2020)

The next issue identified was the invasion of spaces or encroachment on walkways. It has been posited that the walkway is a stage on which the pedestrian's life plays out (Bloomberg, Burden, Burney, Farley, & Sadik-Khan, 2013). It is a dedicated space for pedestrians. Not only does it act as a stage for the pedestrian, but it also serves as a connective infrastructure that separates the pedestrian from moving traffic. Two forms of pedestrians are considered in the design and construction of pedestrian facilities: the adult pedestrian and other pedestrians (children, the elderly, and persons with disabilities). As posited by Murgua (2012), encroachment on spaces often sends a signal of a lack of consideration for certain user needs. Encroachments or obstructions may not seem like a big deal to a healthy adult commuter who can avoid being uncomfortable, but they could be a big problem for someone who is disabled or has special needs.

From the study, it was observed that almost all pedestrian walkways were encroached upon by small-business dwellers, and in some instances, these facilities served as waste dumping and collection sites. These forms of street trading present a major challenge to pedestrian access on walkways in Accra Metropolis. For instance, in recounting how trading on walkways affects the facility, a representative from the Department of Transportation (AMA) revealed that:

> *"If you have somebody cooking, or operating a food joint on the walkway, that kind of activity does not make the environment healthy because they pour waste water on the walkways and they generate a lot waste."*

Figure 8: Showing encroached and obstructed walkways in Accra central and Achimota**.**

Source: Field Survey (2020)

Pedestrians further identified that path uncleanness and cracks were among the factors they considered to affect the conditions of walkways and, inadvertently, their route choice. As identified in Figure 7, walkways were observed to have huge cracks, uneven surfaces, and weeds growing on them. The deformed and unclean surfaces covered with weeds and dirt potentially affect the surface conditions of these walkways, which invariably has the potential and capacity to reduce the level of satisfaction derived from using such facilities. Conditions of walkways have a general influence on pedestrian route choice and directionality. As noted by Murwadi and Dewancker (2017), pedestrians' route choice and satisfaction are found to be highly associated with factors such as path durability, attractiveness of route, path continuity, and absence of obstructions. Therefore, pedestrians are more likely to neglect poorly conditioned paths. In situations where one's options are limited, a pedestrian may choose to travel on the main street or carriageway, which has inherent safety risks.

Figure 9: Showing an unclean and cracked walkway in Adabraka and Achimota overhead

Source: Field Survey (2020)

Other factors cited included low maintenance, poor regulation and planning, and low knowledge and awareness levels. This gives credence to the findings from Corazza et al. (2018), who indicated that low-maintenance services such as shock repairs, cleaning, and surface fitting, among others, significantly affect the quality and state of walkways, highlighting a lack of management concerns or activities.

In another study, Amoako et al. (2014) identified that unapproved changes in the use of walkways also affected their conditions. These unapproved uses include trading activities and vehicle parking. They further identified that poor maintenance, a lack of enforcement of regulations characterised by poor coordination of activities, and ineffective management contribute to this phenomenon. Again, the findings of this study support the findings of Alemgena et al. (2018) and Amoako et al. (2014) by adding that trading activities coupled with the dumping of illegal construction materials affect the quality of walkways.

Organisational practices in the management of walkways in Accra Metropolis

Organizational practises and mechanisms can either facilitate or impede the performance of organisations. As noted by Odoom, Kyeremeh, Afram, and Tawiah (2020), weak institutional mechanisms or practises in regulating transportation in most developing countries have impeded the performance of the sector. According to Oladokun and Ajayi (2018), organisational practises and services are central to the management of facilities in order to achieve efficiency and proper cohabitation among users of a facility. Thus, an

organization's practices, services, and arrangements are key to the management of walkways.

Table 2 below presents the results of the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's test of sphericity. In all, 14 organisational practise variables were identified in the literature (Carmona et al., 2008; Oladokun Ajayi, 2018) in the management of facilities measured on a five-point Likert scale ranging from highly unsatisfactory to highly satisfactory and subjected to factor analysis (principal component analysis (PCA)). The correlation matrix, Kaiser-Meyer-Olkin (KMO), and Bartlett's tests were employed. The correlation matrix involves inspecting coefficients of 0.3 and above. The KMO test was employed to measure the sampling adequacy of each of the organisational practises in the model and the complete model. The Bartlett's test measures the correlational strength and suitability of organisational practises for structural detection.

As evident from Table 2, the KMO measure is 0.878, which is above the suggested minimum value of 0.6 (Kaiser, 1974). This indicates that the sampling is statistically adequate. Therefore, the original number of organisational practises can be accounted for efficiently. The KMO index also implies that the proportion of variance among variables (organisational practises in the management of walkways) that might be common variance is lower, and hence there exists a common correlation among variables.

Table 2: *KMO measure of sampling adequacy and Bartlett's Test of Sphericity*

KMO and Bartlett's test	**Test statistic**
Kaiser-Meyer-Olkin Measure of sampling adequacy	0.878
Bartlett's test of Sphericity Approx. Chi-square	1544.565
Degrees of freedom (df)	55
Sig.	0.000***

Note: *, **, and *** represents 10%, 5% and 1% level of significance respectively

Source: Field Survey (2020)

Further, on the suitability of the data for factor analysis, the strength of the correlation was tested to ascertain whether the original correlation matrix is different from an identity matrix. This was tested following Bartlett's test. Theoretically, the Bartlett's test tests the null hypothesis that the original correlation matrix is an identity matrix. As evident from Table 2, Bartlett's test of sphericity for organisational practises is 1544.565 and statistically significant at a one percent (1%) level of significance. This implies a rejection of the null hypothesis that the original correlation matrix is an identity matrix, supporting the factorability of a correlation matrix. This also implies that the factor scores (organisational practises in the management of walkways) are strongly correlated. We, therefore, conclude that the principal component analysis technique can act efficiently and is relevant and suitable for the data. Subsequently, three items (enforcement of regulation, routine checks of walkways, and prompt maintenance of dislodged surfaces under regulation and maintenance factors) that cross-loaded with other factors were removed, starting

with the one with multiple cross-loads. Similarly, items with factor scores less than 0.4 were removed (Armor, 1973).

After assessing the suitability of the principal component analysis, the study went further to apply a criterion to determine which of the 11 factors to retain and which to discard by looking at the magnitude of the associated eigenvalues before extraction, after extraction, and after rotation using Kaiser's criterion of retaining factors with eigenvalues greater than 1 (Kaiser, 1974).

As evident from Table 3, the PCA identifies three components with eigenvalues greater than one (1); these three components resulted in a total variation of around 74 percent (73.960 percent). The first component's eigenvalue, which is equal to 5.571, explained approximately 51 percent of the variance in the original data before and after extraction. The second component's eigenvalue of 1.377 explained approximately 13 percent of the variance, whereas the third component's eigenvalue of 1.188 explained approximately 11 percent of the variance before and after extraction. This indicates that the first component explained a relatively large amount of the variance, whereas subsequent components explained only a small amount of the variance. The implication of the large amount of variance explained by the first component is that coordination activities have a greater impact on the management of pedestrian walkways. What this means is that coordination practises have a major influence on the current regime of management of walkways in the metropolis; thus, the current state of walkways is largely explained by the level of coordination that exists among institutions and departments mandated to manage activities carried out on these walkways.

Table 3: *Total Variance Explained*

Table 3: *Total Variance Explained*

Component	Initial Eigenvalues			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	5.571	50.645	50.645	3.110	28.272	28.272
2	1.377	12.514	63.158	2.672	24.288	52.560
3	1.188	10.802	73.960	2.354	21.400	73.960
4	.566	5.149	79.109			
5	.503	4.574	83.683			
6	.425	3.863	87.546			
7	.389	3.535	91.082			
8	.360	3.274	94.356			
9	.232	2.109	96.464			
10	.215	1.955	98.420			
11	.174	1.580	100.000			

Source: Field Survey (2020)

In the final part of Table 3 (labelled Rotation Sums of Squared Loadings), the eigenvalues of the components after rotation are evident. The rotation has the effect of optimising the factor structure, and one consequence of this is that the relative importance of the three components is equalised a bit. Before rotation, the first component accounted for considerably more variance than the remaining three (50.6% compared to 12.5% and 10.8%), but after

rotation, it accounts for only 28.27 percent of the variance (compared to 24.3% and 21.4%, respectively).

The 11 items used to assess organisational practises were reduced to three components. This indicates that the three components are adequate for assessing the organisational practises in the management of walkways in Accra Metropolis. These three components are labelled regulation, maintenance, and coordination. Therefore, these organisational practices—regulation, maintenance, and coordination—are paramount in walkway management, and hence an assessment of these practises should be considered in the management of walkways in the Accra Metropolis.

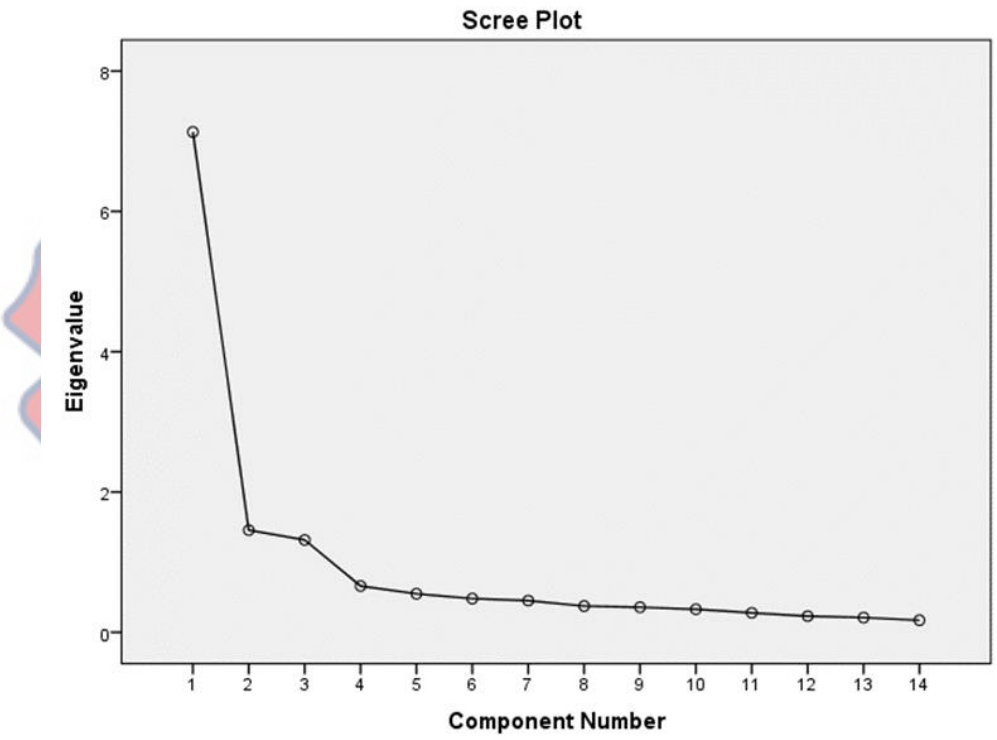


Figure 10: Organisational practices in the management of walkways

The empirical result from the scree plot is evident in Figure 10. The plot shows the component eigenvalues (the variations of the components, the actual values of the eigenvalues) across the component numbers (corresponding to the

different eigenvalues) on the x-axis. The plot confirms the existence of three components of organisational practises as far as the management of walkways is concerned. With the three components, it is confirmed from the plot that the first component (component 1) is dominating the solution since there is a deep descent from the first component to the subsequent components (components 2 and 3). The overall impression is that three components of organisational practises can be retained or are adequate in explaining the issues of walkway management in the Accra Metropolis.

After determining the components to retain, further testing was conducted to determine the significance of the components to retain as indicated by the scatter plot using Monte Carlo parallel analysis. The parallel analysis involves comparing the sizes of the eigenvalues with those randomly obtained from the data. This test helps in determining significant eigenvalues that exceed the corresponding values from the data (Watkins, 2000). As evident in Table 4, the PCA eigenvalues of the three components are larger as compared to the PA criterion values. This implies that the eigenvalues of these three components are significant, and hence we accept their retention as organisational practises that are significant in assessing the management of walkways in the Accra Metropolis. Therefore, the parallel analysis supports the decision from the scatter plot to retain three components for further investigations.

Table 4: ***Monte Carlo Parallel Analysis (PA)***

Components	PCA Eigenvalues	PA Criterion values	Decision
1	5.571	1.3615	Accept
2	1.377	1.2521	Accept
3	1.188	1.1739	Accept

Source: Field Survey (2020)

To aid comprehension of these three components, the Varimax rotation approach from the orthogonal rotation approach was used to the rotated component matrix, revealing the presence of an unsophisticated pattern with three elements signifying substantial item loadings. Varimax provides an idealised loading pattern (Schmitt, 2011). The varimax was chosen as the best method because it maximises factor simplicity, variables, or objects that allow grouping on new axes (Forina et al., 1988). Results are shown for this type of rotation under the orthogonal. They are rotated using the rotated component matrix and component transformation matrix. As shown in Table 5, the rotated component matrix shows how the original indicators were loaded on the factors that were kept or taken away.

Table 5: *Showing Rotated component Matrix*

Rotated Component Matrix			
	Component		
Variable	1	2	3
CDR2	.856		
CDR3	.839		
CDR1	.832		
CDR4	.794		
RGL4		.786	
RGL5		.777	
RGL3		.763	
RGL2		.736	
MNT4			.874
MNT2			.796
MNT5			.791

Source: Field Survey (2020)

Reliability analysis

The reliability of the constructs used in this study is represented in Table 6 below. Cronbach's alpha was employed to test the internal consistency of the result measurements. Reliability of construction means internal consistency of measurement. In addition, internal consistency can be evaluated by Cronbach's alpha and composite reliability (Hair, Hult, Ringle, & Sarstedt, 2017). Using Cronbach's alpha gives an estimate for the reliability depending on indicator inter-correlations (Henseler, Ringle, & Sinkovic, 2009). All values exceeded the proposed cut-off point of 0.7 according to [regulation =.824; maintenance =.849; and coordination =.913].

Table 6: *Labelling of components and Cronbach Alpha*

Organisational practices	**Factor loadings**	**Cronbach Alpha**
Component 1: Coordination		
Stakeholder Consultation	.856	
Complaints and User-feedback system	.839	
Sensitization/training for facility users	.832	**.913**
Information sharing	.794	
Component 2: Regulation		
Safety and Security of life	.786	
Professionalism of City Guards	.777	
Traffic management on walkways	.763	**.824**
Patrol services on walkways	.736	
Component 3: Maintenance		
Regular Cleaning of walkways	.874	
Efficient waste management	.796	**.849**
Promptness in responding to cleaning services	.791	

Source: Field Survey (2020).

The items presented in Table 6 are familiar components, such as maintenance item 9; items 10 and 11; and they all move in unison and belong to the same group. Similarly, regulations such as item 5, item 6, item 7, and item 8 are in the second group. The coordination group comprises of items 1, 2, 3, and 4. Table 4 item loadings were used to determine the item number. The summary scale of a five-point Likert scale on pedestrians' assessment of organisational practises in walkway management in the Accra Metropolis, where 1 represents highly unsatisfactory and 5 represents highly satisfactory, is presented. From Table 7, the mean of each variable explaining management was computed from the five Likert responses. After computation, means below 1.8 represented highly unsatisfactory; between 1. 8–2.6, unsatisfactory; 2.6–3.4, neither satisfactory nor unsatisfactory; 3.4–4.2, satisfactory; and a mean of 4.2–5.0, highly satisfactory. As evident in Table 7, the summary statistics suggest that the three organisational practises have mean values of approximately 2.3 and 2.4, which is below satisfactory. This indicates that pedestrians in Accra Metropolis assessed the implementation of these practises to be unsatisfactory. This finding affirms previous reports about citizens rating the city's or metropolis' capacity to provide services and the ability to fix service problems as poor and unsatisfactory (AMA, 2010).

Table 7: *Descriptive summary statistics on organizational practices*

Practices	**Mean**	**Std. Dev.**	**Skewness**	**Kurtosis**
Maintenance	2.3710	1.07687	0.570	0.482
Coordination	2.2615	1.02624	0.625	0.269
Regulation	2.3651	0.97141	0.483	0.350
Total mean	**2.3325**	**1.0248**	**0.5595**	**0.3673**

Note: Std. Dev. Represents standard deviation.

Source: Field Survey (2020)

While observing the skewness, the statistic for the three practises depicts data that is (positively) skewed to the left. This suggests that the majority of the respondents assessed the performance of these activities as below average (mean). The standard deviation statistic also confirms that there is high variability between the majority, who assessed these activities to be below average, and the minority, who assessed them above average. This implies that the practises of maintenance, execution of regulations, and coordination among stakeholders are assessed as unsatisfactory as far as walkway management is concerned. Similarly, this confirms other works done in the metropolis and in Ghana (AMA, 2019; Amoako et al., 2014; Ministry of Transport, 2008).

A further analysis was conducted on the data using the ordinal regression route two method to model the predictive relationship between the ordinal outcome variable, the management of walkways, and the explanatory variables maintenance, regulation, and coordination. The outcome variable for level of satisfaction with the management of walkways in the Accra metropolis was measured on an ordered, categorical five-point Likert scale. The downside of using route one is that one cannot get odds ratios (ORs), which reflect the changing odds of a case falling at a higher level on the dependent variable. Moreover, the test results associated with the independent variables are based solely on the Wald test. These results can be less powerful than test results based on the use of likelihood ratio chi-square tests. Using the "Generalized linear models" option, we can obtain all of this additional information. The results of the analysis are presented and discussed below. Table 8 provides information on the model-fitting information.

The Omnibus test is the alternative for Likelihood ratio chi-square test or the model fitting information test. This represents the intercept only (null) model and full model (containing the full set of predictors). This tests the assumption of whether there is a significant difference or movement in fit of the final model relative to the intercept only model. In this case, we have a significant improvement in fit of the final model over the null model [[χ^2 (3) =323.713, p<.001]. This justifies the rejection of the null hypothesis that the model without predictors is the same as the final model containing predictors.

Table 8: *Omnibus test for model fitting information*

Model	Likelihood Ratio Chi-Square	df	Sig.
Final	323.713	3	0.000***

Source: Field Survey (2020)

The *Goodness-of-Fit* table (Table 9) contains the Deviance and Pearson chi-square tests, which are useful for determining whether a model exhibits good fit to the data. Non-significant test results are indicators that the model fits the data well (Field, 2018; Petrucci, 2009). In this analysis, we see that both the Pearson chi-square test [χ^2 (733) =3304.492.412, p=4.508] and the deviance test [χ^2 (733) =343.594, p=.469] were both non-significant. These results suggest good model fit.

Table 9: *Goodness-of-Fit*

	Chi-Square	Df.	Sig.
Pearson	3304.492	733	4.508
Deviance	343.594	733	0.469

Source: Field Survey (2020)

From the parameter estimate table, three key variables—regulation, maintenance, and coordination—were used as predictor variables to model the predictive relationship between management and the predictors in question. From Table 10, it was revealed that there is a predictive relationship between coordination and management, whereas the two other explanatory variables show no relationship.

The Exp(B) column contains odds ratios reflecting the multiplicative change in the odds of being in a higher category on the dependent variable for every one unit increase on the independent variable, holding the remaining independent variables constant. An odds ratio > 1 suggests an increasing probability of being at a higher level on the dependent variable as values on an independent variable increase, whereas a ratio 1 suggests a decreasing probability with increasing values on an independent variable. An adds ratio of 1 suggests no predicted change in the likelihood of being in a higher category as values on an independent variable increase.

Table 10: *Parameter estimates of the predictive powers of RGL, MNT and CDR on WMGT*

Parameter	Coefficient	Std. Error	Wald Chi-Square	Exp(B)	CI (Exp(B) Lower	CI (Exp(B) Upper
WMGT=1.00	5.481***	0.5660	93.760	240.072	79.164	728.038
	8.558***	0.7233	139.995	5205.709	1261.373	21484.042
WMGT=2.00	11.941***	0.9540	156.663	153394.976	23646.318	995081.725
	14.767***	1.1709	159.049	2589770.163	260956.621	25701242.835
WMGT=3.00						
WMGT=4.00						
RGL	-0.032	0.1875	0.030	0.968	0.670	1.398
MNT	0.109	0.1625	0.450	1.115	0.811	1.534
CDR	3.399***	0.2929	134.724	29.946	16.867	53.167
(Scale)	1[a]					

Note: *RGL means Regulation; MNT = Maintenance; CDR = Coordination and WMGT = Walkway Management*

Source: Field Survey (2020)

From Table 10, coordination was a positive predictor of walkway management. Improved or effective coordination is more likely to improve people's satisfaction levels with the management of pedestrian walkways. The odds ratio indicates an increasing probability of improving the management of walkways by a percentage value of approximately 30 percent and thereby increasing pedestrians' satisfaction levels with walkway management in Accra Metropolis. By implication, this indicates that an improvement in coordination activities of one percent will improve management by approximately 30 percent. This finding confirms the model used in the assessment of walkways. As noted in the model, coordination is an overarching and by far the most critical component because supervision, servicing, and investments are expected to involve a broad range of persons or entities, either directly or indirectly; hence, processes must be organised to guarantee that the actors in charge of such activities are all going in the same direction. This applies equally to departments and organisations. Leach and Percy-Smith (2001), as cited in Carmona et al. (2008), posit that coordination is more pressing given the changing landscape of command-and-control nature as well as the wide array of emerging forms of urban governance. Coordination is bi-directional (horizontal and vertical), which brings to bear the active involvement and dissemination of information either horizontally among local authority departments and regional offices or vertically from the community scale upwards among agencies at different administrative levels (Carmona et al., 2008). Structures to secure vertical and horizontal coordination are important in the management of public spaces such as walkways in Accra Metropolis. Another important issue for coordination is how the different aspirations,

demands, and actions of users are factored into public space management. Evident from the interviews conducted, a handful of departments iterated that there is little or no coordination system in place; thus, service delivery is often done in compartments, specifically along professional lines, for example, environmental sanitation officer, highway engineer, and security department. Therefore, authorities operated independently and distinctively from each other with regards to managing walkways in Accra Metropolis. Below are some views of participants on collaboration.

> *Being an officer, we work with other departments especially when moving to the field, but you will find us working individually…sadly, there is virtually no communication and collaboration (A representative from Department of Security,* ONMA).

Another also had this to say:

> *There is very little collaborations between the community, traditional systems and the public service (A representative from the Department of Transport,* AMA).

Given the importance of coordination, improving coordination in the management of walkways in Accra Metropolis calls for more sensitive and flexible ways of articulating and integrating the views of users. This can be achieved through such ways as proper and adequate representation, consultation, and making available reporting mechanisms that provide appropriate feedback to citizens and connections to agencies that render services, as this has the probability of increasing people's satisfaction and improving the management of walkways.

Again, from Table 10, effective regulation (-.032) is less likely to increase people's disobedience to regulations. Given the assumption under the interpretation of odds ratios, which suggests that an odds ratio > 1 has an increasing probability of falling into a higher category on the dependent variable, the odds ratio (.670) therefore indicates a decreasing probability of improving on the management of walkways. Maintenance, on the other hand, is more likely to increase pedestrians' satisfaction with the walkway management strategy or regime. The odds ratio suggests being in a higher category or the likelihood of maintenance activities increasing the overall management of pedestrian walkways by a percentage value of 11 percent, however, which is insignificant.

Organisational challenges in the management of walkways

Institutions like local assemblies play a critical role in the management of public open spaces. Institutional arrangements encompass involved and responsible organisations, their human resources, funds, logistics, leadership, and communication links that exist. These structures and practises are central to the management and maintenance of facilities. Organizations are not immune to challenges. Such organisational challenges greatly affect an organisation's performance, output, and impact on a large scale. On a global, regional, and local scale, there are a considerable number of challenges associated with managing public spaces that face institutions and authorities. These challenges are split into three categories: funding (investment), legislation (regulation), and maintenance (repairs and services), with coordination of these concerns regarded as a major concern (Carmona et al., 2008).

In Ghana, metropolitan, municipal, and district assemblies have the mandate of administration over their jurisdictions of influence. In other words, these institutional bodies manage urban open spaces, both grey and green, such as parks, streets, and plazas, among others. Considering this research, the Accra Metropolitan Assembly and the Okaikoi North Municipal Assembly represent, respectively, the bodies responsible for managing open spaces in the areas of interest.

The objective, therefore, was to explore challenges that affected institutions in managing pedestrian walkways in the city of Accra using an interview guide. It was found that institutions given the mandate of management were faced with challenges that bordered on enforcement, finance, logistics, and personnel, a lack of a policy, and poor collaborations among stakeholders. These issues are discussed as sub-themes in detail below.

Enforcement of regulations

Public spaces, irrespective of how open they are, require some level of regulation and the enforcement of such regulations (Carmona et al. 2008). According to Chitrakar et al. (2017), regulations play an important part in the management of spaces. Regulations further ensure that walkways are wide enough to accommodate traffic, decongesting the street environment by controlling objects within the walkway space to illegalize actions and activities that may be injurious to others (Deacon, 2013). Laws and regulations serve as checks on human behaviour to ensure some level of conformity. They are enacted to achieve safety, ensure sanity, and reduce accidents within the road environment (Odame, 2014). In the interest of attaining a safe road environment, enforcement of traffic laws and regulations, the frequency of

enforcement, as well as public perceptions of enforcement, are key to reinforcing compliance and important in addressing issues that affect the behaviour of the road user (Searles, 1985; Elvik & Vaa, 2004; 2009 cited in Odame, 2014).

Although enforcement plays a major role and serves the purpose of ensuring the right usage and sustainability of facilities, little has been achieved. The results from the in-depth interviews showed that the enforcement of regulations on the use and extent of the walkway was a major challenge known to the Assembly and its designated departments. It was characterised by the issuing of privileges to relatives and friends, the issuing of tickets to traders who occupied illegal spaces and the intervention of "big men in enforcement. This is what one participant had to say on the issue:

> *The enforcement agency has internally breached their protocols by issuing privileges to people to trade where they should not be trading. These are issues of corruption.* (*A representative from Department of Transport,* AMA)

Another participant confirming the above submission iterated that the intervention of individuals or persons that wielded power in ongoing enforcement exercises affected enforcement and the performance of activities. The participant had this to say:

> *"Big men" solve issues before demolition" (A representative from Department of Security*, AMA*)*

Similarly, it was also evident in Okaikoi North that enforcement of the assembly's byelaws and other national policies, laws and regulations was a challenge. It was revealed that enforcement was weak owing to some factors

such as political interferences and misinterpretation of activities, internal breaches, as well as lengthy legal processes that often forestalled effective enforcement. Below are some voices of participants on enforcement by the Assembly:

> *The country is a democratic country, and in the present era the law enforcer does not have the power to arrest because Kofi will say he is doing it in favour of this man. Another will say because it is election season they have left the people in the street because they want to win the election, the same person when the law is enforced will come to complain that people are being bullied. Meanwhile they all know the law (A representative from Department of Security,* ONMA*).*
>
> Again,
>
> *A trader is selling where he is not supposed to, an ONMA man will go and collect ticket fee and when you try to eject them, they say your people came to collect ticket fee (A representative from Department of Security,* ONMA*).*

Another had this to say

> *There are some interferences when it comes to enforcing the law. Imagine you being an assembly member and I happen to take action against your brother, you will not allow me to take your brother. The court system too is very cumbersome, court is saying that if you take someone to court you should have pictures and whatever evidence you prepare you must give it to the accused person to read it. This slows down the process of*

enforcement (A representative from Department of Sanitation, ONMA*).*

The narrative provided above confirms the report of the Ministry of Roads and Highways (2017) and assertions made by others such as Agyapong and Ojo (2018) and Damsere-Derry et al. (2019). They reported that inadequate or poor enforcement of transport regulations in general and for NMT was a key issue affecting Ministries, Department and Agencies mandated with the supply, repairs and control of transportation delivery. The National Transport Policy (NTP) stated, "*Regulation is meaningless unless consistently enforced and updated as Ghana's governance framework evolves"* (Ministry of Transport, 2008: p25). Therefore, enforcement is a critical component of the regulatory framework yet all transport sector regulatory bodies reported a lack of resources, facilities, and suitably qualified personnel to fulfil their regulatory obligations (Ministry of Finance and Economic Planning, 2011). As reported by Steel, Ujoranyi, and Owusu (2014), traders had a sense of entitlement to the use of spaces because of payments they made which in the broader context somewhat legitimised their operations.

Finance

Investment in public spaces and their services forms one of the principal components in achieving efficient public space management and the quality of such spaces. Regulating, and physically maintaining spaces demands financial commitment and materials. The amount of financial commitment affects the degree to which maintenance routines and regulatory instruments function (de Magalhães and Carmona 2009). Resources for managing spaces come from several sources. To de Magalhães & Carmona, "investment is primarily about

capturing an appropriate slice of public sector budgets for public services" (2009: p.120).

In the state-led model of public space management, resources come from state budgets. As reported by Eddington (2016), cited by Odoom, Kyeremeh, Afram, and Tawiah, (2020) underinvestment in transport facilities could have dire consequences on passengers' mobility. Montag (2014) also reported that a decrease in investment and resources for law emforcement lead to a decrease in the effectiveness of enforcement. From the data obtained from the field, it was revealed that investment in transportation infrastructure and ongoing enforcement was not enough as revealed by responsible departments of the assemblies. Below are some submissions:

> *We rely on donors but apart from that, there is almost nothing from the central government. Almost 90 percent of our budget is financed from donor sources (A representative from department of Transport,* AMA*).*

Another participant also had this to say:

> *We take our funding from the Ghana Road Fund but it is heavily constrained so the little that they have they share among all the departments and agencies. Currently we are dealing with inadequate funds (A representative from Department Urban Roads,* AMA*).*

In the case of Okaikoi North, it was evident that finances and investments into ongoing processes and activities was also lacking. This affected the operations of the assembly as in some instances the situation often led to delays in salaries of workers of the assembly, which could have dire consequences on the

performance of individual duties. This what a participant had to say on the issue:

> *When you delay the payment of your employee, you will be teaching them to be corrupt. Ghanaians do not know that; in the military it is not like that (A representative from Department of Security* ONMA*).*

The above findings confirms the assertion made by Obeng-Atuah, Poku-Boansi, and Cobbinah (2017) that there is an urgent need to invest in transport infrastructure and capacity, to effectively deal with urban management challenges and respond to the transport needs of the growing population. Similarly, Amoako, Cobbinah, and Niminga-Beka (2014) indicated that programmes and plans of MMDA's aimed at improving pedestrian infrastructure delivery particularly in CBDs is curtailed by the lack of funding to undertake such projects and activities. The Integrated Transport Plan for Ghana Volume 1(Ministry of Finance and Economic Planning, 2011) indicated that transportation financial management in MDAs is weak. The plan reports that shortfalls in management, poor financial reporting, monitoring and accountability sets the tone for the failure recorded in the public sector to maintain transport infrastructure from revenues received.

Logistics and Personnel

This section looks at available logistics and adequate staffing. Organisations employ the use of machinery or equipment as well as the services of experts and other members of the organization or department in carrying out their activities and mandate. An organisation's level of performance is highly dependent on its employees. Employees can be regarded as the engine of any

organisation and the driving force that keeps it in motion. Thus, their impact on organisational performance cannot be overlooked.

According to Cobbinah (2010), staff capability and inadequate staffing are major problems that affects effective maintenance of public infrastructure. From the interviews, it was realised that staff capability, staff availability and staff capacity coupled with inadequate logistics (computers, software's, vehicles etc.) affected the general performance of the department and the organisation as a whole. It was also realised that a blend of the orientation of technocrats with foreign training to the local context of facility (walkway) management was a problem. In another instance, the tools or skills required to effectively plan, manage public spaces and walkaways required a considerable number of years to build the right understanding to apply them, these also affected effective management of walkways in the metropolis. In their submissions, this is what participants from the two assemblies had to say regarding staff capacity and capability:

> *In my department, we are supposed to be a minimum of 26 staff but currently we are only four. We are expected to have a management team for four units of which only one is functional. This affects the work on the ground so if you need to collect data and you need four minds to be thinking now only one mind is trying to coordinate all of these (A representative from Department of Transport,* AMA*).*

A participant from the Okaikoi North Assembly had this to say on staff strength as a challenge to effective management of walkways and public spaces in general.

What is happening is that I am here alone, we are supposed to be five that including the head, maintenance, works, traffic engineer, but as at now I am the only person managing all this (A representative of the Department of Urban Roads, ONMA*).*

Another had this to say:

We have challenge with labour, the workers are not many and they are aged (A representative from the Department of Sanitation, ONMA*)*

From the above interviews, it could be realised that staff strength in terms of number, capacity concerning skill and capability - the ability to work affected the daily administration and management of public spaces and in particular, walkways as workloads were often enormous for any single individual at the Assembly to manage.

On the issue of logistics, participants had this to say from respective assemblies:

So, on a scale of 1-10, I will say our logistic capacity is at 3 because most of the time you will have to use your personal resources to do public work be it the availability of a nationally accredited software for planning the public spaces (A representative from Department of Transport, AMA*)*

Recounting his views, this is what another participant had to say:

Logistics is one of the challenges we are facing ranging from speed guns, raincoats among others. (A representative from Department of Security, AMA*)*

A participant from the Okaikoi North Assembly also opined that:

> *We have logistical problems - in that our workers sometimes go about cleaning the drains without enough protective gears (A representative from Department of Sanitation,* ONMA*)*

The above narrative confirms the findings of Odoom, Kyeremeh, Owusu-Ansah and Tawiah, (2020), Fawcett (2010) and Cobbinah 2010) on expert and staff capacity. Their findings point to lack of expert, staff capacity and capability and how this affects transportation management in organisations in Ghana and beyond. Cited in the Integrated Transportation Plan for Ghana Volume 1 (Ministry of Finance and Economic Planning, 2011: p. 70), the Road Sector Development Programme 2002-2008 identified that inadequate agency staff, capability shortfalls of staff, and logistics are among other challenges that affect transport delivery and management.

Policy and collaborations

Effective policies and collaborations are central to an organization's leadership, logistics, funds and collaborations. A policy is a deliberate plan of action taken to guide decisions and achieve desired results by governmental entities (ref). In official written documents, such as laws, ordinances, or planning documents, policies are typically issued (FHWA, 2010). These policies often come with the endorsement or signature to legitimize the policy and demonstrate that the leaders of governmental entities consider it in force.

Communities that have been most successful in providing options for pedestrian transportation recognise that more than meeting minimum standards is the need for a safe and usable pedestrian environment. Such communities in their bid to ensure a safe and user-friendly pedestrian environment have adopted

policies, ordinances and guidelines specifying their usage and management (Walsh 2012). It was revealed from the interview conducted that collaboration between local people, traditional authorities and among institutions was low. Again, there was a lack of a manual for the design, construction and maintenance of road infrastructure. According to the submission made by an official from AMA:

> *There is very little collaborations between the community, traditional authorities and the assembly (A representative from the Department of Transport,* AMA

On policy or design manual, this is what he further stated that:

> *Although we have a highway code for our roads, Ghana as a country does not have a manual for constructing walkways so you find us borrowing from other places.*

Another participant also confirmed there is no separate manual for walkways in Ghana and because of that, its construction was often not prioritised due to its associated cost of construction and maintenance. Below is his submission;

> *Walkways are part of the road design most of the time they are taken out because of their costs. There is also no separate manual for constructing and maintaining our walkways (A representative from department of Urban Roads,* AMA*).*

In the case of Okaikoi North, the data also revealed that collaborations and participation between departments within the assembly, the community and other government agencies whose activities affected the road environment was fraught with several challenges such as poor communication. This resulted in different institutional and departmental schedules and timelines for operations

invariably affecting their collaborations and cooperation levels. The community on the other side of the continuum also had a low response rate in participating in managing the walkways and public spaces. In some instances, residents or the community regarded the maintenance and management of urban spaces to be the sole responsibility of the municipal assembly. This posed a major challenge for the assembly and its operations within the municipality. Below are some narratives to confirm the above assertion:

> *There is apathy on the path of residents. The collaboration between us is very bad. We become actors and they, spectators when it comes to managing public spaces especially during clean-up exercises (A representative from department of Security,* ONMA*)*

On institutional and departmental collaborations or participation, below are narratives explaining the extent of the challenge.

> *One challenge we have is poor communication between utility service providers and us. They lay their pipes where walkways have been constructed and getting them to maintain it after removing the surfaces is not easy because they do not have the skills to go about. Instead of liaising with us, they will just move there, cut our roads, and then leave it (A representative from Department of Urban Roads,* ONMA*).*

Another had this to say:

> *Being an officer, we work with other departments especially when moving to the field, but you will find us working individually. A sanitation officer knows the law governing*

sanitation and if there is obstruction of processes being a security man, I will ensure the law is enforced. Sadly, there is virtually no communication and collaboration in that regard. (A representative from Department of Security, ONMA).

This response substantiates the findings that transport management in organisations are affected by lack of policies (Davids, 2012; Odoom et al., 2020). Similarly, Carmona et al., (2008) observed that majority of local authorities do not have a clear and thorough plan for managing their public areas. Instead, they employ the 'mother-hood' style in managing changes taking place within the sphere of public space management. That is local institutions often lack a detailed plan or manual for managing public spaces thus they adopt a variety of methods and styles to manage the changes taking place within the sphere of public space management.

It was observed that the Accra Metropolitan and Okaikoi North Municipal Assembly respectively were faced with the challenge of managing pedestrian walkways in the metropolis. This was a result of factors such as inadequate staff, logistics, low investments or finance, poor collaborations and cooperation between institutions, departments and the community and poor enforcement. Other factors such as political interferences, poor attitudes on the part of pedestrian and the public towards street cleaning and maintenance also affected the management of pedestrian walkways. Although enforcement was ongoing, the consistency and frequency was lacking. Observations from the field revealed a situation where there was little or no presence of city guards, metro guards or taskforce patrolling the streets and walkways. Again, the

inability of officials to desist from issuing privileges to close relatives, friends and some traders invariably affected the rate of compliance among the citizenry.

Community participation in walkways management.

From Figure 10 below, it was observed that individuals' level of involvement in walkway management was low. The results indicated that 73.2 percent of total respondents were not involved or did not feel involved in making decisions concerning walkways with 26.8 percent indicating their involvement. On whether one had power to influence decisions concerning walkways and its management 68.6 percent said they did not have the power to make decisions. Finally, when asked if they knew who to contact about pedestrian walkway management, 79.9 percent of respondents answered they did not know who to contact about walkway issues. However, 20.1 percent indicated they knew whom to contact for information and issues relating to pedestrian walkways in Accra Metropolis. Some pedestrians cited the media, the metro office and friends as sources of information on walkways.

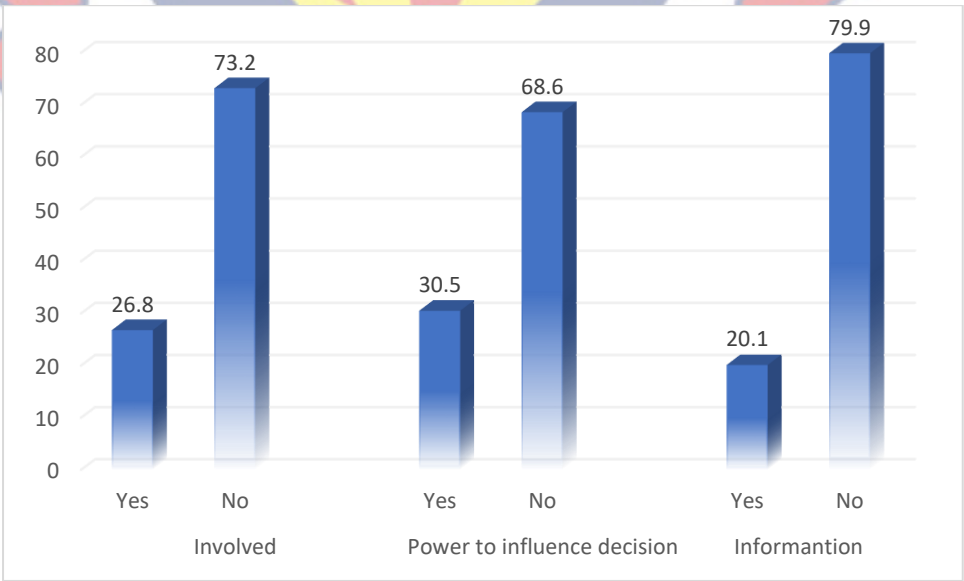


Figure 11: Stakeholder Coordination level in walkway management

Source: Field Survey (2020)

To better understanding of one's level of participation, individual responses were categorised to determine their level of participation.

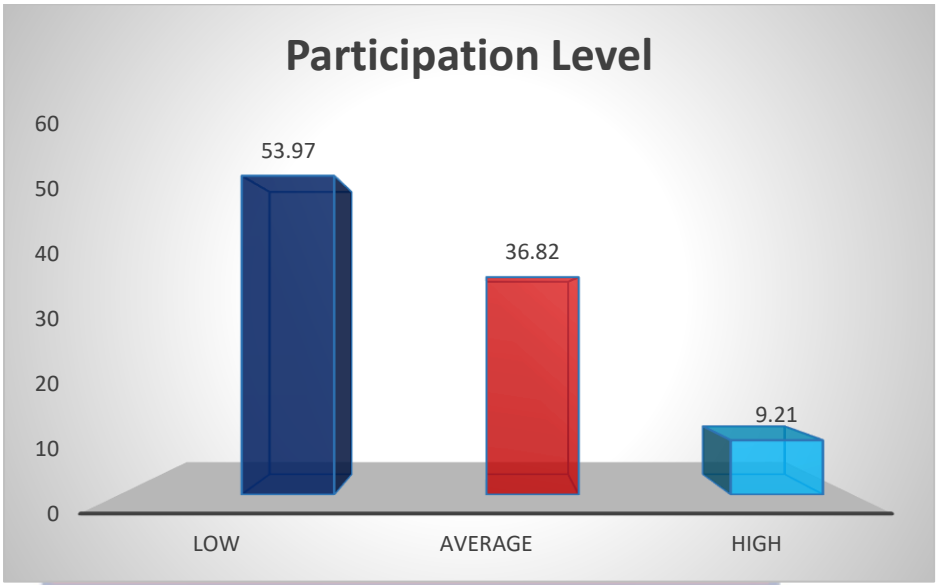


Figure 12: Stakeholder level of walkways management.

Source: Field Survey (2020)

The above findings indicated that community member's potential or likelihood of participation was generally low characterised by low level of decision-making, low levels of involvement and access to information. This confirms other findings. In the case of local participation in Ghana, Adjei-Mensah et al. (2017) assessed community participation in the case of managing Green Spaces and found it to be very low, with poor consultation and empowerment of the local people and inefficiencies of bodies responsible for organising and consulting. Regardless of the number of attempts to ensure that people engaged in decision-making regarding local issues, the adoption of such initiatives was inadequate. Similarly, Boadu (2010) also found that poor partnership existed between authorities and local people projects.

The United Nations (UN) Agenda 21 from the Rio Earth Summit in 1992 emphasized that participation is key in achieving sustainable development. This owes to the fact that community participation helps to address issues ranging from social, economic and environmental problems more effectively (United Nations, 1992). Drawing on the definition of Hart (1992) as cited in Wetzelhütter & Bacher (2015), participation means a "process of sharing decisions which affect one's life and the life of the community in which one lives". Thus, participation is a *process* of collective decision-making. Participation is always associated with participants empowerment (Smith, 2006 cited in Nour, 2011).

According to Nour (2011), community participation and multi-stakeholder partnership is important, without which no attempts at achieving remarkable and sustainable impacts will fail. To Kumar (2002), this partnership offers a platform for possible users of any resources to engage in the planning, execution, and assessment of activities, to increase responsiveness, sustainability, and efficiency of such resources. Worpole and Knox (2007), argue that the success of any public space is not entirely the responsibility of the expert, and technocrats, but lies also on the people using and adopting the spaces. Worpole and Knox admit that the success, management and sustainability of any public space is a shared responsibility and does not rest entirely within the domain of the community or government.

Participation as explained in the framework of public space management and its key dimensions by Carmona et al. (2008) focuses on coordination of intervention, actions, organisational hierarchies, consultation and user feedback. Therefore, to determine the individual's level of involvement or

consultation and access to information expressed in the light of a feedback system, individuals were asked to indicate whether they were involved in decision-making, whether they had the power to influence decisions and whether they knew who to contact. The results are presented in Figure 10.

Factors that affect willingness to participate in walkway management

Individual factors that potentially influence willingness to participate were also

Identified. The outcome is shown in Table 11 below.

As evident from Table 11, individual responses are widespread away from their mean values. This depicts a high variability or differences in individual response.

Table 11: *Summary Statistics for participation in walkway management in AMA*

Variables	Mean	Std.Dev.
Knowledge	3.04	1.226
Access to information	2.95	1.258
Level of income	2.64	1.158
Political affiliation	2.40	1.177
Gender	2.39	1.207
Perceived benefits associated with walkways	3.06	1.194
Perceived quality of walkways	3.07	1.273
Attitudes and beliefs towards environmental protection and sustainability	3.05	1.207
Social norms and customs	2.75	1.175
Religious affiliations	2.52	1.188

Note: Max. represents maximum, Min. represents minimum, Std. Dev. represents standard deviation, Skew. represents skewness, and Obs. represents observations.

Source: Field Survey (2020).

Knowledge, perceived benefits associated with walkways, perceived quality of walkways, and attitude and beliefs towards environmental protection and sustainability recorded mean values of 3.04, 3.06, 3.07, and 3.05 respectively. This implies that on average, these factors could have a moderate effect on the extent to which the respondents would be willing to participate in walkway management. The remaining factors including access to information, level of income, political affiliations, gender, social norms and customs, and religious affiliations recorded mean values of 2.95, 2.64, 2.40, 2.39, 2.75, and 2.52 respectively. This implies that on average, these factors had a low effect on the extent to which the respondents would be willing to participate in walkway management.

In addition, it could be observed that gender recorded the least mean value of 2.39 whereas the perceived quality of walkways recorded the highest mean value of 3.07. Therefore, this could imply that on average the perceived quality of walkways, as compared to gender, had higher tendency to affect the willingness of pedestrians to participate in the management of walkways. These perceived qualities included accessibility, cleanliness, security, well-fitted spaces, and attractiveness (Hassan & Mombo, 2017).

According to Hassan and Mombo (2017), in the light of the perceived quality of walkways, willingness to participate is rated positively even if such is influenced negatively by various socio-economic factors. Hence, pedestrians of the Accra Metropolis would be much more willing to participate in walkway management provided their involvement could cause a positive change in accessibility, cleanliness, security, well-fitted spaces, and the attractiveness of walkways.

In effect, the summary result suggests that political affiliations and gender are the least to affect the willingness of pedestrians in the Accra Metropolis to participate in walkway management. However, they would be much more willing to participate because of the perceived quality and benefits attached to walkways. Also, knowledge, attitudes, and beliefs towards environmental protection and sustainability, level of income, and access to information could, to some extent, affect their willingness to participate in walkway management. This is in support of the arguments raised by Ali (2014), and Roy and Jha (2012) that acquiring new information, knowledge level, incomes, family traditions and attitudes towards overall society, religiosity, and social relations are motivational factors for pedestrian participation in walkway management.

To explore the objective to enhance understanding of the level of importance respondents associated with their ratings or weightings of the various statements, the relative importance index was adopted in this study to rank respondents' statements according to their relative importance. Reliability test conducted on the ten (10) variables revealed high internal consistency of data. The Cronbach's Alpha was 0.83. According to Hair et al. (1998), there is high internal consistency for the data if Cronbach's Alpha is more than 0.7. In determining the effect size of relative importance values, Akadiri (2011 cited by Rooshdi et al., 2018) offers five important levels of transformed relative importance (RI) values. These values are high (H) ($0.8 \leq RI \leq 1$), high-medium (H-M) ($0.6 \leq RI \leq 0.8$), medium (M) ($0.4 \leq RI \leq 0.6$), medium-low (M-L) ($0.2 \leq RI \leq 0.4$) and low (L) ($0 \leq RI \leq 0.2$).

Table 12 shows the ranking results for each variable using the relative importance index analysis. Based on the results, four variables (perceived quality, perceived benefits, attitudes and beliefs towards environmental sustainability, and level of knowledge) were highlighted to have high-medium important levels in walkways management with RI value of 0.61. What this suggests is that pedestrians regarded perceived quality of walkways, perceived benefits associated with walkways, their attitudes and beliefs towards environmental sustainability and their levels of knowledge to influence (high-medium) their willingness to participate in walkways management. All other variables ranked had a medium effect on pedestrian willingness to participate.

Table 12: *Table showing Relative Importance Index*

Factors that Influence Participation	RII %	Rank	Effect Degree
Perceived quality	**0.61**	**1**	H-M
Perceived benefits	**0.61**	**2**	H-M
Attitudes and beliefs	**0.61**	**3**	H-M
Knowledge	**0.61**	**4**	H-M
Access to Information	0.59	5	M
Social norms & customs	0.55	6	M
Income level	0.53	7	M
Religious affiliation	0.50	8	M
Political affiliation	0.48	9	M
Gender	0.48	10	M

Note*** H-M, means High-Medium; M means Medium

Source: Field Survey (2020)

Chapter Summary

This chapter analysed, presented and discussed the descriptive statistics of the data used in this study and subsequently the explanatory analysis of the study variables. Findings from the study reveals that the management of walkways in Accra Metropolis was unsatisfactory with coordination being the major predictor of management of walkways. In addition, it was found that the conditions of majority of walkways assessed were in bad or very bad conditions. Additionally, almost all walkways used had some level of obstructions and were heavily encroached either for trading or as parking space for vehicles.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Introduction

This final chapter begins with a summary of the objectives of the study, its methods and data analysis techniques. The chapter proceeds with a summary of the key findings pertaining to each objective and the conclusions drawn from them. Specific recommendations from the findings and conclusions are made to stakeholders for decision making. The chapter ends with some suggestions for further research.

Summary

The purpose of this study was to assess the management of pedestrian walkways in Accra Metropolis. The study sought to achieve five specific objectives. The first specific explored the factors that account for the conditions of urban walkways in the Accra Metropolis. The second assessed organizational practices in the management of walkways. The study further explored the challenges faced by responsible agencies in the management of walkways within urban neighbourhoods. The fourth objective evaluated community participation in the management of walkways and finally the study sought to determine the factors that affect people's willingness to participate in walkways management.

A sample size of 246 was drawn from a population of 1,665,086 using Fisher et al. (1998) formula for sample size determination and seven key respondents were interviewed. 239 responses was derived from the field representing 97 per cent-response rate. The study employed the intercept

sampling approach used in Pedestrian and Bicycle Survey (PABS). A self-administered questionnaire was distributed to respondents.

The first objective explored factors that accounted for the condition of urban walkways in Accra Metropolis. It was found that majority of pedestrian walkways were not in good conditions. The factors that greatly affected the condition of walkways were path blockages or restrictions (poles, trees, benches or seats) and invasion of walkway space for activities such as trading, parking of vehicles, operating of vulcanising points, dumping refuse and construction materials on the surfaces affected the condition of the walkway.

With regards to the second objective, the study assessed organisational practices in the management of the walkway and found that coordination, be it horizontal and vertical coordination, significantly impacted on the overall management of walkways or sidewalks in Accra Metropolis.

The third objective explored factors that affected responsible organisations in the management of walkways and found out that the investment and coordination were the key factors that influenced management activities of these organisations.

The fourth objective evaluated the participation level of the stakeholders and the community in the management of pedestrian walkways. It was found that stakeholder and community participation was low.

The final objective determined factors that will influence individuals' willingness to participate in the management of walkways. It was revealed that factors such as perceived quality of walkways, perceived benefits associated with walkways, level of knowledge, attitudes and beliefs towards environmental protection and sustainability.

Conclusion

- With regards to aim of study, the study concludes that pedestrian walkways in the area of study are inadequately managed. Path obstruction such as traffic light and light poles, fixing of benches on walkways and encroachment of walkways for selling, parking, operating vulcanising points and dumping of construction materials had a profound impact on the surface condition of the walkway. Most of these activities requires the drilling of holes on the path to fix for example seats and poles and this tends to deform the surface of these walkways. Trading activities on the walkway generates a lot of waste and when not attended to over time creates mini dumpsites on the walkways which also over time deforms the path making it unattractive. In addition, there was no separate manual and readily available design standards for planning, construction and management of pedestrian walkways in the metropolis. This meant borrowing from several sources resulting ununiformed design and management standard or regimes.
- Again, organisational practices, particularly coordination of activities among agencies, departments, stakeholders and the community at large affected the management of walkways. This being said, when coordination improves with respect to efficient stakeholder engagement, effective dissemination of information and effective communication will have a significant impact on the management of pedestrian walkways.
- On challenges of responsible organisations in the management of pedestrian walkways in Accra Metropolis, it is concluded that among

the multiple issues that these organisations face, investment and coordination appear to be the most significant. . Inadequate investment such as poor budget allocation, inadequate logistics, lack of expertise and personnel, software, design manual for planning spaces, inadequate financing of activities, weak rationalisation of resources leading to wastage and coordination were major factors that affected institutions in the management of walkways in Accra Metropolis. Due to poor financing, walkways management and construction are often omitted or taken out during the planning, construction and management stages as a result of the associated cost. On the same continuum, institutional heads lamented about the poor coordination among departments, agencies and the community at large exhibited by poor stakeholder participation, inadequate information sharing and long bureaucratic and cumbersome legal systems. The poor coordination between agencies and department often resulted in poor resource rationalisation leading to wastage.

Recommendations

The following recommendations are made in light of the key findings and conclusions. The study provides evidence that pedestrian walkways in the selected study area is poorly managed. It is therefore recommended that current design standards for management of walkways must be revised to cater for the needs of all that have vested interest in these spaces. A development of a context specific design manual for walkways planning, design, construction and managing walkways by the Ministry of Transport and Urban roads for its agencies and departments is particularly is needed.

Developing and planning of spaces should be people centred. In this regard planning is expected to touch all stakeholders regardless of their status in order to make a meaningful impact. In so doing, rigid standards of enforcing laws and the traditional systems of planning standards must be revised by local government agencies particularly the metropolitan, municipal and district assemblies to depict and reflect the ever-changing landscape of urban open spaces design.

Finally, central government must resource institutions with enough financial backing to enable them carry out their activities, as cities are known to be the drive behind successful social and economic growth of many regions. City authorities must focus and coordinate effectively by engaging and defining clear structures of operation to cater for the inadequacies of having several departments performing the same role leading to apathy. Public education must also be rolled out and intensified to inform and educate the general populace.

Suggestions for Future Research

Future research should consider an assessment of the correlates between pedestrian infrastructure design standards and travel behaviour.

Again, a study can be carried out using a qualitative approach to assess the management of pedestrian walkways in Ghana.

REFERENCES

A Pedestrian Facility Design. (1996). 42–50.

Abane, A. M., Amoako-Sakyi, R. O., Agyemang, K. K., Odame, P. K., Owusu, S. A. (2019). "Report by INTALInC Transport and Social Exclusion in Ghana June 2019 Supported by the Volvo Research and Educational Foundations." (June). doi: 10.13140/RG.2.2.36086.45121.

Alfonzo, M. A. (2005). To walk or not to walk? The hierarchy of walking needs. *Environment and behaviour*, *37*(6), 808-836.

Agyapong, F., & Ojo, T. K. (2018). Managing traffic congestion in the Accra Central Market, Ghana. *Journal of Urban Management*, *7*(2), 85–96. https://doi.org/10.1016/j.jum.2018.04.002

Alemgena, H., Emer, P., Quezon, T., & Kumela, T. (2018). Investigation of Pedestrian Safety Problems and Its Countermeasures: A Case Study in Nekemte City, Ethiopia. *International Journal of Engineering and Technical Research*, *8*(2), 58–64.

Al-Hagla, K. (2008). Towards a Sustainable Neighbourhood: The Role of Open Spaces. *Archnet- IJAR*, (2)2, 162-177.

AMA (2017). *Pedestrian Road Safety Action Plan for the Accra Metropolitan 2018-2012*. (December), 28.

Amoako, C., Cobbinah, P. B., & Niminga-Beka, R. (2014). Urban Infrastructure Design and Pedestrian Safety in the Kumasi Central Business District, Ghana. *Journal of Transportation Safety and Security*, *6*(3), 235–256. https://doi.org/10.1080/19439962.2013.861887Al

Amoako-Sakyi, R.O. (2016). *School path walkability and pedestrian crashes in the Cape Coast metropolitan area*. An unpublished PhD thesis submitted to Department of Geography and Regional planning, University of Cape Coast.

Armor, D. J. (1973). Theta reliability and factor scaling. *Sociological methodology*, *5*, 17-50.

Adjei-Mensah, C., Andres, L., Baidoo, P., Eshun, J. K., & Antwi, K. B. (2017). Community Participation in Urban Planning: the Case of Managing Green Spaces in Kumasi, Ghana. *Urban Forum*, *28*(2), 125–141. https://doi.org/10.1007/s12132-016-9295-7

Ali, A. (2014). Factors Affecting the Participation of Rural People in Community Organisations. *Journal of School of Agriculture & Food Sciences*.

Ali, M. A. (2014). An assessment of factors affecting women participation in nigeria labour congress. *Journal of Emerging Trends in Educational Research and Policy Studies*, *5*(8), 220-223.

AMA. (2019). *Accra resilience strategy*. 118. Retrieved from http://www.100resilientcities.org/wp-content/uploads/2019/03/Accra-Resilience-Strategy.pdf

Accra Metropolitan Assembly. (2010). City of Accra: Ghana Consultative Citizens' Report Card.

Angba, A. O., Adesope, O. M., & Aboh, C. L. (2009). *Effect of socioeconomic characteristics of rural youths on their attitude towards participation in community development projects*. *4*(8), 348–351.

Accra Metropolitan Assembly. (2016). *Republic of ghana the composite budget of the accra metropolitan assembly 2016 fiscal year*. 171.

Annum, G. (2016). *Research instruments for data collection*. 1–4.

AARP Livable Communities. (2014). AARP Livability Fact Sheet - sidewalks. Retrieved September 2, 2021, from https://www.aarp.org/livable-communities/info-2014/sidewalks-fact-sheet.html

Bloomberg, R. M., Burden, A., Burney, D., Farley, T., & Sadik-Khan, J. (2013). Active Design: Shaping the Sidewalk Experience. *City of New York: Report from City Council*. 1–124.

Boadu, K. A. (2010, August 14). Is Kumasi a beautiful city? Retrieved September 22, 2020, from http://www.tcpghana.gov.gh/index.php?option=com_content

Bonilla, M. H. (2013). The significance and meanings of public space improvement in low income neighbourhoods 'colonias populares' in Xalapa-Mexico. *Habitat International*, 38,34-46. Doi: 10.1016/j .habitatint.2012.09.003.

Brody, S. D., Godschalk, D. R., & Burby, R. J. (2003). Mandating citizen participation in plan making: Six strategic planning choices. *Journal of the American Planning Association*, 69(3), 245-264.

Brierley, J. A. (2017). The role of a pragmatist paradigm when adopting mixed methods in behavioural accounting research. *International Journal of Behavioural Accounting and Finance*, *6*(2), 140-154.

Brierley, J. A. (2017). *Version : Accepted Version Article : The role of a pragmatist paradigm when adopting mixed methods in behavioural accounting research University of Sheffield*.

Burns, N., & Grove, S. (2003). Understanding nursing research (ed.). *St Louis: Wb Saunders Company*.

Carmona, M., Magalhães, C. de, & Hammond, L. (2008). *Public space : the management dimension*. Routledge 2 Park Square, Milton Park, Abingdon, Oxon OX14 4RN.

Chitrakar, Rajjan Man, Douglas C. Baker, and Mirko Guaralda. 2017. "Emerging Challenges in the Management of Contemporary Public Spaces in Urban Neighbourhoods." *Archnet-IJAR* 11(1):29–43. doi: 10.26687/archnet-ijar.v11i1.1197.

Cities Alliance. (2017). *Urban Governance and Services in Ghana Institutional , financial and functional constraints to effective service delivery*. 1–194.

Corazza, M. V., Di Mascio, P., & Moretti, L. (2018). Management of sidewalk maintenance to improve walking comfort for senior Citizens. *WIT Transactions on the Built Environment*, *176*, 195–206. https://doi. org/10. 2495/UT170171.

Creswell, J. W., & David, J. Creswell. (2018). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*.

Creswell, J. W., & Tashakkori, A. (2007). Differing perspectives on mixed methods research.

Creswell, J. W. (2012). Educational research: planning. *Conducting, and Evaluating*.

Creswell, J. W. (2009). Research design: Qualitative and mixed methods approaches. *London and Thousand Oaks: Sage Publications*.

Creswell, J. W. (2009). Mixed methods procedures. *Research design: Qualitative, quantitative, and mixed methods approaches*, *3*, 203-225.

Creswell, J. W., & Creswell, J. D. (2005). Mixed methods research: Developments, debates, and dilemmas. *Research in organizations: Foundations and methods of inquiry*, 315-326.

Creswell, J. W., Plano Clark, V. L., Gutmann, M. L., & Hanson, W. E. (2003). Advance mixed methods research designs. In A.Tashakkori & C. Teddlie (Eds.), *Handbook of mixed methods in social and behavioral research* (pp. 209-240). Thousand Oaks, CA: Sage.

Creswell, J. W., Goodchild, L., & Turner, P. (1996). Integrated qualitative and quantitative research: Epistemology, history, and designs. In J. Smart (Ed.), *Higher education: Handbook of theory and research* (Vol. 11, pp. 90–136). New York: Agathon Press.

Cobbinah, P. J. (2010). *Maintenance of buildings of public insitutions in ghana. Case study of selected institutions in the ashanti region of ghana*. Kwame Nkrumah University of Science and Technology.

Duho, Q. R. (2017, January 27). 'Lack of pedestrian walkways, obstacles on routes are barriers to PWDs' - Graphic Online. Retrieved November 10, 2019, from https://www.graphic.com.gh/news/general-news/lack-of-pedestrian-walkways-obstacles-on-routes-are-barriers-to-pwds.html.

Deacon, L. (2013). Planning Sidewalks: Implications of Regulating Sidewalk Space in the East Village. *Master's Thesis*, (May).

Dempsey, Nicola, and Mel Burton. 2012. "Defining Place-Keeping: The Long-Term Management of Public Spaces." *Urban Forestry and Urban Greening* 11(1):11–20. doi: 10.1016/j.ufug.2011.09.005.

Davids, M. (2012). Urban Transport Priorities: Meeting the Challenge of Socio-economic Diversity in Cities, a Case Study of Delhi, India. International J. of Cities, 19(2): 95–103\

Damsere-Derry, J., Ebel, B. E., Mock, C. N., Afukaar, F., Donkor, P., & Kalowole, T. O. (2019). Evaluation of the effectiveness of traffic calming measures on vehicle speeds and pedestrian injury severity in Ghana. *Traffic Injury Prevention*, *0*(0), 1–7. https://doi.org/10.1080 /153895 88.2019.1581925

de Magalhães, C., & Carmona, M. (2009). Dimensions and models of contemporary public space management in England. *Journal of Environmental Planning and Management*, *52*(1), 111–129. https://doi.org/10.1080/09640560802504704.

Farvacque-Vitkovic, C., Raghunath, M., Eghoff, C., & Boakye, C. (2008). Development of the Cities of Ghana: Challenges, Priorities and Tools. *Africa Region Working Paper*, (110), 1–157.

Elvik, R., and Vaa, T. (2004). *The handbook of road safety measures*. Amsterdam: Elsevier.

Elvik, R., Vaa, T., Hoye, A., & Sorensen, M. (Eds.). (2009). *The handbook of road safety measures*. Emerald Group Publishing.

Fhwa. (2008). *Walkways, Sidewalks, and Public Spaces 13.1*.

Fagariba, C., & Song, S. (2017). *Assessment of Impediments and Factors Affecting Waste Management : A Case of Accra Metropolis Research Paper Assessment of Impediments and Factors Affecting Waste Management : A Case of Accra Metropolis*. (December). https://doi.org /10.15413/ajes.2016.0125.

Forina, M., Armanino, C., Lanteri, S., & Leardi, R. (1989). Methods of varimax rotation in factor analysis with applications in clinical and food chemistry. *Journal of Chemometrics*, *3*(S1), 115-125.

Field, A. (2000). *Discovering Statistics using SPSS for Windows*. London – Thousand Oaks – New Delhi: Sage publications.

Field, A. (2018). *Discovering statistics using IBM SPSS statistics* (5th ed). Los Angeles: Sage

Fisher, A. A., Laing, J. E., Stoeckel, J. E., & Townsend, J. W. (1998). *Handbook for family planning operations research design.* New York: Population Council.

FHWA. (2010). *International Technology Scanning Program: Public policies for pedestrian and bicyclist safety and mobility*. *10*(September). Retrieved from https://international.fhwa.dot.gov/pubs/pl10028 /pl10028 .pdf

Fawcett, P. (2010). Managing Passenger Logistics: The Comprehensive guide to people and Transport. London: Kogan Limited.

Forsyth, Ann, Asha Agrawal, and Kevin Krizek. 2012. "Simple, Inexpensive Approach to Sampling for Pedestrian and Bicycle Surveys." *Transportation Research Record* (2299):22–30. doi: 10.3141/2299-03.

Gehl J. (1999) Keynote speech, WALK21 Conference proceedings, http://www.staffs.ac.uk/schools/sciences/geography/cast/walk21/frames.html

Gupte, M. (2004). Participation in a gendered environment: The case of community forestry in India. *Human Ecology*, *32*(3), 365–382. https://doi.org/10.1023/B:HUEC.0000028086.63366.3d

Ghana Statistical Service (GSS). (2014). Accra metropolitan. *Ghana Statistical Service*, 78. Retrieved from https://new-ndpc static1.s3.amazonaws.com /CACHES/PUBLICATIONS/2016/06/06/AMA.pdf

Goss, S. (2001), *Making Local Governance Work: Networks, Relationships and the Management of Change, Basingstoke*, Palgrave.

Hadi, N. U., Abdullah, N., & Sentosa, I. (2016). An easy approach to exploratory factor analysis: Marketing perspective. *Journal of Educational and Social Research*, *6*(1), 215-215.

Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2017). *A primer on partial least squares structural equation modeling (PLS-SEM) (2nd ed.)* Thousand Oaks: Sage.

Hair, J. F.; Anderson, R. E.; Tatham, R. L.; Black, W. C. 1998. *Multivariate data analysis*, 5th ed., Prentice-Hall, New Jersey

Hass-Klau C., Dowland C., and Nold I., (1994) Streets as living space, Brighton: Environmental and Transport Planning.

Hassan, A., & Mombo, F. (2017). Urban Community's Participation in Conservation of Open Spaces: A Case of Dar es Salaam City. International *Journal of Natural Resource Ecology and Management*, 2(1), 9. https://doi.org/10.11648/j.ijnrem.20170201.12

Hart, R. A. (1992). Children's participation. From tokenism to citizenship. Innocenti es- says, No. 4. Florence: UNICEF, United Nations Children's Fund.

Healey, P. (1998). Building institutional capacity through collaborative approaches to urban planning. Environment and Planning A, 30, 1531-1546.

Henseler, J., Ringle, C.M., & Sinkovics, R. (2009). The use of Partial Least Squares path modeling in International Marketing. *International Marketing*, *20*, 277-319.

Horn, J. L. (1965). A rationale and test for the number of factors in factor analysis. *Psychometrika*, *30*(2), 179-185.

Hutcheson, G. D., & Sofroniou, N. (1999). *The Multivariate Social Scientist: an introduction to generalized linear models.* Sage Publications.

International Road Assessment Program (iRAP): www.irap.org iRAP. Star rating roads for safety: Accra report, 2016.

Ihuah, P. W., & Eaton, D. (2014). *The Pragmatic Research Approach: A Framework for Sustainable Management of Public Housing Estates in Nigeria*. (October 2013).

Ivankova, N. V., Creswell, J. W., & Stick, S. L. (2006). Using Mixed-Methods Sequential Explanatory Design: From Theory to Practice. *Field Methods*, *18*(1), 3–20. https://doi.org/10.1177/1525822X05282260.

Jones, H., Moura, F., & Domingos, T. (2014). Transport infrastructure project evaluation using cost-benefit analysis. *Procedia-Social and Behavioral Sciences*, 111, 400–409.

Johnson, R. B., & Onwuegbuzie, A. J. (2004). Mixed methods research: A research paradigm whose time has come. *Educational researcher*, *33*(7), 14-26.

Kaiser, H. F. (1974). An index of factorial simplicity. *Psychometrika*, *39*(1), 31-36.

Krambeck, Holly Virginia. 2006a. "The Global Walkability Index." *Environmental Engineering*.

Krambeck, Holly Virginia. 2006b. "The Global Walkability Index."

Kumar, S. (2002). Methods for community participation: a complete guide for practitioners.

Kumekpor, T. K. (2002). *Research methods and techniques of social research*. SonLife Press & Services.

Leach, R. and Percy-Smith, J. 2001. *Local Governance in Britain*, Basingstoke: Palgrave.

Mateo-Babiano, I. (2003). Sustainable+ Mobility+ Management: Pedestrian Space Management as a Strategy in Achieving Sustainable Mobility. *Transport Research and Infrastructure Planning Laboratory, Civil Engineering Department, University of Tokyo, Japan*.

Montag, J. (2014). A radical change in traffic law: effects on fatalities in the Czech Republic. *Journal of Public Health*, *36*(4), 539-545.

MORI (2002) *The Rising Prominence of Liveability*, London, MORI.

Movahed, S., Azad, S. P., & Zakeri, H. (2012). A Safe Pedestrian Walkway; Creation a Safe Public Space Based on Pedestrian Safety. *Procedia - Social and Behavioral Sciences*, *35*(December 2011), 572–585. https://doi.org/10.1016/j.sbspro.2012.02.124

Murwadi, H., & Dewancker, B. (2017). Study of quassessment model for campus pedestrian ways, case study: Sidewalk of the University of Lampung. *Sustainability (Switzerland)*, *9*(12). https://doi.org/10.3390 /su9 122285.

Marsden, G. R., & May, A. D. (2006). Do institutional arrangements make a difference to transport policy and implementation? Lessons for Britain. *Environment and Planning C: Government and Policy*, *24*(5), 771–789.

https://doi.org/10.1068/c0543

McDonough, J. (2014). New Haven. *The Minnesota Review*, *2014*(83), 31–31. https://doi.org/10.1215/00265667-2781560

McLaren, A. (2016, September 14). *Economic & environmental benefits of walking and walkable communities*. Economic & Environmental Benefits of Walking and Walkable Communities - Iowa Healthiest State Initiative. Retrieved March 15, 2020, from http://www.iowahealthieststate.com/blog/communities/economic--environmental-benefits-of-walking-and-walkable-communities/

Mohammed, J., Osei-Fosu, A. K., & Yusif, H. (2017). Factors influencing households' participation in forest management in the northern region of Ghana. *Independent Journal of Management & Production*, *8*(4), 1324. https://doi.org/10.14807/ijmp.v8i4.631

Murguía, R. O. (2012). *Share the Road: Design Guidelines for Non Motorised Transport in Africa*. Retrieved from www.unep.org/transport/sharetheroad.

Mahjabeen, Z., Shrestha, K. K., & Dee, J. A. (2009). Rethinking community participation in urban planning: The role of disadvantaged groups in Sydney metropolitan strategy. *Australasian Journal of Regional Studies*, 15 (1), 45 – 63.

Margerum, R. D. (2002) Collaborative planning: Overcoming obstacles during consensus building. *Journal of Planning Education and Research*, 21(3), 237-253.

Moghaddam, F. M., Walker, B. R., & Harre, R. (2003). Cultural distance, levels of abstraction, and the advantages of mixed methods. *Handbook of*

mixed methods in social and behavioral research, 111-134.

Moon, K., & Blackman, D. (2014). A guide to understanding social science research for natural scientists. *Conservation Biology*, *28*(5), 1167-1177.

Morse, J. M. (1991). Approaches to qualitative-quantitative methodological triangulation. *Nursing research*, *40*(2), 120-123

Ministry of Finance and Economic Planning. (2011). *Ministry of Finance and Economic Planning Integrated Transport Plan for Ghana* (Vol. 1).

Ministry of Roads and Highways. 2017. *Ministry of Roads & Highways Sector Medium-Term Development Plan (Smtdp): 2014-2017*.

National Department of Transport South Africa. (2003). *Pedestrian and Bicycle Facility Guidelines Department of Transport Pedestrian and Bicycle Facility Guidelines*.

Ministry of Transport (2008). *National Transport Policy*, (February), 134. Retrieved from https://s3.amazonaws.com/ndpc-static/pubication/Transport+Policy_Dec2008.pdf

Nour, A. M. (2011). Challenges and Advantages of Community Participation as an Approach for Sustainable Urban Development in Egypt. *Journal of Sustainable Development*, *4*(1), 79–91. https://doi.org/10.5539/jsd.v4n1p79.

Obadire, O., Mudau, M., Zuwarimwe, J., & -Mensah, P. S. (2014). Participation index analysis for CRDP at Muyexe in Limpopo Province, South Africa. *Journal of Human Ecology*, *48*(2), 321-328. doi:10.1080/09709274.2014.11906801

Odame, P. K. (2016). Road Transport Infrastructure and Mobility: Views of Students with Physical Disability in the University of Cape Coast.

Okpala, D. (2009*). Regional overview of the status of urban planning and planning practice in Anglophone (Sub-Saharan) African Countries.* Nairobi: United Nations Human Settlement Programme, Regional study for Global Report on Human Settlement.

Oladokun, Sunday Olarinre, and Cyril Ayodele Ajayi. 2018. "Assessing Users' Perception of Facilities Management Services in a Public University: A Case Study Approach." *Journal of Facility Management Education and Research* 2(2):62–73. doi: 10.22361/jfmer/00071.

Onwuegbuzie, A. J., & Johnson, R. B. (2006). The validity issue in mixed research. *Research in the Schools*, *13*(1), 48-63.

Obeng-Atuah, D., Poku-Boansi, M., & Cobbinah, P. B. (2017). Pedestrian crossing in urban Ghana: Safety implications. *Journal of Transport and Health*, *5*(2005), 55–69. https://doi.org/10.1016/j.jth.2016.06.007

Odame, S. K. (2014). *Police - Driver Interaction And Traffic Law Enforcement In Madina And Adenta-Ghana* (University of Ghana). Retrieved from http://ugspace.ug.edu.gh

Odoom, D., Kyeremeh, C., Afram, K. O. O., & Tawiah, S. (2020). *Transportation Management Challenges in Ghana : A Study of Three Selected Transportation Management Challenges in Ghana : A Study of Three Selected Companies in the Sekondi-Takoradi Metropolis*. (April). https://doi.org/10.5923/j.economics.20201003.04

Pallant, J. (2005). SPSS Survival Manual. A Step by Step Guide to Data Analysis Using SPSS for Windows (Version 12). *Journal of Advanced Nursing* 1–299. doi: 10.1046/j.1365-2648.2001.2027c.x

Pallant, J. (2013). *SPSS Survival Manual. A step by step guide to data analysis*

using SPSS, 4th edition. Allen & Unwin, www.allenandunwin.com/spss.

Pallant, J. (2013). *SPSS survival manual*. McGraw-hill education (UK).

Parahoo, K. (1997) *Nursing Research: Principles, Process, Issues.* London: Macmillan

Petrucci, C. J. (2009). A primer for social worker researchers on how to conduct a multinomial logistic regression. *Journal of social service research*, *35*(2), 193-205.

Rahman, F., Sadıa A., Afrına, A., Islam, R., & Al Majıd, R., (2015). "Road User's Perception about the Sidewalk Condition of Dhaka City." 74–78. doi: 10.15242/iie. e0815051.

Roy, A., & Jha, S. K. (2012). *Factors Affecting People ' s Participation and Implementation of Institution- Village Linkage Programme in Sunderbans , West Bengal*. (January).

Rooshdi, Raja Rafidah Raja Muhammad, Muhd Zaimi Abd Majid, Shaza Rina Sahamir, and Noor Akmal Adillah Ismail. 2018. "Relative Importance Index of Sustainable Design and Construction Activities Criteria for Green Highway." *Chemical Engineering Transactions* 63(2007):151–56. doi: 10.3303/CET1863026.

Rondinelli, D. A., & Cheema, G. S. (1983). Implementing decentralization policies: an introduction. *Decentralization and development: Policy implementation in developing countries*, 9-34.

Sousa, N., Coutinho-Rodrigues, J., & Natividade-Jesus, E. (2017). Sidewalk infrastructure assessment using a multicriteria methodology for maintenance planning. *Journal of Infrastructure Systems*, *23*(4). https://doi.org/10.1061/(ASCE)IS.1943-555X.0000362.

Samad, M. (2002). Participation of the Rural Poor in Government and Non-Government Organizations Program, Mowla Brothers, Dha a, Bangladesh. Stein, MR (1960), "The Eclipse of Community: An Interpretation of American Studies.

Samad, M. (2002). *Participation of the rural poor in government and NGO programs: A comparative study*. Mowla.

Dos Santos, P. M., Caccia, L. S., Samios, A. A. B., & Ferreira, L. Z. (2019). The 8 Principles of Sidewalks: *Building More Active Cities*. (2nd edition):1-136.

Sarker, A., Ross, H., & Shrestha, K. K. (2008) Common pool approach for water quality management: An Australian case study. *Ecological Economics*, 68(1-2), 461-471.

Saunders, M., Lewis, P., & Thornhill, A. (2009). Understanding research philosophies and approaches. *Research methods for business students*, *4*(106-135).

Searles, B. (1985). Overseas investigations; road safety countermeasures.

Selman, P. (2004). Community participation in the planning and management of cultural landscapes. *Journal of Environmental Planning and Management*, 47(3), 365-392.

Schmitt, T. A. (2011). Current methodological considerations in exploratory and confirmatory factor analysis. *Journal of Psychoeducational assessment*, *29*(4), 304-321.

Shaaban, K. (2019). Assessing Sidewalk and Corridor Walkability in Developing Countries. Sustainability, 11(14), 3865. https://doi.org/10.3390/su11143865

Shackleton, S., Campbell, B., Wollenberg, E., & Edmunds, D. (2002). Devolution and Community-Based Natural Resource Management: Creating Space for Local People to Participate and Benefit? Natural Resource Perspectives, 76(76), 1–6. https://doi.org/10.1016/j.ecolecon.2012.09.001

Shackleton, S., Campbell, B., Wollenberg, E., & Edmunds, D. (2002). Devolution and community-based natural resource management: Creating space for local people to participate and benefit. *Natural Resource Perspectives*, 76,1-5.

Shrestha, K. K., & McManus, P. (2005) Sustaining inequity? Rethinking the history of Nepalese forest policy. In M. Calver (Ed.), *Forest Consciousness*. Proceedings 6th National Conference of the Australian Forest History Society (pp. 681-691). Rotterdam: Millpress.

Spirkin, A. G. (1983). *Dialectical materialism*. Progress Publishers.

Steel, W., Ujoranyi, T., & Owusu, G. (2014). *Why Evictions Do Not Deter Street Traders: Case Study in Accra, Ghana*. *11*(2), 1–17.

Steiner, F., & Butler, K. (2007). Plannign and urban design standarts. In *John Wiley & Sons, Inc., Hoboken, New Jersey*.

Ticehurst, G. W., & Veal, A. J. (2000). *Business research methods: A managerial approach*. New South Wales: Addison Wesley Longman.

Tight, M. R., Kelly, C. E., Hodgson, F. C., & Page, M. (2004). Improving pedestrian accessibility and quality of life. Leeds.

Transportation Research Board. (2000). *Highway capacity manual*.

Trancik, R. (1986) *Finding Lost Space: Theories of Urban Design*, New York, Van Nostrand Reinhold.

Transportation Reaserch Board. (2000). *Highway capacity manual*.

Tashakkori, A., & Creswell, J. W. (2007). The new era of mixed methods.

Tashakkori, A., Teddlie, C., & Teddlie, C. B. (1998). *Mixed methodology: Combining qualitative and quantitative approaches* (Vol. 46). Sage.

Tashakkori, A., & Teddlie, C. (2003). The past and future of mixed methods research: From data triangulation to mixed model designs. *Handbook of mixed methods in social and behavioral research*, 671-701.

Teddlie, C., & Tashakkori, A. (2006). A general typology of research designs featuring mixed methods. *Research in the Schools*, *13*(1), 12-28.

Unhabitat. (n.d.). *Public space & sustainable urban development*. Retrieved from www.unhabitat.org

UNDP. (2017). *Definition for National Institutional Arrangements*. 1. Retrieved from http://ggim.un.org/ggim_20171012/docs/meetings/4th hlf/definition for national institutional arrangements.pdf

UNDP Malaysia. (2010a). *A Review of International Best Practice in Accessible Public Transportation for Persons with Disabilities*. 1–74.

UNDP Malaysia. (2010b). *A Review of International Best Practice in Accessible Public Transportation for Persons with Disabilities | UNDP in Malaysia, Singapore & Brunei Darussalam*. 75. Retrieved from http://www.my.undp.org/content/malaysia/en/home/library/poverty/PubPovRed_PublicTransportation.html

UNEP. (2016). *Global Outlook on Walking and Cycling.*

UN Environment (2016). Global Outlook on Walking and Cycling 2016, *UN Environment, Nairobi.*

UN-GGIM. (2017, October 12). Definition for national institutional arrangements - UN-GGIM. Retrieved November 2, 2022, from https://ggim.un.org/ggim_20171012/docs/meetings/4th%20HLF/DEFINITION%20FOR%20NATIONAL%20INSTITUTIONAL%20ARRANGEMENTS.pdf

UN Habitat (2010). *The state of world's cities 2010/2011: Bridging the urban divide*. London: Earthscan.

UN- Habitat (2013). *Streets as public spaces and drivers of urban prosperity*. Nairobi: UN-Habitat.

United Nations (1992). *Sustainable development: Agenda 21*. United Nations Conference on Environment & Development, Rio de Janeiro, Brazil, June 3 – 14.

US Department of Health and Human Services (2015). Step it up! the surgeon general's call to action to promote walking and walkable communities. *Washington, DC: US Dept of Health and Human Services, Office of the Surgeon General. http://www. Surgeon general. Gov/library/calls/walking-and-walkable-communities*.

Uddin, M. N., & Hamiduzzaman, M. (2009). The philosophy of science in social research. *The journal of international social research*, *2*(6).

Voorhees, A. M., & Carmalt, C. R. (2006). *Constructing , Maintaining and Financing Sidewalks in New Jersey*. (August).

Walsh, R. (2012). Local Policies and Practices That Support Safe Pedestrian Environments. In *Local Policies and Practices That Support Safe Pedestrian Environments*. https://doi.org/10.17226/22739.

Watkins, M. W. (2000). *Monte Carlo PCA for parallel analysis (computer software).* State College, PA: Ed & Psych Associates.

World Health Organization (WHO). (2013). *Make walking safe*. 3.

Worpole, K., & Knox, K. (2007). The Social Value of Public Spaces. *Jrf*, 15. Retrieved from https://www.jrf.org.uk/sites/default/files/jrf/migrated/files/2050-public-space-community.pdf

Wetzelhütter, D., & Bacher, J. (2015). How to Measure Participation of Pupils at School. Analysis of Unfolding Data Based on Hart's Ladder of Participation. *Journal for Quantitative Methods and Survey Methodology*, *9*(1), 111–136. https://doi.org/10.12758/mda.2015.004

World Health Organization. (2015). *Country Profiles 2015: Ghana. 2012*, 2012. Retrieved from http://www.who.int/violence_injury_prevention/road_safety_status/2015/country_profiles/country_profiles/en/

Wilson, K., Hannington, S., & Stephen, M. (2015). The role of community participation in planning processes of emerging urban centres. A study of Paidha Town in Northern Uganda. *International Refereed Journal of Engineering and Science*, 4(6), 61-73.

Yin, R. K. (2009). *Case study research: Design and methods (4th Ed.).* Thousand Oaks, CA: Sage.

APPENDICES

APPENDIX A

Pedestrian Walkways/Pavements/Sidewalks Management

The main goal of this study is to assess the Management of Pedestrian Walkways in the city of Accra. This survey will last approximately 10-12 minutes. The information you provide will only be used for this research. You are also assured of the secrecy and privacy of any information that you will provide; as a result, you should feel comfortable to provide the necessary information to enable the success of this task. Thank you for your help.

BIO-DATA OF RESPONDENTS

Q1. Sex of respondents

Male [ ] Female [ ]

Q2. What is your age?

15-24 [ ] 25-34 [ ] 35-44 [ ] 45-54 [ ]

55+ [ ]

Q3. What is your educational level?

No formal Education [ ] Basic [ ] Secondary [ ] Tertiary [ ]

Other [ ] kindly specify……

Q4. Marital status?

Never Married [ ] Informal/Consensual union/Living together [ ]

Married [ ] Separated/Divorced [ ] Widowed [ ]

Q5. Are you employed?

Yes [ ] No [ ]

Q5a. If Yes, What is your employment status?

Self-employed without employee(s) [ ] Casual Worker [ ]

Self-employed with employee(s) [ ] Apprentice [ ]

Domestic employee (House help) [ ]

Other [ ], please specify_____

Q6. What is monthly income (Range)

0-100 cedis [ ] 101-1000 cedis [ ] 1001-2000 [ ]

2001-5000 [ ] 5001+ [ ]

Q7. What is your religion?

Christianity [ ] Islam [ ] Traditional African [ ]

Other, please specify……

Q8. What is your Ethnicity?

Akan [ ] Ga-Dangme [ ] Ewe [ ]

Guan [ ] Other [ ], please specify……

Q11. Which of these statements defines a pedestrian walkway/sidewalk?

[ ] Lanes that provide people with space to travel within the public right-of-way separated from roadway vehicles.

[ ] A place designated to pedestrians to cross a road, street or avenue.

[ ] A place on the road marked with black and white stripes.

[ ] No idea

Q12. Which of these signs depicts a pedestrian walkway/pavement?

[ ] Image2 

[ ] Image 3 

[ ] Image4 

Q13. What do you think is the function of a pedestrian walkway/pavement/sidewalk?

Walking [ ] Socializing [ ] Selling [ ]

Parking [ ]

Q14. Why do you use pedestrian walkways/pavement?

Because others are using it [ ] I think I am supposed to use it [ ]

I feel safer using it [ ]

Because it is the main infrastructure for pedestrian movement [ ]

Q15. Do you encounter any challenge(s) using the selected route?

Yes [ ] No [ ]

If yes, please state……

Q16. How often do you use pedestrian walkways/pavement?

Every time [ ] Most of the time [ ]

Hardly ever [ ] Never [ ]

Q17. What is your assessment of the state of pedestrian walkway/pavement of the selected route?

Very bad [ ] Bad [ ] Good [ ] Very Good [ ]

Q18. What factors do you think are responsible for the state of pedestrian walkways? In response to (Q6) above

1. …….
2. …….

Q19. Which of these factors will prevent you from using the walkway/pavement?

Restrictions /blockages on walkways [ ] Uncleanliness [ ]

Path discontinuity (walkways are not continuous) [ ]

Invasion of space (path taken over for other activities such as selling [ ]

Presence of cracks, potholes etc. [ ]

Q20. What is your degree of satisfaction in using the walkway/pavements/sidewalks in Accra Metropolis?

Highly unsatisfied [ ] Unsatisfied [ ] Satisfied [ ]

Highly satisfied [ ]

Q21. Sources of information about walkways/pavement/sidewalks regulation?

Internet/social media [ ] Relatives/Friends [ ] TV/Radio [ ]

Newspaper/Brochure [ ] Other, P**lease specify……**

Q22. How do you assess on a scale of 1-5 where 1= highly unsatisfactory, 2= unsatisfactory, 3= indifferent, 4= satisfactory, 5= highly satisfactory the following practices performed by the assembly in the management of pedestrian walkways.

Regulation	1	2	3	4	5
1. Enforcement of regulations	○	○	○	○	○
2. Safety/Security of life	○	○	○	○	○
3. Professionalism of City Guards	○	○	○	○	○
4. Traffic management on walkways	○	○	○	○	○
5. Patrol services on walkways	○	○	○	○	○

Maintenance	1	2	3	4	5
1. Walkways routine checks	○	○	○	○	○
2. Regular Cleaning of walkways	○	○	○	○	○
3. Prompt maintenance of-dislodged surfaces	○	○	○	○	○
4. Efficient waste management	○	○	○	○	○
5. Promptness in responding to cleaning services	○	○	○	○	○

Coordination	1	2	3	4	5
Stakeholder Consultation	○	○	○	○	○
Availability of complaints/User feedbacksystem	○	○	○	○	○
Sensitization/training for facility users	○	○	○	○	○

Availability and access to

Information sharing

Q23. How would you assess on a scale of 1-5 the management of pedestrian walkways; where 1= highly unsatisfactory, 2= unsatisfactory, 3= indifferent, 4 = satisfactory, 5= highly satisfactory

Highly unsatisfactory [ ] Unsatisfactory [ ]

Neither satisfactory nor unsatisfactory [ ] Satisfactory [ ]

Highly satisfactory [ ]

Q24. Do you feel involved in decisions taken on walkways/pavements?

Yes [ ] No [ ]

Q25. Do you have the power to influence local decisions and resolution, which might have a significant impact on pedestrian walkway/pavement design and management?

Yes [ ] No [ ]

Q26. Do you know whom to contact about walkways/pavement issues?

Yes [ ] No [ ]

Q27. How important is it that local assemblies look after pedestrian walkways/pavement?

Low importance [ ] Medium importance [ ]

High importance [ ] Highest importance [ ]

Q28. Suggest three things the assembly should do to ensure a sustainable management of walkways in Accra Metro.

a. ……

b. ……

c. ……

Q29. On a scale of 1-5, to what extent does the following affect your willingness to participate in walkway management?

Variable	Lower extent	Low extent	Neutral	High extent	Higher extent
Level of Knowledge	○	○	○	○	○
Access to information	○	○	○	○	○
Level of Income	○	○	○	○	○
Political Affiliation	○	○	○	○	○
Gender	○	○	○	○	○
Perceived benefits associated with walkways	○	○	○	○	○
Perceived quality of walkways	○	○	○	○	○
Attitudes and beliefs towards env. protection and sustainability	○	○	○	○	○
Social norms and customs	○	○	○	○	○
Religious affiliations	○	○	○	○	○
Any comment(s)	○	○	○	○	○

……

……

Thank you for participating

APPENDIX B

INTERVIEW GUIDE FOR MANAGEMENT INSTITUTIONS FOR PEDESTRIAN WALKWAYS

Interview date:

Place:

Gender of participant:

Organization:

Portfolio:

Introduction

The goal of this study is to assess the management of urban walkways in Accra Metropolis. The purpose of this interview guide is to obtain information on the institutional arrangement in the management of pedestrian walkways and the challenges faced by responsible institutions as part of the purpose of this study. The information you provide would only be used for this research. You may also be guaranteed that any information you provide will be kept completely secure and private. As a result, you should feel free to provide the necessary information to ensure the success of this project. Thank you for your help.

Background information

Kindly tell me about yourself

Sex …… **Age ……**

Marital status …… **Educational level ……**

Roles of your department

a. Please can you describe the current state of walkways within your jurisdiction?
b. What factors do you think have accounted for the current state?

c. What does planning and management of walkways entail?

d. What are your institution's tasks or obligations in terms of planning and management of Pedestrian Walkways?

e. What method or procedure does your institution employ to carry out its responsibilities?

N.B: How often do you conduct route inspection to determine the condition of walkways?

Human Capital

a. What is the total staff strength of your department?

b. What is your opinion concerning the staff strength?

c. How do you perceive your employees' pay situation?

d. Apart from the salary, what other incentive(s) (packages) does your institution/department have to motivate the staff to perform their duties?

e. How do you rate your staff's performance, from very high through high, normal, low, and very low? Give your reasoning.

Logistics

a. What are some of the logistics that your department use in its day-to-day tasks?

b. Kindly describe the condition of these logistics

c. Does the state of your institution's logistics affecting its performance??

d. Will you say you have logistical strength to plan and manage walkways in the city?

Finance

a. How does your organisation fund its operations?

b. In your view, how do you consider the financial base for your operation

Collaboration

a. Which institutions does your outfit collaborate with to manage pedestrian walkways in the Accra Metropolis?

b. In such cooperation, what services does your institution provide?

c. What challenges confronts such collaborations?

Challenges facing your institution

a. What challenges affect your institution in relation to the management of walkways?

b. Which of these problems has the greatest impact on your institution in managing walkways?

c. In what way(s) do these problems hinder your department's activities?

d. What do you believe can be done to address these issues?

e. How can we best plan sidewalks in urban spaces in Ghana?

f. How can we best manage sidewalks in urban spaces in Ghana?

APPENDIX C

This is to help establish the present condition of walkways within the selected areas of study. The indicators to be used are obstructions, path continuity, physical conditions, encroachment and cleanliness.

Walkway Indicator	Description
Obstructions	Obstructions are identified as any immovable item that impedes the pedestrian route and reduces the walkway space below the permissible minimum. Utility poles, tree stumps, signage, hydrants, and other objects that impede walkers on the Walkways are common causes of walkway obstacles.
Continuity	The continuation of the pathway is critical for pedestrians, particularly those who are handicapped or old. Uninterrupted walkways are ones with no ups and downs. The constant ups and downs make it difficult for people to use the boardwalk.
Physical Condition	The physical state of pedestrians influences their walking environment by defining how challenging a place is to navigate. For pleasant walking, a pathway floor should be solid, stable, slip-resistant, and free of cracks, potholes, and vertical defects.

Encroachments	Encroachments are any impermanent items created by commercial or other operations that obstruct the path and lower its width below the permitted minimum. Garbage bins, signage, cars parked on the street, vendors hawking their products, and so on are examples of encroachments.
Cleanliness	The walking space should be pleasurable. The path should be clean and clear of rubbish, broken glass, and other debris.

Location: Date: Time:			
Variable	Availability	Condition	Dimension (100m)
Walkway	Both side Yes [ ] No [ ] One side Yes [ ] No [ ]		Width:
Obstruction/ Encroachment	Yes [ ] No [ ]	**Type of obstruction** Poles [ ] 1 Trees/plants root [ ] 2 Sign Post [ ] 3 Garbage bins [ ] 4 Parked vehicles [ ] 5 Bench/Seats [ ] 6 Greenery/Veg. [ ] 7 None [ ] 8 Others (9)……. ……. .	**Obstruction width**

Sidewalk Discontinuity		Complete [ ] Missing some sections [ ]	
Physical condition	**Path material** Asphalt [ ]	Poor [ ] (many cracks, dislodged bricks, potholes, open sewage)	
	Concrete [ ] Paving bricks [ ]	Fair [ ] (some cracks, dislodged bricks, holes, potholes, open sewage)	
	Gravel [ ] Sand/Dirt [ ]	Good [ ] No cracks, dislodged bricks, potholes etc.	
Cleanliness		Poor (large litter) [ ] Fair (some litter) [ ] Good (no litter) [ ]	
Curb height			Height:
Curb cut	Yes [ ] No [ ]		

APPENDIX D

INTRODUCTORY LETTER

UNIVERSITY OF CAPE COAST
COLLEGE OF HUMANITIES AND LEGAL STUDIES
FACULTY OF SOCIAL SCIENCES
DEPARTMENT OF GEOGRAPHY & REGIONAL PLANNING

UNIVERSITY POST OFFICE
CAPE COAST, GHANA
WEST AFRICA

Our Ref: GRP/S4./20/Vol.1/223

Your Ref:

10th November, 2020.

.....

.....

.....

.....

Dear Sir/Madam,

LETTER OF INTRODUCTION
TO WHOM IT MAY CONCERN

The bearer of this letter, **Mr. Clifford Koranteng (SS/PGR/18/0008),** is an **Mphlil** student at the Department of Geography and Regional Planning, University of Cape Coast. He is conducting a study on the topic: ***"Management of Urban Walkways in Greater Accra Metropolitan Area Ghana"***

We shall therefore be very grateful if your organisation could assist him to support the study.

Thank you.

Yours faithfully,

Dr. (Mrs) Regina Obilie Amoako-Sakyi.
HEAD

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