

BINDURA UNIVERSITY OF SCIENCE EDUCATION

A MODEL FOR IMPROVING PARKING SERVICES IN HARARE CENTRAL DISTRICT.

BY

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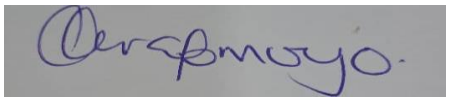
A DISSERTATION SUBMITTED TO THE BINDURA UNIVERSITY OF SCIENCE EDUCATION IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR A MASTER OF SCIENCE DEGREE IN LEADERSHIP AND CORPORATE GOVERNANCE

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APPROVAL FORM

The undersigned certify that they have read and recommended to Bindura University of Science Education (BUSE) for acceptance a Dissertation entitled **"A WORKING MODEL TOWARDS IMPROVING PARKING SERVICES IN HARARE CENTRAL BUSSINESS DISTRICT"** by CYNTHIA RAFOMOYO in partial fulfilment of the requirements for the degree of Master of EXECUTIVE MASTER OF BUSINESS LEADERSHIP.

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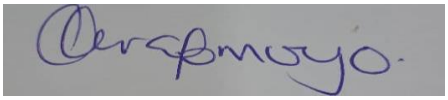
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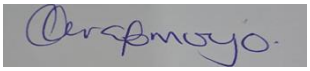
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DECLARATION

I CYNTHIA RAFOMOYO Student Reg Number B1129503 do hereby declare that this dissertation is a result of my own investigation and research, except to the extent indicated in the acknowledgments, bibliography, references, and comments included in the body of the report, and that it has not been submitted in part or in full for any other degree to any other university.

STUDENT SIGNATURE  **DATE: 17/04/2025**

DEDICATION

I dedicate this research study to my loving husband, my late mother and my adorable five children.

ACKNOWLEDGEMENTS

My sincere gratitude goes to Bindura University Science Education for providing me the opportunity to do my Executive master's in business leadership under the leadership of highly qualified lecturers and mentors. I have acquired vast knowledge that will help me sail through carrier and endeavors. My profound appreciation goes to Doctor Rusike who was my mentor during this research study. If it had not been through his guidance, patience and commitment I would not have completed this research study.

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ABSTRACT

The study set out to explore strategies for enhancing parking management in Harare, focusing on leveraging technology to improve service delivery and revenue collection in the city's central district of Harare. The study was driven by three objectives, which were to evaluate the effectiveness of the current parking management systems in the Harare Central Business District, to assess the impact of technological innovations on parking services efficiency in the Harare CBD, and to analyse the impact of revenue allocation on the parking services in Harare CBD. The study adopted a mixed research method, where surveys and case study designs. Data were collected using questionnaires and interviews from 142 respondents (survey) and 16 participants (interviews). Analysis of data was done concurrently for quantitative and qualitative methods using SPSS and NVivo, respectively. The study found significant dissatisfaction with Harare's CBD parking management system. Only 16.9% of respondents felt it met their needs, with 69% disagreeing. Enforcement and system clarity were also areas of concern. They also found that while 75.4% saw technology's potential to improve parking, issues with payment system reliability and inefficiency persist. There was support for further technological development, but respondents called for better integration. Regarding parking revenue, 44.3% felt funds were used for improvements, but 33.8% disagreed. Poor revenue allocation was seen as negatively affecting service efficiency. A proposed framework was designed. To improve Harare's CBD parking system, clearer signage and better-defined parking zones should be implemented to address disorganisation. Enforcement practices must be more consistent, with increased personnel and automated systems to ensure fairness and transparency. Advanced technologies like parking sensors and real-time data integration should be adopted to improve efficiency. Additionally, parking revenue must be transparently reinvested into infrastructure and technology upgrades, with regular audits and public reports to address concerns about fund allocation and increase user trust.

Keywords: Service delivery; Parking management system; Inefficiency; Harare's CBD

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CHAPTER 1

INTRODUCTION

1.0 Introduction

This chapter concentrated on the background of the study, problem statement, objectives of the research, research proposition, significance of the research, assumptions, and delimitations, definition of key words and terms and structure of the dissertation.

1.1 Background of the study

Globally, the rapid advancements in the automotive industry and the significant growth of urban populations have led to an increase in the number of cars, thereby exacerbating parking challenges in urban areas (Shimi et al., 2022). It is well-documented that approximately 30% of urban traffic congestion is attributed to the search for parking spaces, resulting in unnecessary energy consumption and environmental pollution (Melnyk et al., 2019). To address these challenges, smart cities have emerged as a trend, focusing on the automation of infrastructure monitoring, access, and usage (Hong, et al., 2013). A key component of smart cities is the development of smart parking guidance systems, which aim to provide real-time information about available parking spaces (Sanchez, et al., 2022). However, even in developed countries, the effectiveness of these systems is limited, as users may find that the parking space they were directed to is no longer available by the time they arrive (Hsueh-Chan & Chen-Hao, 2020). Intelligent Transportation Systems (ITS) are central to the efforts to mitigate the impact of increasing road traffic congestion (Vera-Gómez, et al., 2016). These systems rely on the cooperation of various components, including routing, prediction, and parking management systems, to optimize the flow of vehicles within cities. Despite advancements in other aspects of transportation, Parking Management Systems (PMS) have not seen significant improvements (Alkheder, et al., 2016). Drivers still spend substantial time searching for available parking spaces, even though a considerable number of parking spots remain underutilized.

In developing countries, particularly in Africa, the rapid growth of cities and the increase in car ownership have compounded transportation challenges. In numerous major cities, including Harare, Zimbabwe, transportation challenges have been exacerbated by policy shifts, particularly the deregulation of the transport sector in the early 1990s, which followed the unsuccessful implementation of the Economic Structural Adjustment Programme (ESAP). This deregulation led to the proliferation of informal public transport systems, which have contributed to congestion and a chaotic urban transport environment, adversely affecting the quality of the urban environment (Mataruse & Gambe, 2024).

Parking management systems in African cities are crucial tools for controlling inner-city accessibility while also enhancing municipal revenue (Sana, et al., 2014). Nevertheless, the development and upkeep of urban parking infrastructure necessitate sustainable financial resources. A key challenge for many cities in developing countries is determining the most effective approach to managing parking systems in a way that enhances revenue generation.

In Zimbabwe, the history of parking management in Harare provides a case study of evolving urban parking challenges. Parking charges were introduced in the 1950s, with minimal fees for parking in the city centre (Mataruse & Gambe, 2024). Over time, as the urban population and the number of vehicles increased, the need for more structured parking management became evident. The introduction of parking meters and the construction of parkades in the 1970s were early efforts to manage parking demand in Harare. However, in the early 2000s, a decline in parking management led to the takeover of parking spaces by informal operators, resulting in chaos in the city centre (Mudzengerere & Madiro, 2013). The subsequent introduction of City Parking Pvt Ltd, a commercial enterprise, brought some order, but also led to a significant increase in parking charges. This, coupled with the emergence of online payment systems, has modernized parking services in Harare, but also shifted the commercial dynamics of the city centre (Bandauko, et al., 2018). Many businesses have relocated to suburban areas, where parking space is more accessible, leaving the city centre dominated by small businesses that do not require extensive parking.

The evolution of parking management in Harare central business district reflects the broader trends seen globally and across Africa (Mataruse & Gambe, 2024). As Harare continues to grow, there is an urgent need to adopt smart parking solutions that align with global trends while addressing the unique challenges faced by the city. The adoption of technologies such as sensor-based parking systems, real-time parking information, and mobile payment platforms

offers a pathway to improve the efficiency of parking services in Harare's Central District. Moreover, the integration of these technologies with broader urban planning and transportation strategies could enhance the city's ability to manage traffic congestion, improve the urban environment, and increase municipal revenue (Munuhwa, et al., 2020). This study aims to explore strategies for enhancing parking management in Harare, focusing on leveraging technology to improve service delivery and revenue collection in the city's central district

1.2 Problem Statement

The rapid urbanisation of Harare's Central Business District (CBD), coupled with a significant increase in private vehicle ownership, has exacerbated parking challenges, leading to traffic congestion, inefficient space usage, and a decline in urban quality. Between 2012 and 2022, the number of registered vehicles in Zimbabwe increased by over 60%, with Harare alone accounting for nearly 45% of this growth (ZIMSTAT, 2023). Despite the introduction of parking management systems and mobile payment platforms such as City Parking's TapCard, the city continues to face poorly coordinated, inefficient, and underdeveloped parking infrastructure (Makoni & Maphosa, 2021).Studies show that urban motorists spend up to 30% of their travel time searching for parking, a trend that contributes significantly to fuel consumption, air pollution, and lost economic productivity (Shimi et al., 2022; Litman, 2021).

Despite efforts to modernise the system through the introduction of parking management frameworks and online payment platforms, the existing infrastructure remains fragmented and poorly managed. This has led to widespread frustration among motorists due to long search times for available parking and limited accessibility. Scholars such as Litman (2021) argue that disorganised parking systems contribute significantly to urban transport inefficiency, reducing the overall quality of life and economic productivity in cities. Similarly, Smith and Jones (2021) emphasize that inconsistent enforcement and lack of clarity in parking regulations can exacerbate user dissatisfaction and undermine the credibility of urban transport management. The limited integration of smart parking technologies also hampers the effectiveness of current solutions. According to Tan et al. (2022), advanced systems such as real-time data platforms and sensor-based monitoring significantly improve parking efficiency and reduce congestion.

Moreover, the inadequate management and reinvestment of parking revenue in Harare's CBD have raised concerns about transparency and sustainability. Khan and Patel (2024) highlight that without strategic reinvestment of funds into infrastructure upgrades and technological innovation, urban parking systems risk becoming obsolete and unable to meet the growing

demands of modern cities. The inefficiencies of the current Parking Management System (PMS) in Harare are not only causing operational setbacks but also contributing to economic decentralisation, as businesses and consumers shift towards suburban areas with more accessible parking options. Therefore, this study seeks to explore innovative, efficient, and sustainable approaches to parking management that can revitalise Harare's CBD, improve motorist experiences, and enhance municipal revenue systems.

1.3 Main Objective

The main objective of the study is to develop a framework for enhancing parking services in Harare CBD

1.3.1 Specific Objectives

1. To evaluate the effectiveness of the current parking management systems in the Harare Central Business District
2. To assess the impact of technological innovations on parking services efficiency in the Harare CBD
3. To analyse the impact of revenue allocation on the parking services in Harare CBD

1.4 Main Research Question

1. What are the key components in developing a framework for enhancing parking services in Harare CBD?

1.4.1 Specific Research Questions

1. How effective are the current parking management systems in Harare's Central Business District?
2. What is the impact of technological innovations on parking services efficiency in the Harare CBD?
3. What is the impact of revenue allocation on the parking services in Harare CBD?

1.5 Research proposition

This study's proposition in that the efficacy of parking service delivery within Harare's Central Business District can be substantially enhanced through the implementation of a holistic framework that synergises efficient administrative practices, context-appropriate technological

interventions, and judicious reinvestment of parking revenues. It is hypothesised that the integration of these dimensions will address systemic inefficiencies, promote spatial optimisation, and restore user confidence in the urban parking system. By critically interrogating the interrelationships among management practices, technological adoption, and fiscal governance, the study seeks to contribute to the broader discourse on sustainable urban mobility and inform evidence-based policy and infrastructural reform in rapidly urbanising contexts.

1.6 Justification of the research

The study is justified by the pressing need to address the parking challenges in the Harare CBD, which have significant negative impact on commuters, businesses and the overall urban environment. The research aims to provide practical solutions and recommendations for improving parking services, contributing to a more efficient, sustainable and vibrant city centre.

1.7 Purpose of the study

This study aims to develop a comprehensive working model for improving parking services in the Harare CBD, addressing the existing challenges and proposing practical solutions for implementation.

1.8 Significance of the study 2030, 2025 WORLD CLASS

This study holds significant value for a diverse array of stakeholders engaged in the urban management and development of Harare's Central District:

1.8.1 City Council and Urban Planners

This study will provide the Harare City Council and urban planners with critical insights into the current inefficiencies of the Parking Management Systems (PMS). Through this study they can develop more informed policies and strategies to optimise parking management, reduce congestion, and improve the urban environment. Additionally, the study will help in identifying revenue-generating opportunities, which are essential for funding future urban development projects.

1.8.2 Motorists and the General Public

Motorists, who are the primary users of parking services in Harare's Central District, will benefit from the study's exploration of technological innovations and improved parking strategies. This study’s findings will help motorists to expect reduced time spent searching for

parking, easier access to available spaces, and a more seamless parking experience. This will contribute to reduced traffic congestion and a more pleasant urban environment for all residents and visitors.

1.8.3 Business Community

The study is particularly relevant to businesses operating in or considering relocating to Harare's Central District. Efficient parking management is crucial for maintaining customer access and overall business viability. The improvement of parking services, the city centre could become more attractive to businesses, helping to reverse the trend of commercial flight to the suburbs. This could lead to increased economic activity and a revitalised urban core, benefiting the broader business community.

1.8.4 Investors

For investors, the study will highlight the potential market opportunities within Harare's parking sector.

1.8.5 Technology Providers

For companies specialising in smart city solutions, the study will emphases on technological advancements, such as sensor-based systems and digital payment platforms, presents an opportunity for technology providers to collaborate with the city in implementing cutting-edge solutions. This could lead to mutually beneficial partnerships that drive innovation and improve urban services.

1.8.6 Policy Makers

Policymakers and relevant government agencies may be guided by the findings of the study in legislative and regulatory frameworks that support sustainable urban development.

1.8.7 Significance to the academia

This study can be used as library material to benefit future researchers for inference purposes and proposals for future research can be made.

1.9 Delimitation of the study

1.9.1. Theoretical Delimitation

This study is theoretically delimited to the examination of the impact of parking management on urban traffic congestion, municipal revenue generation, and the overall efficiency of urban infrastructure. The study will primarily draw on existing literature related to smart city technologies, urban planning, and transportation management, excluding other aspects of urban mobility such as public transit systems and pedestrian infrastructure. Additionally, the study will not focus on the psychological or behavioural aspects of driver behaviour beyond their interactions with parking systems.

1.9.2. Geographical Delimitation

The geographical focus of this study is confined to the Central Business District of Harare, which serves as the primary commercial and administrative hub of Zimbabwe's capital city. While the findings may have broader implications for other urban areas within Zimbabwe or similar contexts in developing countries, the study will specifically focus on the challenges and opportunities within this district. The study will not cover parking management issues in suburban areas, satellite towns, or rural regions.

1.9.3 Population Delimitation

The population delimitation of the study is confined to three primary groups which are motorists who regularly use parking facilities within Harare's Central District, business owners and operators in the district, and city officials and planners responsible for the management of parking services. The study gathered data and perspectives from these groups to understand the effectiveness of current parking management systems and the potential for improvement. The study did not include residents of other parts of Harare or Zimbabwe who do not frequently interact with the parking systems in the Central District.

1.9.4 Time Frame Delimitation

The study was conducted within a specific time frame, focusing on data and developments related to parking management in Harare's Central District from 2017 to 2024. This period allows for an analysis of recent trends and the impact of technological advancements in parking

systems. The study will not consider data or events prior to 2017, as it aims to focus on the most relevant and contemporary issues affecting parking management. The study's recommendations will also be geared towards future improvements, taking into account current and emerging trends up to 2024.

1.10 Assumptions of the Study

It is the assumption of this study that traffic patterns and parking behaviour in Harare's Central District will remain relatively stable during the study period. This includes the assumption that the number of vehicles, the flow of traffic, and the demand for parking spaces will not be drastically altered by external factors such as major infrastructure projects, policy changes, or sudden shifts in transportation preferences and that there will be no pandemic like COVID 19.

The study assumed that technological innovations such as sensor-driven parking systems and digital payment platforms could be feasibly deployed and effectively utilized within Harare's Central Business District. It also presumed that these technologies had the potential to enhance parking management and that the local population would be receptive to adopting such advancements.

The study assumed that global and regional trends in parking management, such as the adoption of smart parking systems, are relevant and applicable to the context of Harare's Central District. It is assumed that lessons learned from other cities can be adapted to address the unique challenges faced by Harare.

It is assumed that the local government, city planners, and other stakeholders are supportive of efforts to improve parking management in Harare's Central District. The study assumes that there will be a willingness among these groups to consider and potentially implement the recommendations derived from the study's findings.

1.11 Limitations of the study

Councils have high confidentiality hence may be reluctant in disclosing important information. To counter this a letter of consent was used to indicate that the study was for academic purposes only.

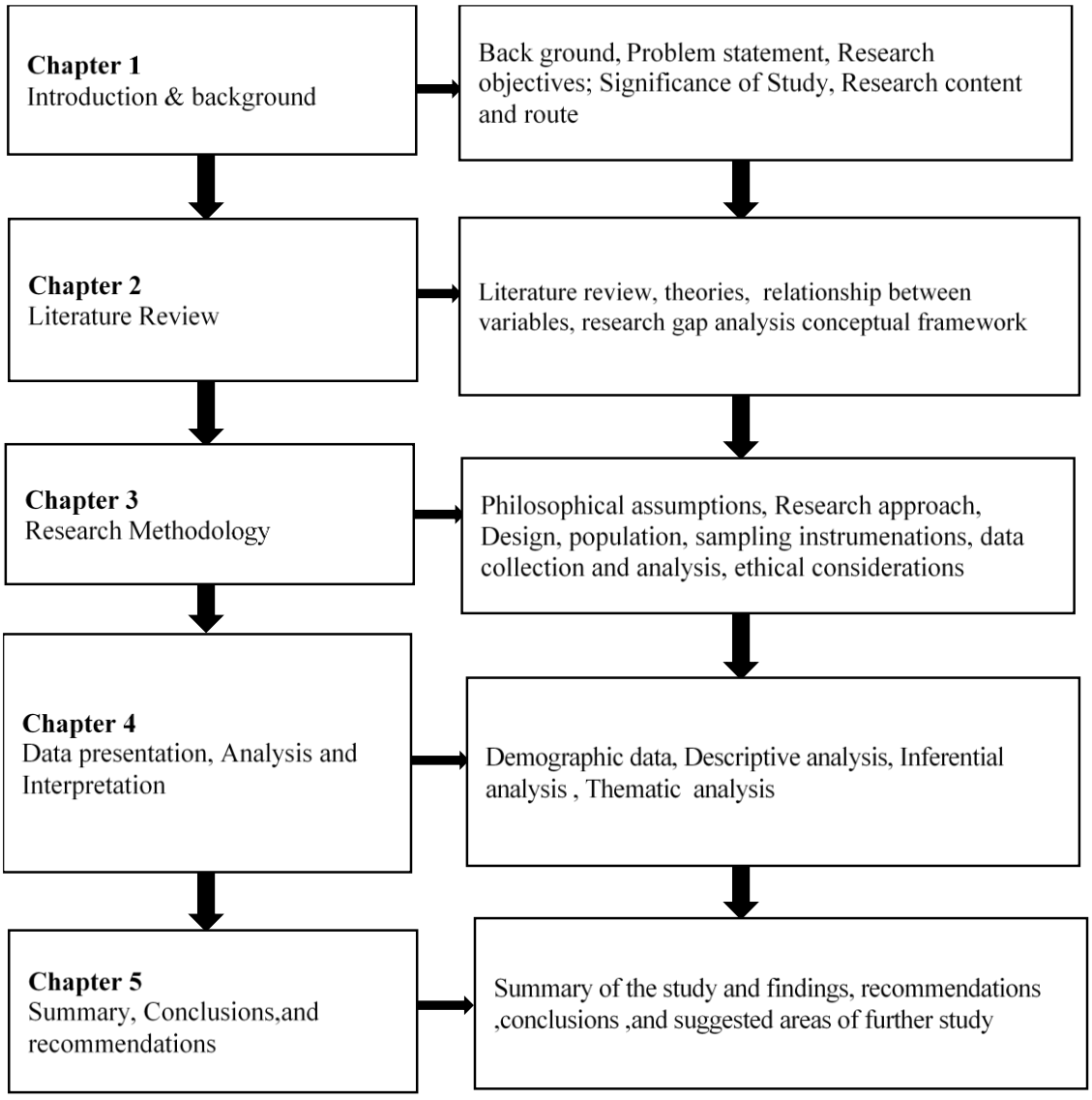
1.12 Definition of key terms

Parking Services - encompass the range of facilities, technologies, and management practices provided to support the parking of vehicles in urban areas, particularly in Central Business Districts (CBDs). These services include the availability of parking spaces, the use of parking

meters, enforcement of parking regulations, provision of security, and the integration of technology for payment and space management. The goal of parking services is to ensure that parking is accessible, efficient, and contributes to reducing congestion and improving the urban environment (Melnyk et al., 2019).

Central Business District - (CBD) is the commercial and often geographic heart of a city, characterized by a high concentration of businesses, offices, retail stores, and cultural institutions. The CBD is typically a hub for economic activity and is usually well-served by public transportation. It experiences high demand for parking due to the dense concentration of activities and limited space, making effective parking management crucial to maintaining accessibility and reducing congestion within the area (Shimi et al., 2022).

1.13 Dissertation structure



Source: Own Construction (2025)

1.14 Chapter Summary

This chapter laid the groundwork for the study by presenting the background that informed the research problem. It articulated the rationale behind the investigation and outlined the research objectives that directed the study's focus. Additionally, research questions were developed to guide the inquiry. The chapter also highlighted the study's significance, defined its scope and limitations, and stated the key assumptions underlying the research. To promote clarity, essential terms were defined. Overall, the chapter established the context for the research, with the next chapter set to review relevant existing literature..

CHAPTER 2

LITERATURE REVIEW

2.0 Introduction

This chapter reviewed relevant literature related to the study on the development of a model towards improving parking services. It began by examining the theoretical foundations that provided a framework for understanding the study. Key concepts related to parking services were also explored. The chapter then presented an empirical review aligned with the study's objectives. Finally, a gap analysis was conducted to identify existing gaps in the literature, highlighting the study's niche and rationale for further research. The main objective was to come up with a model to improve parking services.

2.1 Purpose of literature review

According to Saunders et al (2019), literature review is a critical examination and evaluation of existing literature in a particular subject. Saunders et al (2019) went on to say that the main purpose of literature review is to provide complete overview of the present state of knowledge on a particular topic, identify gaps in existing literature and highlight areas that need additional research. The significance of literature review in this study was to:

- Identify gaps in present knowledge, ascertain areas where there was lack of research and requires further investigations. It enabled the researcher to identify unanswered questions and design a new study as noted by Leavy (2019).
- It helped in assessing the quality of the existing research studies on related subjects as argued by Kivunjal (2017). By critically scrutinising the methods used, results and conclusions drawn from previous researches, the researcher was able to identify strengths and weaknesses in the existing literature.

2.2 Theoretical Framework

This theoretical framework of the study was guided by the following existing theories which are related to the study. The theoretical framework is given on Figure 2.1

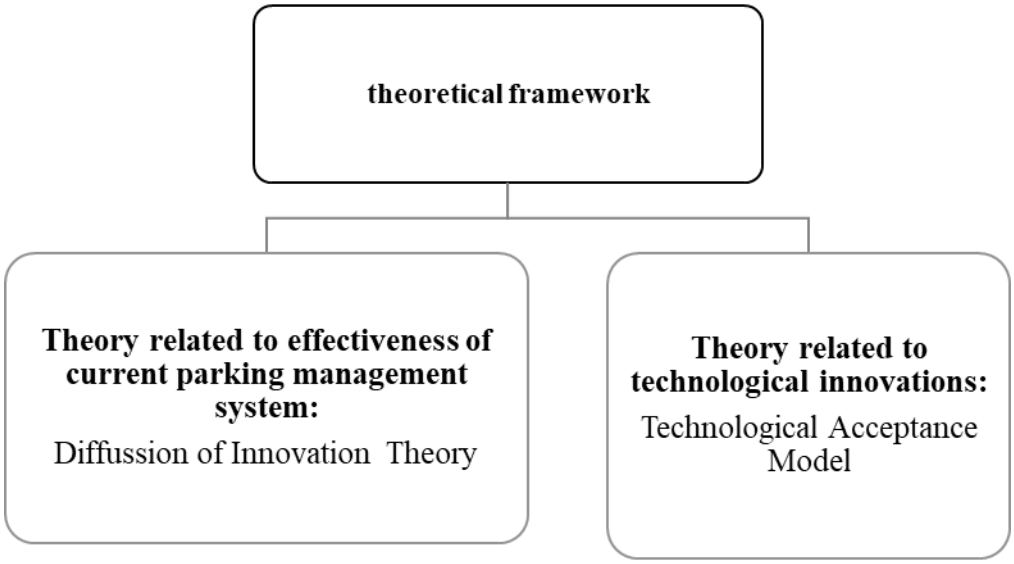


Figure 2.1: Theoretical framework

SOURCE: Own construct (2025)

The study will be hinged on the technology acceptance model and diffusion of innovation theories.

2.2.1 The Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM), introduced by Davis (1989), is widely recognized and empirically tested. TAM defines technology adoption as the acceptance and use of new technologies or products, while technology acceptance refers to the extent to which individuals embrace and utilize new technologies (Agarwal, 2016). With the rise of Information Systems (IS) in an increasingly digital and globalized world, numerous competing theories and models have emerged across various disciplines to predict, explain, and understand technology acceptance (Davis, 2010). Notable among these are TAM (Davis, 1989, 2010), the Unified Theory of Acceptance and Use of Technology (UTAUT) by Venkatesh et al. (2015), the DeLone and McLean IS Success Model (2017), and Rogers' Diffusion of Innovation Theory (2003). Nonetheless, Straub (2015:626) argues that “there is no one model for understanding the processes in which an individual engages before adopting an innovation.”

Despite the multitude of models proposed, TAM has garnered significant attention within the Information Systems community (Chuttur, 2009) and is considered a robust framework for

explaining technology adoption in various contexts (Chen & Chang, 2013). Developed by Davis (1989), TAM originally aimed to elucidate attitudes and intentions toward using technology, particularly personal computers and software in workplace settings (Agarwal, 2016). Since its inception, TAM has been extended to understand and assess the acceptance of diverse information systems and ICT applications, including e-government systems (Bartodziej, 2017). TAM evolved from the Theory of Reasoned Action (TRA), which posits that a person's behavioral intentions are influenced by attitudes and subjective norms (Agarwal, 2016; Ollila & Lyytinen, 2016). TAM expands upon TRA by incorporating additional variables affecting behavioural intention, offering a more direct relationship with ICT usage (Liao & Hong, 2018).

However, TAM's applicability and relevance in contemporary knowledge and the ever-evolving business environment have been debated. Chuttur (2016) notes that while TAM is widely cited, researchers have mixed opinions regarding its theoretical assumptions and practical application, suggesting it may lack sufficient rigor and relevance. In contrast, Holden & Karsh (2018) argue that TAM has demonstrated enduring relevance and robustness as a foundational analytical framework. Belanche et al. (2014) support this view, asserting that TAM remains one of the most effective frameworks for understanding technology adoption and can be adapted to various contexts.

Originally derived from social psychological theories such as TRA and the Theory of Planned Behaviour (TPB), TAM focuses on a person's intention to perform a behaviour, though the constructs of these models differ (Holden & Karsh, 2018; Hale, Householder, & Greene, 2015). Davis's empirical work on TAM (Davis, 2010; Yousafzai, Foxall, & Pallister, 2017) has successfully applied and tested the model across a broad range of ICT applications. The theory posits that actual behaviour is influenced by behavioural intention, which is shaped by attitudes and subjective norms (Liao & Hong, 2018). TAM's popularity stems from its effectiveness in predicting technology use and acceptance, with its basic model emphasizing the mediating role of perceived ease of use and usefulness in the relationship between system characteristics and usage (Park & Park, 2020).

Burton-Jones and Hubona (2016) highlight that among the various theories explaining technology acceptance, TAM is the most popular and has been validated across numerous systems with reliable constructs. Nonetheless, TAM is not without limitations, as it assumes user rationality and lacks guidance on improving technology usability (Hale, Householder, &

Greene, 2015). Despite these drawbacks, TAM has been extensively tested and modified, incorporating elements from other models to address its limitations (Agarwal, 2016).

Application to Parking: In the context of smart parking systems, TAM can be employed to evaluate how drivers and city officials perceive and adopt technologies such as smart meters, parking apps, and sensor-based solutions. By understanding user acceptance, TAM aids in designing technologies that are intuitive and cater to user needs, thereby enhancing adoption rates and overall system effectiveness.

2.2.2 Innovation Diffusion Theory

Rogers' Diffusion of Innovation Theory (2003) explains the process through which new ideas and technologies spread within a society. It highlights key factors influencing adoption, including relative advantage, compatibility with existing systems, complexity, trialability, and observability, all of which are essential in understanding how and why innovations are embraced or rejected. The Diffusion of Innovation (DOI) theory remains one of the most frequently applied frameworks for examining factors influencing the adoption of new innovations and technologies by various users and organizations (Rogers, 2013). It is widely utilized to explore how, why, and at what rate new technologies and ideas spread through social systems (Majanja & Kiplangat, 2015).

Diffusion describes the process by which innovations—whether they are new ideas, applications, products, or technologies—are communicated through specific channels among members of a social system (Murray, 2009). This phenomenon occurs naturally, independent of theoretical frameworks, and involves the spatial and temporal spread of an innovation (Kincaid, 2004). According to Rogers (2013), the DOI theory accounts for various external factors that impact the adoption of information technology innovations. The theory has been applied across numerous academic disciplines, including economics, health, education, sociology, geography, communication, and business (Murray, 2009).

Scholars of diffusion identify five key attributes that influence the success of an innovation: relative advantage, compatibility with existing values and practices, simplicity and ease of use, trialability, and observable results (Majanja & Kiplangat, 2015).

Relative Advantage: This attribute measures the extent to which an innovation is perceived as superior to the idea it replaces, based on factors like economic benefit, social prestige,

convenience, or satisfaction (Robinson, 2016). A greater perceived relative advantage typically accelerates the rate of adoption (Robinson, 2016).

Compatibility with Existing Values and Practices: This refers to how well an innovation aligns with the values, experiences, and needs of potential adopters (Rogers, 2013). Innovations that are consistent with existing values and practices are adopted more quickly than those that are not (Rogers, 2013).

Simplicity and Ease of Use: This aspect considers how easy an innovation is to understand and use (Rogers, 2013). Innovations that are simpler to comprehend tend to be adopted faster than those that require more complex skills and understandings (Robinson, 2016).

Trialability: This factor denotes the extent to which an innovation can be tested on a limited basis (Rogers, 2013). Innovations that can be trialed reduce uncertainty for potential adopters, making them more likely to be adopted (Robinson, 2016).

Observable Results: Innovations that provide visible results are more likely to be adopted (Holden & Karsh, 2018; Rogers, 2013). Visible outcomes help reduce uncertainty and encourage discussion among peers, thereby facilitating adoption. Rogers (2013) suggests that these five characteristics account for between 49% and 87% of the variation in the adoption of new products.

Variable Factors in DOI Theory

Diffusion of innovation, especially in terms of subscriber uptake, is a crucial factor for a company's success (Frambach & Schillewaert, 2016). Rogers' (2013) model highlights 28 attitudes organized into five key characteristics that affect the adoption decision. These characteristics are subjective and differ among individuals (Ollila & Lyytinen, 2016). The theory suggests that addressing these factors can facilitate the acceleration of innovation diffusion (Ollila & Lyytinen, 2016; Rogers, 2013).

A critical individual factor influencing adoption is a potential user's perception of an information system. According to DOI Theory, an individual's attitude towards an innovation plays a significant role in determining whether it will be accepted or rejected (Thong, 2017). Important personal factors include:

- **Own Testing**: Evaluating the innovation in a controlled environment allows users to assess its functionality and resolve any issues that arise (Ollila & Lyytinen, 2016).
- **Personal Contact Network**: Individuals often rely on the experiences and recommendations of their friends and peers when considering new innovations (Ollila & Lyytinen, 2016).
- **Own Rules and Control of Job**: Innovators need to experiment with new ideas to confirm their benefits, ensuring that the innovation aligns with their needs and expectations (Ollila & Lyytinen, 2016).
- **Learning by Doing**: Gaining experience with the innovation helps users to reduce uncertainty and speed up adoption. This hands-on approach allows individuals to evaluate the innovation based on their personal experience, thereby increasing its likelihood of acceptance (Rogers, 2013; Ollila & Lyytinen, 2016).

DOI Adopter Categories

Rogers (2003) classifies individuals according to their willingness to adopt innovations into five categories: innovators, early adopters, early majority, late majority, and laggards.. Innovativeness refers to how early an individual or unit adopts new ideas compared to others in the system (Rogers, 2003). Braak (2001) describes innovativeness as a stable, socially constructed characteristic indicating an individual's willingness to change familiar practices. Rogers' categorization helps in understanding adoption behaviour:

- Innovators: Willing to take risks and face uncertainties associated with new ideas. They bring innovations into the system but may not always be respected by others (Rogers, 2003).
- Early Adopters: Generally hold leadership roles and influence others' perceptions of innovations. Their approval can significantly impact the diffusion process (Liao & Hong, 2018; Hale, Householder, & Greene, 2015)
- Early Majority: Adopt innovations before the average person but are not leaders in the process. They adopt innovations through their networks and tend to deliberate longer than innovators and early adopters (Rogers, 2003).
- Late Majority: Skeptical and adopt innovations after the majority of their peers. Peer pressure and economic necessity often drive their adoption (Rogers, 2003).

- Laggards: Highly skeptical and adopt innovations only after seeing widespread acceptance by others. They tend to have limited resources and prefer to wait until innovations are proven (Rogers, 2003).

In the context of Zimbabwe, this theory is relevant as various organisations and individuals fall into the different adopter categories outlined by Rogers (2013). However, Mambo (2015) notes that many public sector organisations in Zimbabwe are classified as late majority or laggards, which impacts the applicability of the theory in this context. Smart parking innovations, such as automated parking systems or dynamic pricing models, can be analyzed using DOI theory to understand their adoption across different urban areas and user groups. Innovations offering clear advantages and integrating seamlessly with existing infrastructure are likely to spread more quickly. Urban Informatics encompasses the use of information and communication technologies (ICT) to enhance urban living and facilitate more effective management of urban environments. It emphasises the utilisation of data and analytics to inform and support decision-making processes. In the context of smart parking, urban informatics plays a key role by gathering and analysing data on parking availability, usage trends, and user behaviors. This data-centric strategy enables municipalities to develop more efficient parking policies, optimize the use of available spaces, and deliver real-time updates to motorists.

2.3 Empirical literature

2.3.1 The Current Parking Management Systems

The history of parking systems reflects the broader evolution of urban transportation and infrastructure. In the early days of automobiles, cars were a novel technology and were often relegated to the outskirts of cities (Bandauko, et al., 2018). Parking was a haphazard affair, with vehicles left on cobblestone streets in an unregulated manner. As the number of cars grew, their presence began to infiltrate urban landscapes, causing significant congestion and chaos. This emerging problem spurred the rise of early entrepreneurs who saw opportunities amidst the pandemonium (Bartodziej, 2017). These pioneers transformed vacant lots and alleyways into parking lots, marking the first steps towards what would become a vast and complex parking industry (Melnyk et al., 2019).

The earliest attempts to regulate traffic and parking in the United States can be traced back to 1678 in Rhode Island, which prohibited horse-drawn carriages from "galloping or running" in Newport. This was followed by Connecticut's establishment of the first automobile speed limit

in 1901 (Alkheder, et al., 2016). Cities like New York relied on scattered ordinances within their Penal Codes, Sanitary Codes, and City Charter to address traffic issues. These regulations covered aspects such as maximum speeds, passing sides, and right of way, but they were often fragmented and lacked uniformity (Shimi et al., 2022). The inadequacy of these early regulations highlighted the need for more comprehensive and standardized rules, leading to federal intervention and the development of nationwide traffic and parking regulations.

William Phelps Eno (1858-1945) is often heralded as the "Father of Road Safety Rules," having significantly influenced the development of traffic and parking regulations (Alkheder, et al., 2016). Although Eno never drove himself, his visionary contributions to urban traffic planning laid the groundwork for modern parking systems. In the early 20th century, he devised the first comprehensive traffic plans for major cities such as New York, London, and Paris (Liao & Hong, 2018). His introduction of essential traffic features like stop signs, taxi stands, and pedestrian islands revolutionized urban navigation (Hsueh-Chan & Chen-Hao, 2020). His "Rules of the Road," adopted by New York City in 1909, were the world's first comprehensive city traffic plans, which included on-street parking regulations and fundamentally shaped the way urban parking is managed today (Bandauko, et al., 2018).

As the number of vehicles continued to increase, the limitations of street parking became evident. This led to the advent of high-rise parking facilities, or parkades, which represented a significant advancement in parking infrastructure. The first known high-rise parking lot was opened in May 1901 by the City & Suburban Electric Carriage Company in London (Park & Park, 2020). This seven-story structure was capable of accommodating 100 vehicles (Vera-Gómez, et al., 2016). The company, specializing in the sale, storage, and maintenance of electric vehicles, recognized the need for dedicated parking space as automobile popularity surged. This innovative concept of vertical parking was subsequently adopted by urban planners to manage the growing demand for parking (Melnyk et al., 2019). The 20th century saw the emergence of automated parking systems, which represented a leap forward in parking technology. Early systems, such as the Paternoster in Chicago and the Duopark in the United States, offered a glimpse into a future where parking could be handled with minimal human intervention (Shimi, et al., 2022). These systems used mechanized processes to park vehicles efficiently, reflecting the growing trend towards automation (Shimi et al., 2022).

Today, we are on the brink of yet another transformation in parking management with the advent of smart parking technologies. Modern advancements include sensor-based systems that provide real-time information on parking space availability, mobile apps for easy payment, and even self-driving cars that promise to eliminate parking concerns altogether. This progression from chaotic street parking to highly sophisticated, automated systems represents a fascinating journey of innovation that continues to shape our urban landscapes (Hsueh-Chan & Chen-Hao, 2020). The future of parking is poised to be even more seamless and efficient, as technology continues to evolve and integrate into our daily lives.

Parking Management Systems (PMS) play a pivotal role in urban planning and transportation management, especially within Central Business Districts (CBDs) where the demand for parking spaces frequently exceeds supply (Alkheder, et al., 2016). Traditional PMS approaches typically encompass metered parking, time-limited parking zones, and various enforcement mechanisms designed to regulate and optimize the availability and use of parking spaces (Melnyk et al., 2019). These systems aim to manage the distribution of parking resources efficiently and ensure that parking spaces are utilized in a manner that supports the overall functionality of urban environments.

Metered parking, one of the most common traditional systems, involves charging drivers for the time they park their vehicles (Vera-Gómez, et al., 2016). Time-limited parking zones are designed to prevent long-term parking by imposing restrictions on how long a vehicle can remain in a specific spot. Enforcement mechanisms, such as parking wardens and automated ticketing systems, are employed to ensure compliance with these regulations and to issue fines for violations (Mataruse & Gambe, 2024). These traditional approaches are intended to balance parking availability and manage demand, thus reducing congestion and increasing turnover of parking spaces.

Despite their intent, traditional PMS often fall short in addressing the complexities of modern urban environments, particularly in rapidly urbanizing areas. Research has shown that outdated parking management systems contribute significantly to urban congestion. For instance, studies indicate that up to 30% of traffic in CBDs can be attributed to vehicles searching for available parking spaces (Shimi et al., 2022). This phenomenon not only exacerbates traffic congestion but also leads to increased fuel consumption and higher emissions, contributing to environmental degradation. Moreover, the inefficiencies inherent in these traditional systems

impact the overall accessibility and attractiveness of CBDs, potentially deterring visitors and businesses from these areas.

One major limitation of traditional PMS is their reactive nature. These systems often respond to parking demand and congestion issues only after they become apparent, rather than anticipating and addressing them proactively (Alkheder, et al., 2016). As a result, parking management becomes a continual challenge, with frequent mismatches between the supply of parking spaces and the actual demand. This leads to scenarios where some areas may experience parking shortages while others suffer from underutilized spaces (Hsueh-Chan & Chen-Hao, 2020). The lack of real-time data and dynamic adjustments exacerbates these problems, making it difficult to manage parking resources effectively.

The increasing complexity of urban environments necessitates more sophisticated and integrated approaches to parking management. Modern solutions, such as smart parking technologies, offer potential improvements by providing real-time information on parking space availability, guiding drivers to open spots, and optimizing space usage (Bandauko, et al., 2018). These technologies, which include sensor-based systems, mobile applications, and data analytics, have the capability to address many of the shortcomings of traditional PMS (Alkheder, et al., 2016). By offering dynamic management and real-time updates, smart parking solutions can reduce the time spent searching for parking, minimize congestion, and enhance the overall efficiency of parking systems (Hsueh-Chan & Chen-Hao, 2020).

2.3.2 Technological Innovations and Parking Services Efficiency in CBDs

In recent years, technological innovations have significantly transformed urban service delivery, leading to more efficient, responsive, and sustainable city management. Significant trends include the incorporation of smart technologies, the growth of data analytics, and the widespread adoption of Internet of Things (IoT) devices. Smart cities, characterized by the use of interconnected technologies to enhance urban living, are at the forefront of these changes. Smart technologies leverage sensors, data analytics, and communication networks to optimize

various urban services, ranging from traffic management to waste collection and energy use (Shimi et al., 2022).

One prominent trend is the adoption of smart infrastructure. Smart grids, for example, use real-time data to manage energy distribution more efficiently, reducing waste and improving reliability. Similarly, smart water management systems utilize sensors to monitor and control water usage, detecting leaks and optimizing supply (Melnyk et al., 2019). These innovations contribute to more sustainable urban environments by reducing resource consumption and operational cost

Another notable trend is the growing use of big data and data analytics. Cities are progressively depending on data-driven decision-making to improve service delivery. By analyzing vast amounts of data collected from diverse sources, such as social media, sensors, and administrative records, urban planners can uncover patterns and trends that guide policy formulation and operational decisions. For instance, predictive analytics can help in anticipating traffic congestion, optimizing public transport routes, and planning for future infrastructure needs (Hsueh-Chan & Chen-Hao, 2020).

The effect of these technological innovations on urban service delivery is significant and multifaceted. One of the most notable effects is the improvement in operational efficiency. Automation and real-time monitoring have enabled cities to streamline operations and reduce costs. For example, smart traffic management systems can adjust traffic signals based on real-time traffic flow data, minimizing congestion and improving travel times (Shimi et al., 2022). Similarly, automated waste collection systems use sensors to determine when bins are full, optimizing collection routes and schedules to ensure timely and efficient waste management.

Technological innovations have also enhanced the quality of public services. In healthcare, telemedicine and digital health records have improved access to medical care and patient outcomes. Citizens can now consult with healthcare professionals remotely, reducing wait times and increasing access to services (Melnyk et al., 2019). In education, digital tools and platforms have expanded learning opportunities, enabling personalized education and facilitating remote learning. Furthermore, the integration of smart technologies has contributed

to better environmental management. Smart grids and energy-efficient buildings reduce energy consumption and greenhouse gas emissions, supporting urban sustainability goals. Sensor-based water management systems help in conserving water resources and managing supply more effectively (Hsueh-Chan & Chen-Hao, 2020).

Nonetheless, the implementation of these technologies comes with challenges. Concerns such as data privacy, cybersecurity, and digital inequality must be addressed to ensure that the advantages of technological innovations are fairly distributed. The reliance on digital systems also raises concerns about vulnerability to cyberattacks and the potential for exacerbating existing social inequalities if access to technology is uneven (Shimi et al., 2022).Technological advancements have the potential to significantly improve the efficiency of parking services, particularly in CBDs where space is at a premium. Smart parking solutions, which leverage technologies such as sensors, IoT (Internet of Things), and real-time data analytics, have emerged as powerful tools for addressing the challenges of urban parking (Hsueh-Chan & Chen-Hao, 2020). These systems offer real-time data on parking availability, directing drivers to vacant spaces and minimising the time spent looking for parking. This not only eases congestion but also lowers emissions and improves the overall efficiency of the transportation network.

Mobile applications and automated payment systems have also been instrumental in enhancing parking services. These technologies allow users to locate, reserve, and pay for parking spaces remotely, adding convenience and reducing the need for physical interaction with parking meters or attendants (Shimi et al., 2022). The integration of these systems with broader Intelligent Transportation Systems (ITS) can further enhance their effectiveness, providing a seamless experience for users and better data for city planners to manage parking resources.

However, the adoption of these technologies is not without challenges. Issues such as high implementation costs, the need for robust infrastructure, and the digital divide among urban populations can hinder the widespread adoption of smart parking solutions (Mataruse & Gambe, 2024). Despite these challenges, the benefits of technological innovations in parking services are increasingly recognized as essential for the sustainable development of CBDs.

2.3.3 Revenue Allocation and Parking Services in CBDs

The financial implications of parking management systems are profound, particularly in the context of municipal revenue generation. Parking fees, fines, and related charges represent a significant revenue stream for city governments, especially in Central Business Districts (CBDs) where parking demand is consistently high (Mataruse & Gambe, 2024). Efficient management of parking resources not only addresses the challenge of limited urban space but also provides a steady and valuable flow of income that can be strategically reinvested into various facets of urban infrastructure and services.

In cities with well-structured parking management systems, revenue generation from parking services is notably higher. Studies have demonstrated that effective parking management can enhance municipal finances by optimizing the use of existing parking spaces and ensuring a consistent income from parking fees and fines (Melnyk et al., 2019). This additional revenue is instrumental in funding urban development projects and maintaining the quality of urban infrastructure. For example, funds accrued from parking services can be allocated to support public transportation initiatives, such as subsidizing bus and train services, thereby improving overall urban mobility. Similarly, revenues can be directed towards essential road maintenance projects, ensuring that the city's road network remains in good condition. Investment in the development of new parking facilities, which can alleviate congestion and improve accessibility, is another critical area where parking revenue can be effectively utilized.

However, the allocation of parking revenues is frequently a subject of debate. The decision on whether to reinvest the funds into parking infrastructure or to divert them to other urban development projects often sparks discussions among city officials and the public. On one hand, investing in parking infrastructure can enhance the efficiency of parking management systems and address parking shortages, which are vital for maintaining the functionality of CBDs. On the other hand, there is a growing recognition of the need to address broader urban issues, such as improving public transportation, enhancing road safety, and developing green spaces. The allocation of parking revenues should, therefore, align with a clear and transparent strategy that supports the city's overarching urban planning goals.

Effective governance and transparent management are essential for the successful allocation of parking revenues. Mismanagement of these funds can lead to public distrust and dissatisfaction. For instance, if revenue from parking fees is perceived to be misused or inadequately invested in critical infrastructure, it can erode public confidence in the parking management system and hinder future revenue generation (Shimi et al., 2022). Furthermore, underinvestment in vital infrastructure, resulting from the misallocation of parking funds, can exacerbate urban problems and undermine the sustainability of CBDs

2.4 Case studies of Efficient Parking Systems

The implementation of smart parking systems represents a transformative approach in addressing urban traffic challenges, particularly in rapidly developing cities. Drawing on the case of the Kingdom of Saudi Arabia, Alharbi et al. (2021) propose an intelligent parking system that leverages Internet of Things (IoT) technologies and artificial intelligence (AI) to reduce traffic congestion and enhance urban mobility. Their model emphasizes the role of automated pre-reservation of parking spaces and vehicle plate recognition through Optical Character Recognition (OCR) integrated into a user-friendly web application. This framework highlights how advanced parking technologies can significantly improve parking efficiency and traffic flow. The system facilitates real-time detection of vacant spaces, automatic user verification, and dynamic reservation adjustments. Furthermore, the study underscores the value of embedding smart parking solutions within broader smart city agendas, ensuring that parking services are not only efficient but also safe, accessible, and sustainable.

Barcelona stands as a prominent example of a smart city leveraging IoT to enhance urban infrastructure, including smart parking systems (Bakici, et al., 2021). According to Sotres et al. (2021), the city deployed 600 wireless sensors in the Les Corts district in 2014, embedded beneath the asphalt to detect vacant parking spaces and relay real-time data to motorists. This initiative aimed to reduce congestion and emissions by guiding drivers to available parking spots via proprietary APIs provided by various vendors (Bakici, et al., 2021). Similarly, Busan, South Korea, implemented an IoT-enabled smart parking pilot between 2015 and 2017. In its initial phase, sensors were installed in public lots to provide real-time data. This system evolved with the integration of CCTV image recognition in 2016 and electric vehicle charging stations in 2017, as part of the Wise-IoT project, which emphasized interoperability through a universal grading framework (Pham, et al., 2017).

In Riga, Latvia, an automated ticketing system was installed in underground parking facilities for 167 vehicles. Drivers receive QR-coded tickets upon entry, and the system enforces time limits by surcharging vehicles that exceed them (Zacepins, et al., 2017). In Santander, Spain, over 250 inductive sensors were embedded in public parking areas to monitor space availability using ferromagnetic detection. This data, shared via APIs, also supports traffic signal control and broader traffic management systems (Lanza, et al., 2020).

Pisa, Italy, tested wireless smart cameras for monitoring medium- and long-term parking zones, including spaces reserved for disabled users and electric vehicles. These systems, powered by photovoltaic panels, processed data locally and transmitted analytical results to a central server, supporting integration with existing traffic systems and enhancing urban mobility planning (Leone, et al., 2019).

Valletta, a historically significant walled city with limited parking infrastructure, presents a unique case for smart parking system implementation (Sotres, et al., 2019). Due to restricted vehicular access influenced by pedestrian density, road pricing, and constrained space availability, the city has adopted real-time parking information systems to better align parking supply with user demand. However, with rising vehicle numbers, authorities have proposed the development of an advanced smart parking management system. As part of this initiative, the city plans to pilot approximately sixty sensors and several surveillance cameras to evaluate various technologies before selecting the most suitable approach for broader deployment (Sotres, et al., 2019). Similarly, the medieval city of Lucca in Italy faces comparable spatial and cultural constraints. Here, a network of intelligent, lightweight cameras equipped with embedded computer vision has been deployed to monitor parking areas of varying sizes (Moroni, et al., 2019). These cameras, powered by convolutional neural network algorithms, achieve an impressive error margin of just 0.4% in determining parking occupancy. In heritage-sensitive zones lacking access to conventional electrical infrastructure, energy harvesting units are paired with ultra-low-power embedded vision boards, resulting in a slightly higher error rate of 0.65%. Notably, all image processing occurs locally within the smart devices, eliminating the need for continuous data transmission (Moroni, et al., 2019).

2.5 Gap Analysis

Current research indicates that parking management systems (PMS) play a crucial role in urban transportation planning and municipal revenue generation (Melnyk et al., 2019). Studies have extensively explored traditional PMS approaches, such as metered parking and time-limited zones, highlighting their effectiveness in managing urban congestion and generating revenue. These studies demonstrate that well-managed parking systems contribute to higher municipal revenues and support urban infrastructure projects (Mataruse & Gambe, 2024). However, much of the existing research tends to focus on developed cities with advanced technological infrastructure, often overlooking the unique challenges faced by cities in developing regions.

Technological advancements in parking management, such as smart parking systems and automated parking facilities, have been widely studied in developed urban centers (Shimi et al., 2022). Research highlights the benefits of these innovations, including improved operational efficiency and better resource management. However, there is limited research on how these technologies are being adapted or implemented in cities with less advanced infrastructure or in contexts where technological adoption is slower.

The impact of parking revenue on urban development has been examined, with findings suggesting that effective revenue management can fund various urban projects (Melnyk et al., 2019). Nonetheless, there is a gap in understanding how parking revenues are specifically allocated and used in different urban contexts, particularly in developing cities. The debate over whether funds should be reinvested in parking infrastructure or diverted to broader urban development initiatives remains underexplored, especially in the context of cities struggling with both high parking demand and limited resources.

Current literature provides insights into the components of parking management systems, including sensors, data analytics, and real-time monitoring (Hsueh-Chan & Chen-Hao, 2020). However, there is a lack of comprehensive frameworks that integrate these components into a cohesive strategy for enhancing parking services, especially in developing cities

The study also addressed the gap in understanding the allocation and utilisation of parking revenues in developing cities. By examining how parking revenue is managed and allocated in Harare, the study will provide insights into effective strategies for reinvesting these funds into

both parking infrastructure and broader urban development projects. This will help address the ongoing debate over the optimal use of parking revenues and contribute to more transparent and effective governance. Finally, the study will work towards developing a comprehensive framework for enhancing parking services in developing cities. This framework will integrate key components of parking management systems, such as sensors and data analytics, into a cohesive strategy that addresses the unique challenges of cities like Harare.

2.3 Conceptual framework

The following is the proposed conceptual framework of the study aimed at achieving efficiency in the parking services of Harare

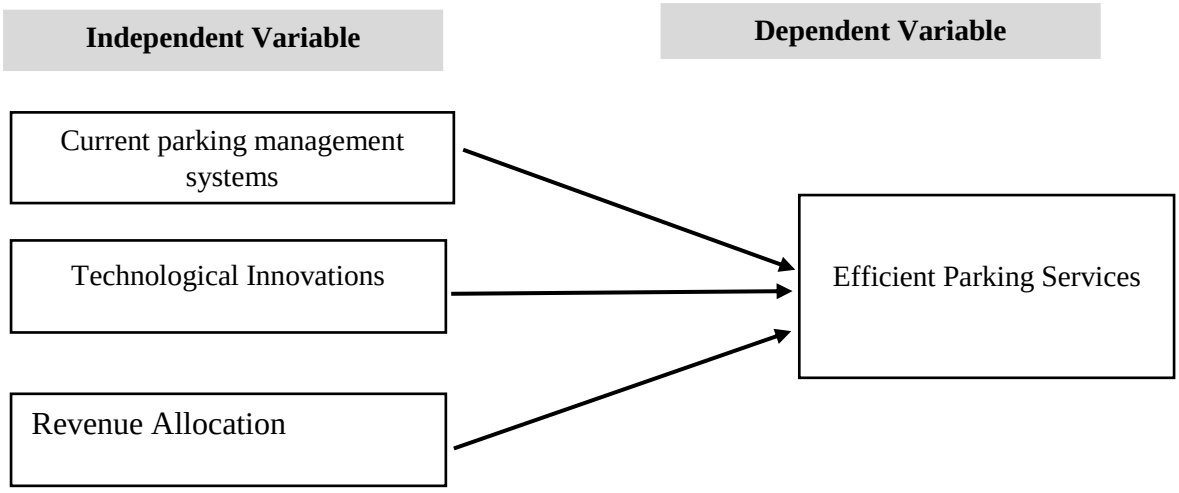


Figure 2.2: Conceptual Framework

SOURCE: Own construct (2025)

The proposed conceptual framework aims to enhance parking service efficiency in Harare's CBD by integrating three critical dimensions: Parking Management System Effectiveness, Technological Innovation, and Revenue Allocation. Each factor plays a synergistic role in addressing urban parking inefficiencies. Scholars such as Bandauko, et al., (2018)and Alkheder, et al., (2016) argue that clearly structured and consistently enforced parking systems reduce operational ambiguity and enhance compliance. Technological integration, including

smart sensors and real-time monitoring, has been shown to optimise space usage and reduce congestion, as evidenced by Hsueh-Chan & Chen-Hao, (2020), who highlight technology's role in transforming urban mobility. Moreover, effective revenue management is central to sustainability; Khan and Patel (2024) assert that transparent reinvestment of parking fees into infrastructure upgrades directly improves service delivery and user satisfaction. The framework posits that improvements in these three domains will result in more efficient, accessible, and user-oriented parking systems. This approach aligns with global best practices and is particularly applicable to rapidly urbanising African cities facing infrastructure strain..

2.6 Proposed Hypotheses

H_1: The effectiveness of the current parking management system positively influences parking service efficiency in Harare CBD.

H_2: Technological innovations significantly enhance parking service efficiency in Harare CBD.

H_3: Proper revenue allocation improves parking service efficiency in Harare CBD.

2.7 Chapter Summary

This chapter reviewed relevant literature related to the development of a model for improving parking services. It began by examining the theoretical foundations that provided a framework for understanding the study. Key concepts related to parking services were explored, followed by an empirical review aligned with the study's objectives. A gap analysis was conducted to identify existing gaps in the literature, highlighting the study's niche and the rationale for further research. Finally a conceptual framework and proposed hypotheses were provided.

CHAPTER 3

RESEARCH METHODOLOGY

3.0 Introduction

This chapter outlines the research methodology adopted in the study, based on a pragmatic philosophy and a mixed-methods approach. It details the research design, strategy, and the use of surveys, interviews, and document analysis. The rationale for these methods is explained, along with their application within the study's context. A detailed overview of the data collection and analysis methods is presented, ensuring a thorough approach to addressing the research problem. The combination of qualitative and quantitative techniques strengthens the study's robustness. Additionally, the chapter outlines the specific procedures for data collection and the analysis methods utilized in the research.

3.1 Research Philosophy

The study was grounded in epistemological assumptions, a fundamental aspect of research philosophy that involves a system of beliefs and assumptions about how knowledge is developed (Saunders, Lewis, & Thornhill, 2019). Researchers make these assumptions at every stage of a study (Burell & Morgan, 2019). These include ontological assumptions (concerning the nature of reality encountered in research), epistemological assumptions (related to the nature of human knowledge), and axiological assumptions (regarding the influence of values on the research process) (Saunders et al., 2019). This study specifically utilized epistemological assumptions. Within epistemology, there are three major positions: positivism, interpretivism, and pragmatism. For this research, the pragmatic philosophy was adopted (Collis & Hussey, 2014).

3.1.1 Pragmatism

Pragmatism, as a research philosophy, is considered relevant only when it supports actionable outcomes. Pragmatists acknowledge that there are multiple ways to interpret the world and conduct research, understanding that no single perspective can provide a complete picture, and recognizing the existence of multiple realities, particularly in contexts like employee motivation (Collis & Hussey, 2014). Pragmatism emphasizes shared meanings and collaborative actions (Thi, 2017) and operates on the belief that theories can be both context-specific and generalizable, depending on their applicability to different situations (Hair, Celsi, Money, Samouel, & Page, 2015). The pragmatic philosophy was adopted in this study because it enabled flexibility, allowing the researcher to move between qualitative and quantitative data, which are often seen as incompatible (Thi, 2017). Furthermore, pragmatism was valuable for this study as it allowed the researcher to consider multiple perspectives on the role of social actors, facilitating a practical approach to the research topic (Kothari, 2019).

3.2 Mixed Methods Research

This study embraced a mixed methods approach, which is one of the three primary research methodologies alongside qualitative and quantitative approaches (Collis & Hussey, 2014). Mixed methods research involves the collection, analysis, and integration of both qualitative and quantitative data within a single study or program of inquiry. This approach allows the researcher to draw inferences using a combination of qualitative and quantitative methods. According to Saunders et al. (2019), mixed methods research entails collecting both types of data, integrating them, and using specific designs that may include philosophical assumptions and theoretical frameworks. This study did not view qualitative and quantitative approaches as rigid or entirely distinct categories, but rather as points on a continuum (Creswell, 2014; Polit & Beck, 2010). Consequently, the adoption of a mixed methods approach is justified as it incorporated elements of both qualitative and quantitative methods, situating itself in the middle of this continuum (Saunders et al., 2019). The core idea behind this approach is that integrating both qualitative and quantitative methods offers a more holistic understanding of the research problem than using either method individually.

The primary advantage of using mixed methods in this study was that the strengths of one approach could offset the weaknesses of the other (Creswell, 2014). It has been argued that when applied correctly, mixed methods research can offer more extensive and robust evidence of research findings (Kothari, 2019). Additionally, mixed methods are particularly useful in addressing research questions that cannot be fully explored through a single approach, thereby fostering interdisciplinary collaboration. When quantitative and qualitative research methods are carefully combined, they often yield more robust scientific inferences than when used separately.

The study employed a pragmatic parallel mixed methods design, which involves collecting and analysing both quantitative and qualitative data to address the research questions (Mertens, 2015). As Creswell (2018) notes, this design collects both types of data in one phase, analyses them separately, and then compares the results to verify or confirm findings. In this study, final inferences was based on the analysis of both data sets. The data was collected independently, either simultaneously or with a brief time lag, and analysed separately before being integrated. Creswell (2018) further explains that the data can be merged in different ways, or results can be compared, with qualitative findings discussed in light of quantitative results. The inferences drawn from each strand of data are then synthesized to form meta-inferences at the conclusion of the study.

3.3 Research Design

The study adopted a survey research design, which served as a systematic plan for collecting data necessary to address the research questions (Glaser & Strauss, 2017; Saunders, Lewis, & Thornhill, 2019). This research utilized both survey and case study strategies, as they are effective in gathering substantial amounts of data from a large population in a cost-effective manner. These methods are generally considered authoritative, easy to explain, understand, and are grounded in real-life situation

3.3.1 Survey Strategy

The survey strategy involved collecting primary data from motorists, council officials, and City park officials in Harare CBD. This approach involved the structured collection of data from a sizable population (Saunders, Lewis, & Thornhill, 2012). In this study, data was collected using a questionnaire survey, and interviews which are most commonly and widely used methods to answer questions like who, where, how much, and how many. The survey strategy was particularly suitable for this research because it enabled collection of large amounts of data from a sizable population in a highly economical way, ensured standardisation and is relatively easy to explain and understand, and provides more control over the research process (Hair, et al, 2015)

3.4 Target Population

The complete set of cases from which a sample was drawn includes motorists, city council officials, and city parking officials, constituting the target population of the study (Creswell, 2014). The population of motorists was identified based on the vehicles parked within the bays along Samora Machel Avenue, bordered by Leopold Takawira to the west, Julius Nyerere to the east, and Nelson Mandela Avenue to the south. This area encompasses 650 parking bays and represented a critical zone for addressing parking challenges within the Central Business District (CBD). Additionally, the study considered a population of 200 council traffic officials, 650 motorists and 600 city park officials, resulting in a total population of 1,450 individuals.

3.5 Sample Size

The actual number of subjects chosen as the study's sample to represent the population characteristics is regarded as the sample size (Bryman & Bell, 2015; Sekaran, 2013). To determine the sample size of the study probability and non-probability sampling techniques were used. The Taro Yamane calculator will be used to determine the study population at 10 % error

The Yamane Fomula will be as follows (Saunders, Lewis, & Thornhill, 2019)

$$n = \frac{N}{1+N_{e^2}}$$

Where:

n = sample size

N = target population

e = maximum acceptable margin of error (10%)

Sample size calculation

$$n = \frac{1450}{1+1457_{(0.10)^2}} = 145$$

Therefore, n= 145

3.6 Sampling Method and Techniques

Sampling involves the systematic selection of a representative subset of the total population to obtain findings that can be generalized to the entire population (Burns & Burns, 2012). The selected sample must possess similar characteristics to the population under study to ensure the results are representative.

3.6.1 Systematic Random Sampling

This study utilized systematic random sampling as part of the survey strategy. In this method, the researcher assigns numbers to all cases, starting from zero. A case is randomly selected first, followed by calculating a sampling fraction of 1/10, which indicates the sampling error percentage. Sampling occurs at regular intervals based on this fraction from the sampling frame. Subsequent cases are systematically selected based on this fraction, resulting in a sample size of 145 for the survey.

3.6.2 Purposive Sampling

For the interviews, purposive sampling, a non-probability sampling technique was utilized to select informants, which is suitable for the case study strategy (Creswell, 2014). Although it

may be challenging to assess the extent to which the sample represents the broader population, the sampling process allows for valid inferences to be drawn based on careful observation of variables within the chosen group (Bhattacherjee, 2012). Consequently, a sample size of 20 key informants was selected for the interviews. Critical case sampling, a subtype of purposive sampling, involves selecting one case for investigation with the expectation that it will provide insights into other similar cases (Bryman & Bell, 2015).

3.7 Research instruments

The research utilised a mixed-method approach; therefore, the selected instruments carefully aligned with both qualitative and quantitative research methods. Creswell (2012) asserts that a research instrument is a tool used to gather data in a scientific investigation. Questionnaires and interviews were used in this research as instruments for data generation.

3.7.1 Questionnaires

In this study, a questionnaire was employed to gather information from respondents. A questionnaire is a structured tool designed to directly obtain data on respondents' behaviour, demographic characteristics, knowledge, attitudes, beliefs, and feelings (Burns & Burns, 2012; Bryman & Bell, 2015). The use of questionnaires was advantageous because they facilitated the collection of a large volume of data in a relatively short period (Bernard, 2011; Creswell, 2014). Additionally, questionnaires are reliable, as the data collected can be analysed both scientifically and objectively.

The questionnaire featured scaled questions, comprising statements followed by a rating scale, where respondents indicated their level of agreement or disagreement. The responses will be captured using a five-point Likert scale. This format was chosen because it is easy to complete and does not require much time from respondents (Collins, 2010).

A cover letter accompanied the questionnaire, clearly stating the research purpose and assuring respondents of confidentiality and that the data collected would be used solely for academic purposes. The letter emphasized that participation was voluntary and anonymity would be maintained. Clear, concise instructions were included to help participants understand how to complete the questionnaire accurately. Respondents were given a minimum of one week to complete and return the questionnaire. To encourage a high response rate, a structured questionnaire was used, designed to be straightforward and user-friendly. The questionnaires

were primarily distributed through self-administration, email, and various online platforms for wider accessibility.

3.7.2 Interview Guide

The researcher used a purposive sampling strategy to select key informants for this study. Creswell (2009) emphasizes that purposive sampling is essential for choosing interviewees who have a deep understanding of the research problem and the central phenomenon being examined. Yin (2009) further notes that key informants play a crucial role in the success of a case study, as they can also provide access to supporting or opposing evidence. The use of both unstructured and semi-structured interviews allows for flexibility in the data collection process (Bryman & Bell, 2015). In this research, interviews were served as a data collection method that enabled the researcher to clarify questions for respondents (Saunders, Lewis, & Thornhill, 2019). The researcher made sure that questions were clear, concise, and free of ambiguity, avoided long, vague, double-barreled, or leading questions..

3.8 Data collection procedure

3.8.1 Survey Data Collection

For the survey, data collection was conducted using both online and self-administered hard copy questionnaires. This dual-method approach was chosen to expand the survey's reach and inclusivity, addressing the diverse preferences and accessibility needs of respondents.

Online questionnaires were distributed via email and other digital platforms, offering numerous advantages such as convenience and efficiency. Respondents were able to complete the questionnaire at their own pace and at times that are convenient for them, which we expected it would increase participation rates. Additionally, the online format facilitated faster data collection and streamline the process of data entry and analysis, as responses were automatically aggregated and stored electronically. Simultaneously, hard copy questionnaires were used to ensure participation from those who prefer or require a physical format. This approach was particularly important for respondents with limited access to digital devices or those who favour a paper-based method. By providing both options, the study aim was to minimize barriers to participation and ensure that the sample was as representative as possible.

3.8.2 Interview Data Collection

For the interviews, the researcher scheduled appointments with participants, accommodating their preferences for either online or face-to-face settings. This approach was implemented to ensure flexibility and convenience for the participants, thereby enhancing the likelihood of securing their cooperation and obtaining high-quality data. Scheduling interviews at times and

locations that are convenient for participants was crucial for creating a comfortable environment that encouraged open and honest responses.

With the participants' consent, the researcher used recording devices, such as electronic gadgets and notepads, to accurately capture the interview discussions. Electronic recording devices were used because they produced clear, high-quality audio recordings, which are essential for capturing the nuances of participants' responses. These recordings were vital for maintaining the accuracy and integrity of the data, enabling a thorough analysis of both verbal and non-verbal elements of the interviews. Notepads were used concurrently to document immediate observations, non-verbal cues, and any additional thoughts that arose during the interviews. This dual method of recording ensured that all relevant data was captured, including aspects that might not be evident in audio recordings alone.

After the interviews, the data was transcribed to convert spoken content into written text, which is necessary for systematic analysis. The transcription process involved carefully listening to the recordings and producing a verbatim text of the interviews, ensuring that the original meaning and context are preserved. The transcribed data was then input into Atlas.ti.9. This is a qualitative data analysis software, for detailed analysis.

3.9 Reliability

For this study, Cronbach's alpha coefficient was used to assess the internal consistency of the scale items. According to Malhotra (2010:137), alpha values below 0.60 are considered inadequate, values ranging from 0.60 to 0.69 are regarded as acceptable for retention in research, and coefficients between 0.70 and 1.00 indicate good to excellent reliability (Majumdar, 2011; Taber, 2017).

3.10 Validity

This study evaluated both content validity and construct validity to ensure the accuracy and relevance of the research findings. Content validity was assessed to determine if the survey and interview instruments adequately cover all relevant aspects of corporate governance practices and their impacts on State-Owned Enterprises (SOEs). The instruments reviewed to ensure they include the full spectrum of concepts and variables relevant to the study, thereby capturing the intended content comprehensively.

Construct validity was examined to ensure that the measures accurately represent the theoretical concepts related to corporate governance and organisational performance. The study verified whether the constructs assessed by the questionnaires and interview questions are

consistent with the theoretical framework and effectively reflect the theoretical concepts of interest.

3.11 Data Analysis and Presentation

The mixed-methods approach enabled concurrent analysis of qualitative and quantitative data using descriptive statistics, correlation, and regression techniques. Qualitative data, which encompasses responses to open-ended questions, interview transcripts, and policy documents, was subjected to thematic content analysis. Triangulation was used to combine data and methods, offering a comprehensive perspective on the phenomenon under investigation by integrating survey and interview data.

3.11.1 Analysis Software Packages

For the quantitative analysis, the study employed the Statistical Package for Social Sciences (IBM SPSS 26). SPSS was used for its user-friendly interface and robust statistical analysis capabilities. Qualitative data analysis was conducted using Atlas.ti 9, which specialized in coding and thematic analysis (Burns & Burns, 2012; Collis & Hussey, 2014). Data was edited, coded, and entered into SPSS for detailed statistical testing, including descriptive, correlation, and regression analyses.

3.11.2 Quantitative Data Analysis Tests

Descriptive analysis summarised and presented demographic data and responses within the study. This involved calculating fundamental statistical measures such as mean, standard deviation, skewness, and kurtosis. The mean provided an average value for each variable, summarising central tendencies. The standard deviation reflected the variability of responses around the mean, indicating data consistency. Skewness would assess the asymmetry of data distribution, and kurtosis would measure the distribution's peakness or flatness relative to a normal distribution. These descriptive statistics are crucial for understanding data patterns and distribution, identifying any anomalies or trends.

Inferential analysis were employed to test hypotheses and make predictions. Correlation analysis investigated the strength and direction of relationships between variables, revealing potential associations. Ordinary Least Squares (OLS) regression was used to model the relationships between dependent and independent variables, testing specific hypotheses regarding how different factors influence outcomes. OLS regression quantified the impact of

predictor variables on the outcome variable, providing a detailed understanding of the dynamics at play.

3.11.3 Qualitative Data Analysis

Qualitative data underwent thematic analysis to identify key themes and sub-themes. The data was transcribed verbatim and verified against audio recordings and backup notes for accuracy. Coding will proceed from open coding to axial coding using Atlas.ti qualitative data analysis software. Thematic analysis involved systematic coding, categorization, and interpretation to uncover significant patterns and themes. Initial codes capturing key ideas were generated, organised into themes, and refined to accurately reflect the data's meaning. This analysis provides insights into the research questions and contribute to a deeper understanding of the studied phenomena.

3.12 Ethical Considerations

The study adhered to ethical standards in academic research by:

Obtaining respondents' consent to participate in the study, with signed consent forms.

Ensuring voluntary participation, with the option for respondents to withdraw at any time.

Securing informed consent to ensure respondents understand the study's purpose and legitimacy.

Maintaining anonymity, reporting findings only in aggregated form to protect respondents' privacy.

3.13 Chapter Summary

This chapter presented the research methodology employed in the study, grounded in a pragmatic paradigm and utilizing a mixed-methods approach. It elaborated on the research design and strategy, incorporating surveys, interviews, and document analysis. The justification for selecting these methods was discussed in relation to the study's objectives. A systematic overview of data collection and analytical procedures was provided to ensure a holistic understanding of the research problem. The combination of qualitative and quantitative methods contributed to the study's methodological robustness. Additionally, the chapter outlined the specific procedures undertaken for data gathering and the analytical techniques used throughout the investigation.

CHAPTER 4: DATA PRESENTATION, ANALYSIS, INTERPRETATION AND DISCUSSION

4.0 Introduction

This chapter presents, analyses, and interprets the research findings through a detailed discussion. It begins by outlining the survey response rate, followed by a descriptive analysis of the sample's characteristics. Both descriptive and inferential statistical techniques are employed to address the study's objectives. In line with the mixed-methods approach, thematic analysis is undertaken to complement the quantitative findings. The selection of subtopics for

analysis and interpretation is guided by the study's objectives, ensuring a thorough and coherent understanding of the data. This integrated approach enhances the depth and trustworthiness of the research outcomes.

4.1 Response Rate

Table 4.1 below indicates that out of the 145 questionnaires distributed, 142 were returned and deemed valid for analysis, resulting in a high response rate of 97.9%. Furthermore, 16 of the 20 scheduled interviews were successfully completed, yielding an 80% response rate. The table below provides a summary of these response rates:

Method	Administered	Returned	Unusable	Valid Responses	Percentage
Questionnaire	145	143	1	142	97.9%
Interview	20	17	1	16	80%

Table 4.1: Response Rate

The response rates of 97.9% and 80% are regarded as credible and satisfactory, providing dependable data that supports generalisability to the broader target. This strong level of participation is likely due to the research being conducted within participants' natural settings, which fostered greater engagement and responsiveness. According to Sherly and Shushanta (2018), a respose rate of at least 70% is highly representative of the sample used. Therefore this means the overall response rate of this study was high enough to yield results which are true reflection of the represented study population.

4.2 Demographic Data Analysis

This section examines the demographic characteristics of the study sample, such as age, educational qualifications, professional experience, and positions

4.2.1 Age

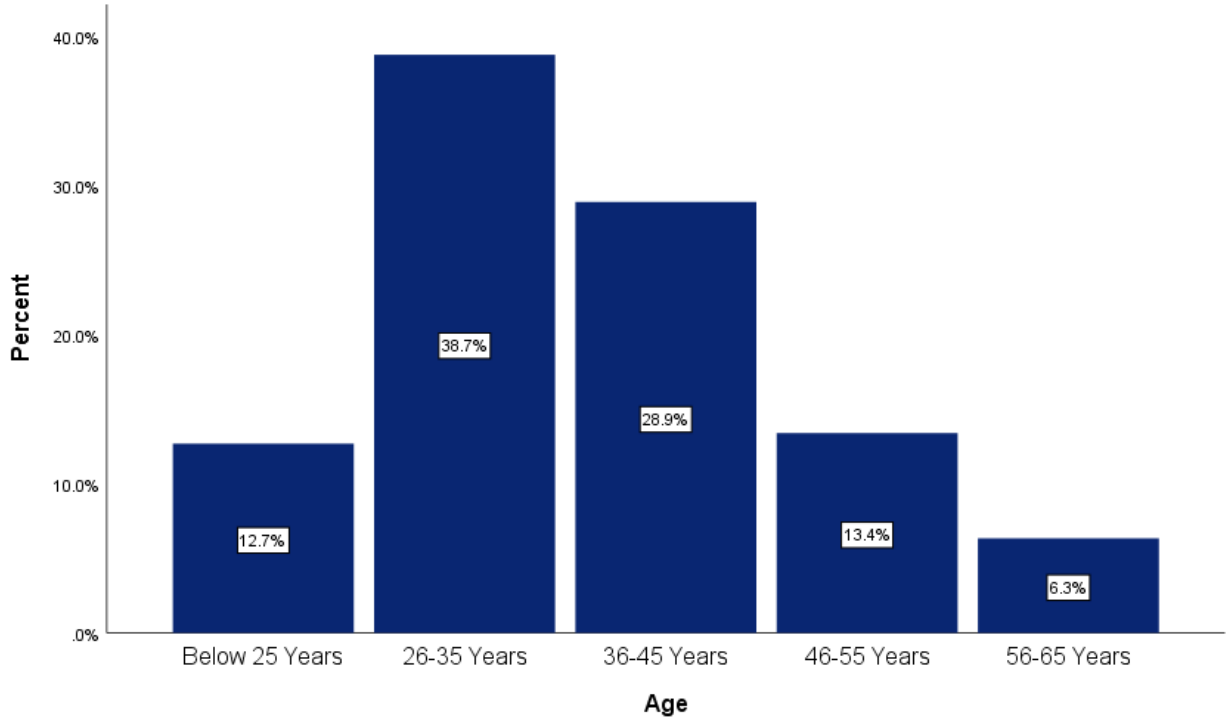


Figure 4.1: Age of the Respondents

The age distribution of respondents in the study indicates that the majority of participants fall within the 26 to 45-year age range, comprising 67.6% of the total sample. Specifically, individuals aged 26–35 years represent the largest group at 38.7%, followed by those aged 36–45 years at 28.9%. This suggests that the views captured in the study are predominantly reflective of individuals in their prime working and commuting years, who are likely to be the most frequent users of parking facilities in the Harare Central Business District (CBD). In contrast, the younger age group, classified as below 25 years, accounts for only 12.7% of the respondents, while those aged 46–55 years and 56–65 years represent 13.4% and 6.3% of the sample, respectively. The relatively lower representation of the youngest and oldest age groups may indicate reduced engagement with or differing patterns of parking use among these populations.

3.0.1 Gender

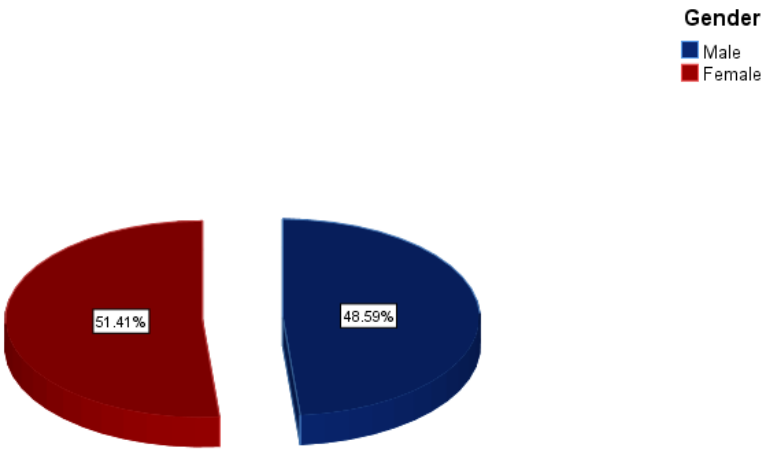


Figure 4.2:Gender of the Respondents

The gender distribution of the survey respondents is relatively balanced, with a slight majority of participants identifying as female (51.4%), compared to 48.6% identifying as male. This near-equal representation suggests that both male and female perspectives are fairly equally reflected in the findings of the study.

4.2.2 Qualifications

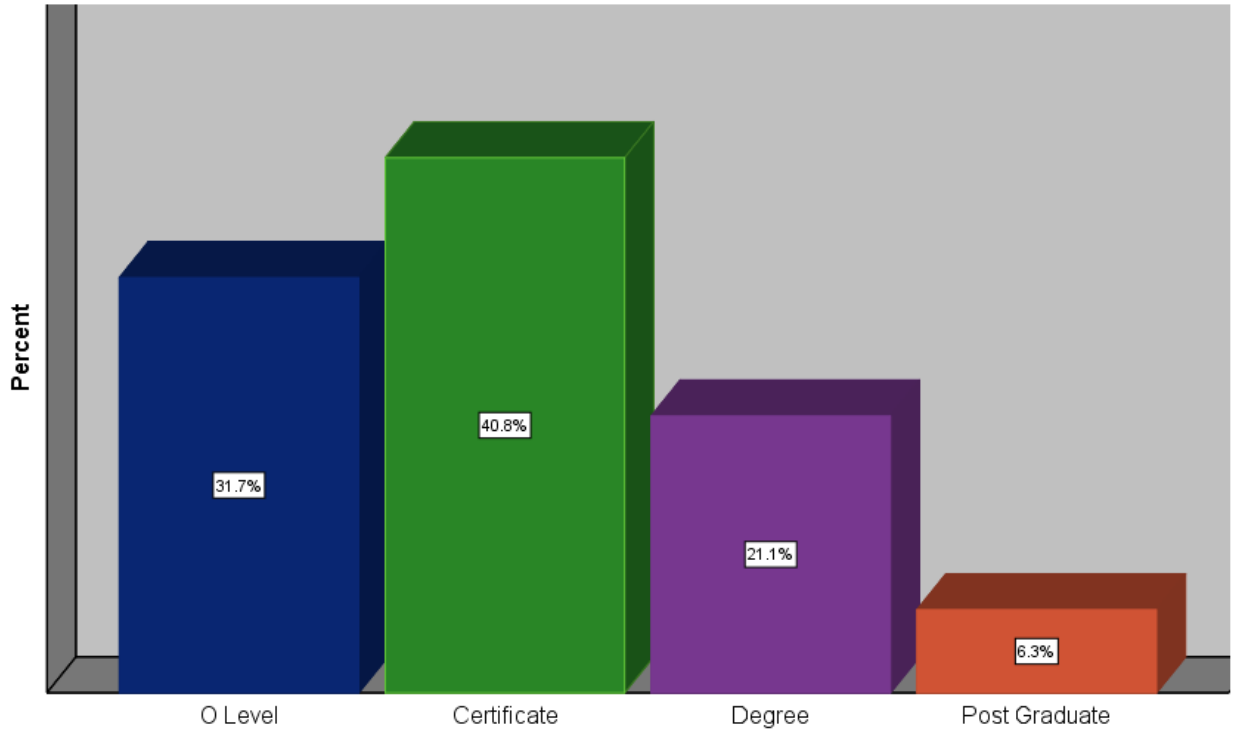


Figure 4.3: Qualifications of the Respondents

The educational qualifications of respondents reveal that the majority possess either a certificate (40.8%) or an Ordinary Level (O Level) qualification (31.7%), collectively accounting for 72.5% of the total sample. Individuals holding a university degree constitute 21.1%, while only a small proportion (6.3%) reported having postgraduate qualifications.

4.2.3 Experience

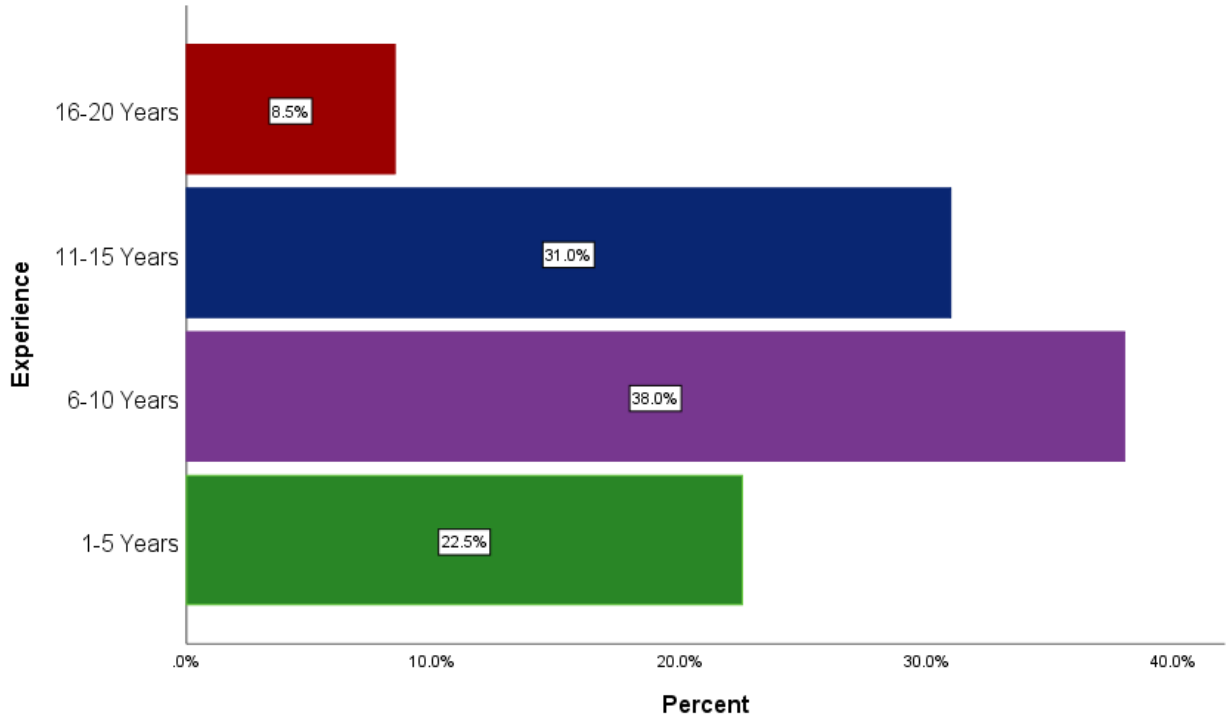


Figure 4.4: Experience of the Respondents

The distribution of respondents based on years of experience reveals that a significant majority have considerable tenure in their professional or driving-related activities. Specifically, 71.1% of the participants have between 6 and 15 years of experience, with 34.5% having 6–10 years and 36.6% having 11–15 years of experience. This suggests that the insights gathered are largely informed by individuals with a well-established familiarity with parking conditions and commuting dynamics in the Harare Central Business District (CBD).

Respondents with 16–20 years of experience represent 9.9% of the sample, while those with over 21 years of experience constitute 13.4%, indicating a meaningful representation of long-term users. In contrast, only 5.6% of the respondents have 1–5 years of experience, reflecting a relatively small proportion of newer entrants or less experienced users of the CBD parking system.

The predominance of mid-career to experienced individuals enhances the credibility of the data, as it is likely to be shaped by sustained interactions with the parking environment over time. These individuals are well-positioned to assess changes, trends, and persistent challenges within the parking management system. Moreover, their input is crucial in evaluating the effectiveness of technological interventions and policy reforms, as they can offer comparative perspectives based on long-term observations.

4.2.4 Position

Position					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	HCC Official	35	24.6	24.6	24.6
	City Park Official	29	20.4	20.4	45.1
	Motorist	67	47.2	47.2	92.3
	Government Official	11	7.7	7.7	100.0
	Total	142	100.0	100.0	

Table 4.2: Positions of the Respondents

The respondents' positions reflect a balanced mix of stakeholders involved in Harare CBD's parking system. Motorists form the largest group (47.2%), offering direct user perspectives. Harare City Council (24.6%) and City Park officials (20.4%) provide operational and administrative insights, while government officials (7.7%) contribute a policy-level viewpoint. This distribution ensures that the study captures diverse experiences and responsibilities related to parking management. The combination of service users and providers enhances the depth and credibility of the findings, supporting a holistic understanding of both institutional and user-based challenges within the current parking framework in the Harare Central Business District.

4.3 The effectiveness of the current parking management systems in the Harare Central Business District

This section analyses data in line with first objective which stated, to evaluate the effectiveness of the current parking management systems in the Harare Central Business District

Question	Strongly Agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly Disagree (%)
The current parking management system adequately meets the needs of motorists in the Harare CBD.	3.5	13.4	14.1	33.8	35.2
There is sufficient enforcement of parking regulations in the Harare CBD.	4.2	24.6	13.4	28.9	28.9
The parking system in the Harare CBD is well-organised and easy to understand.	2.8	24.6	9.2	21.8	41.5
The current parking management system helps reduce traffic congestion in the CBD.	9.2	9.2	54.2	21.8	5.6

Table 4.3: Analysis on the effectiveness of the current parking management systems

The data indicates general dissatisfaction with the effectiveness of the current parking management system in the Harare CBD. Only 16.9% of respondents either agreed or strongly agreed that the system adequately meets motorists' needs, while a significant 69% expressed disagreement or strong disagreement. Similarly, views on enforcement of parking regulations are split, with just 28.8% affirming sufficiency, and a matching 57.8% disagreeing. The system's usability and clarity are also questioned; 63.3%) found it disorganised or difficult to understand, while only 27.4% viewed it positively. Meanwhile, the system's role in reducing traffic congestion drew mostly neutral responses (54.2%), suggesting uncertainty or limited perceived impact.

The data reflects limited effectiveness in meeting user needs, enforcing regulations, reducing congestion, and ensuring clarity. This points to critical gaps in design, communication, and implementation within the current parking management framework, directly informing the study's objective to evaluate and identify areas for improvement.

Qualitative responses from the interviews provide further support for these findings. Participant 1 expressed frustration with the lack of clarity in parking regulations, stating: "Honestly, parking in town is chaotic. Sometimes you don't even know where you're allowed to park. The signs are not clear, and there's little guidance." This echoes the survey data suggesting that the parking system is not well-organised, with only 27.4% of respondents viewing it positively.

Enforcement was another key issue raised by interviewees. Participant 3 noted: "Some areas are over-patrolled, others not at all. You see people double parking with no consequences,

while others are clamped immediately. It feels unfair." This aligns with the 57.8% of survey respondents who expressed dissatisfaction with the enforcement of parking regulations, highlighting perceived inconsistencies and inequities in its application.

Participant 8 highlighted another prevalent challenge: "I avoid going to town with my car because parking is stressful. Either there's no space, or the attendants are missing when you need them." This statement reflects the broader dissatisfaction with the system's accessibility and availability, supporting the survey's findings that 54.2% of respondents felt the system did not effectively reduce traffic congestion in the CBD. Further, Participant 12 observed issues with the technological aspects of the parking system, stating: "Mobile payments are a good idea, but the system is often down or slow, especially when it's busy. That needs fixing." This statement reinforces the survey responses that indicate the parking management system's lack of reliability, particularly in terms of technological interventions.

Finally, Participant 14 summarised the overall sentiment of dissatisfaction, asserting: "There's not enough planning. The system could work if it was properly enforced and maintained. Right now, it's half-baked." This comment succinctly encapsulates the general perception of the system's ineffectiveness, which is consistent with the survey findings, where a significant proportion of respondents expressed a lack of confidence in the system's ability to meet their needs and reduce congestion.

Taken together, the quantitative survey results and qualitative interview responses provide compelling evidence of significant deficiencies in the current parking management system in Harare's CBD. These deficiencies include inadequate enforcement, lack of clarity, poor technical reliability, and inconsistent availability of parking spaces. The insights gathered suggest that the system requires substantial improvements in both operational management and user experience to enhance its effectiveness.

4.3.1 Impact of technological innovations on parking services efficiency in the Harare CBD

This section analyse the data in line with the second objective which stated ; to assess the impact of technological innovations on parking services efficiency in the Harare CBD

Question	Strongly Agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly Disagree (%)
Technological tools will improve my parking experience in the CBD.	47.9	27.5	16.2	3.5	4.9
The use of technology has made it easier to locate available parking in Harare CBD.	23.2	51.4	21.1	2.8	1.4
Mobile or electronic payment systems are reliable and efficient in Harare CBD parking.	12.7	29.6	29.6	13.4	14.8
The integration of technology will reduce the time I spend looking for parking in the CBD.	9.9	21.8	21.8	21.1	25.4
I think further technological innovation could enhance parking services in the CBD.	6.3	22.5	38.7	26.8	5.6

Table 4.4: Impact of technological innovations on parking services efficiency in the Harare CBD

The results reveal generally positive perceptions regarding the potential of technology to improve parking, with 75.4% of respondents agreeing that technological tools could enhance their parking experience. 74.6% also felt that technology has made it easier to locate available parking spaces. However, concerns were raised about the reliability and efficiency of mobile and electronic payment systems, with 28.2% of respondents expressing dissatisfaction. This reflects a gap in the effectiveness of technological solutions, particularly in terms of payment processes. Additionally, only 31.7% of respondents agreed that technology reduces the time spent searching for parking, indicating that current technologies do not always deliver the desired efficiency.

Regarding the potential for further technological innovations, 28.8% of respondents expressed support, while 32.4% remained skeptical, indicating a divided opinion on the need for additional technological developments. The data show that while technological innovations show promise in improving the parking experience and locating available spaces, issues with system reliability, payment efficiency, and time savings highlight significant areas for improvement. These findings suggest that while technology has potential, further

enhancements and better system integration are required to realize its full benefits in the Harare CBD parking system.

In support of the quantitative data finding the interview responses indicate that there is potential in harnessing technological innovation for improved parking management systems. When asked about the technological tools used in Harare's CBD parking services, the responses revealed varying levels of awareness and interaction with such systems. Participant 3 mentioned, "I have noticed the introduction of mobile payment systems, but that's about it. There are not many parking sensors or apps here like in other international cities to stop the need for looking for a parking marshal." Similarly, Participant 6 expressed, "There's still a lack of smart parking solutions like sensors; we mostly have manual payment stations and whistle for the marshal otherwise you will be clamped the moment you leave your car parked."

Regarding the impact of these technological tools on their ability to find and access parking, Participant 8 noted, "The mobile payment option makes things easier when I park, but finding a spot can still take a while." Participant 13 emphasised, "The availability of digital payment methods is a step forward, but it's still difficult to find a space unless you get lucky or know the area well." These responses indicate that while some technological tools have streamlined the payment process, finding parking spaces remains a challenge.

When discussing whether the use of technology has improved the overall efficiency of parking services, Participant 15 stated, "I believe technology helps to an extent, but the system is far from efficient. We still lack real-time information on available parking spaces." Participant 3 agreed, "While the mobile app for payments is a good development, it hasn't significantly improved how quickly I can park. The system still feels outdated." These comments suggest that while technological innovations have made some progress, their effectiveness in enhancing parking efficiency remains limited.

The responses from the interview participants indicate a general acknowledgment of some technological tools in use, particularly mobile payment systems. However, their impact on improving parking accessibility and overall efficiency in Harare CBD is seen as limited, with participants expressing the need for further advancements, such as parking sensors and better real-time data on available spaces.

4.4 The impact of revenue allocation on the parking services in Harare CBD

The section analyses the third objective of the study which was stated, to analyse the impact of revenue allocation on the parking services in Harare CBD

Question	Strongly Agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly Disagree (%)
Funds collected from parking fees are visibly used to improve parking facilities in Harare CBD.	7.7	36.6	21.8	33.8	—
I believe the revenue from parking is effectively managed by the responsible authorities.	9.2	37.3	19.0	34.5	—
There is transparency in how parking revenue is allocated in the Harare CBD.	7.0	52.1	12.0	28.9	—
The quality of parking services would improve if more funds were reinvested into the system.	12.7	31.0	31.0	24.6	0.7
Poor allocation of parking revenue negatively affects the efficiency of parking services in the CBD.	20.4	49.3	21.8	7.7	0.7

Table 4.5: The impact of revenue allocation on the parking services in Harare CBD

The responses from the survey indicate varying opinions on the utilization, management, and transparency of parking revenue, shedding light on potential areas for improvement. A significant 44.3% of respondents either strongly agreed or agreed that funds collected from parking fees are visibly used to improve parking facilities in the CBD. However, a notable 33.8% disagreed, highlighting concerns about the lack of visible improvements despite the funds collected. This points to a perceived disconnect between revenue collection and tangible upgrades in the parking infrastructure.

Regarding the management of parking revenue, 46.5% of respondents agreed or strongly agreed that the revenue is effectively managed by the responsible authorities. However, a substantial 34.5% disagreed, suggesting a general dissatisfaction with how the funds are handled. This indicates that while some users have faith in the management system, many remain skeptical about its efficiency.

When asked about the transparency of parking revenue allocation, 59.1% of respondents either agreed or strongly agreed that the process is transparent. This indicates a relatively positive perception of how parking funds are allocated. However, the remaining 28.9% expressed dissatisfaction, signaling that transparency is still a significant concern for a portion of the population.

On whether the quality of parking services would improve with increased reinvestment of funds, 43.7% of respondents agreed or strongly agreed, while 25.3% disagreed. This suggests that there is a strong belief that further investment into the system could enhance service quality, but some respondents remain uncertain about the effectiveness of additional funding.

The statement regarding poor allocation of parking revenue negatively affecting the efficiency of parking services saw 69.7% of respondents either agreeing or strongly agreeing. This reflects a strong sentiment that the improper use of funds directly impacts the efficiency of parking management in the CBD.

The quantitative findings indicate that while a majority of respondents acknowledge that parking revenue is being used to some extent to improve services, there is significant concern about the effectiveness, transparency, and management of these funds. The majority of participants believe that better allocation and reinvestment of parking revenue could significantly improve parking services in the Harare CBD. The perceived lack of visible improvements, alongside concerns about fund management and transparency, highlights the need for greater accountability and more strategic investment in the parking system.

In support of the quantitative findings the interview also support that there is limited improvements in the development of the parking systems which is not in tandem with amount of money being collected. When asked about how well the revenues generated from parking services are being utilised in Harare, Participant 2 responded, "I don’t see much being done with the money we pay for parking. It’s not obvious that any improvements are being made." This sentiment was echoed by Participant 5, who said, "The parking situation in the CBD hasn’t improved much, so I wonder if the funds are being used properly." Similarly, Participant 9 stated, "It seems like the revenue isn’t being put back into the system to enhance the facilities or services. There’s no visible change."

Regarding whether participants had noticed any improvements in parking infrastructure, Participant 10 shared, "There are a few new parking meters, but beyond that, I haven't seen significant improvements. It still feels like the system is quite outdated." Participant 16 added, "I haven't seen any noticeable improvements in the facilities that are linked to the funds collected. There's no evidence that the revenue is being reinvested into the infrastructure." In contrast, Participant 12 offered a more optimistic view, stating, "Yes, the introduction of more payment machines is a step in the right direction, but it's still not enough to address the broader issues in the parking system."

In terms of the most effective way to allocate parking revenues to improve services, Participant 11 suggested, "The revenue should be reinvested into upgrading parking facilities, like adding more spaces or improving the quality of existing ones." Participant 5 shared a similar view, saying, "A portion of the revenue should go towards technological upgrades, such as parking sensors and better payment systems." Participant 2 also proposed, "There should be a focus on creating more parking spaces and improving the general infrastructure, because that would directly address the current parking challenges."

The findings indicate that while there is some acknowledgement of minor improvements, the majority of participants perceive the revenue from parking services as not being effectively utilized or visible in terms of infrastructure upgrades. The common suggestion for improving the system includes reinvesting the funds into better facilities, expanding parking capacity, and implementing more advanced technological solutions to make the parking experience more efficient for all users.

4.5 Inferential Analysis

4.5.1 Variable Definition

The researcher used the mean function in SPSS, accessed through the "Transform Variable" pathway, to compute the constructs into target variables as outlined below. During this transformation, these variables were converted into scale data, allowing for the execution of regression analysis.

Variable	Definition
EPSS	The dependent variable representing the efficiency of Parking Services.
α	The constant term in the regression equation.
β_i	Represents the partial change in the Efficient Parking Services variable (EPSS) resulting from a unit change in the independent variable *i*.
CPMS	Independent variable reflecting the impact of Current Parking Management Services on parking services efficiency, as indicated by questionnaire responses.
INNV	Independent variable reflecting the impact of Technological Innovations on parking services efficiency, as indicated by questionnaire responses.
REVN	Independent variable reflecting the impact of revenue allocation on parking services, as indicated by questionnaire responses.
Size	The size of the pension fund, as measured by responses to the questionnaire.
Ɛ	Represents the effect of all other factors influencing Efficient Parking Services that are not included in the model.

Table 4.6: Variable Definition

4.5.2 Correlation

Correlation analysis assesses the strength, direction, and significance of the relationships between variables. It utilizes the Pearson correlation coefficient (r), which ranges from 0 (indicating no correlation) to 1 (indicating a perfect correlation), to quantify these associations. Relationships are considered statistically significant when $p < 0.05$. Shuttleworth (2015), states that correlations below 0.3 are considered weak, between 0.3 and 0.5 are moderate, and above 0.6 are strong. This analysis helps to identify whether the relationships are positive or negative and to measure their magnitude. Higher r values represent stronger relationships, while lower values indicate weaker connections, providing a clear guide for interpreting interactions between variables.

Correlations

		EPSS	CPMS	INNV	REVN
EPSS	Pearson Correlation	1			
CPMS	Pearson Correlation	-.348**	1		
INNV	Pearson Correlation	.753**	.027	1	
REVN	Pearson Correlation	.746**	.042	.053	1

**. Correlation is significant at the 0.01 level (2-tailed).

Table 4.7: Correlation Analysis

The correlation analysis between the variables Efficient Parking Services (EPSS), Current Parking Management Services (CPMS), Technological Innovations (INNV), and Revenue Allocation (REVN) reveals several noteworthy relationships.

EPSS and CPMS: The Pearson correlation coefficient between EPSS and CPMS is -0.348**, which indicates a moderate negative correlation. This suggests that as the perception of the effectiveness of current parking management services increases, the efficiency of parking services tends to decrease. The negative relationship is statistically significant at the 0.01 level ($p < 0.01$), implying that there is a meaningful inverse association between these two variables.

EPSS and INNV: The correlation between EPSS and INNV is 0.753**, which represents a strong positive correlation. This indicates that the introduction of technological innovations is associated with a significant improvement in the efficiency of parking services. The high correlation value suggests a robust positive relationship between these two variables, and the result is statistically significant at the 0.01 level.

EPSS and REVN: The correlation between EPSS and REVN is 0.746**, also indicating a strong positive correlation. This suggests that increased revenue allocation is positively associated with better parking service efficiency. As revenue allocation increases, so does the efficiency of parking services, and this relationship is statistically significant at the 0.01 level.

4.6 Regression

4.6.1 Model Summary

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.662[a]	.6213	.6196	2.48817
a. Predictors: (Constant), REVN, CPMS, INNV				

Table 4.8: Regression Model Summary

The model summary presents key statistics related to the multiple regression analysis, which evaluates the combined effect of the independent variables (Revenue Allocation (REVN), Current Parking Management Services (CPMS), and Technological Innovations (INNV)) on the dependent variable (Efficient Parking Services (EPSS)).

R Square (Coefficient of Determination): The $R^2 = 0.6213$ tells us that approximately 62.13% of the variation in the dependent variable (EPSS) can be explained by the combined influence of REVN, CPMS, and INNV. This is a relatively strong R^2 value, indicating that the model is quite effective in explaining the factors that contribute to parking service efficiency in the Harare CBD. The Adjusted $R^2 = 0.6196$ adjusts for the number of predictors in the model, providing a more accurate representation of the model's explanatory power. The very slight difference between R^2 and Adjusted R^2 (0.6213 vs 0.6196) indicates that the model is well-specified and that the inclusion of predictors has not introduced excessive noise.

The model's R^2 value of 62.13% indicates that the predictors (REVN, CPMS, and INNV) explain a substantial portion of the variability in Efficient Parking Services (EPSS). The relatively high R value suggests that the independent variables have a moderate to strong impact on the dependent variable, and the model appears to be well-specified, with only a modest amount of error in its predictions.

4.6.2 Anova

The ANOVA (Analysis of Variance) table assesses the overall significance of the regression model and helps determine if the independent variables

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	8.926	3	2.975	12.485	.000[b]
	Residual	32.887	138	.238		
	Total	41.813	141			
a. Dependent Variable: EPSS						
b. Predictors: (Constant), REVN, CPMS, INNV						

Table 4.9: Anova Results

The F-statistic value of 12.485 assesses the overall statistical significance of the regression model. It is derived by dividing the mean square for regression (MSR) by the mean square for error (MSE). A higher F-value signifies a stronger model fit. In this instance, the F-statistic of 12.485 suggests the model provides a significantly better prediction of EPSS than the mean alone. Additionally, the p-value of 0.000 falls below the conventional alpha level of 0.05,

confirming that the regression model is statistically significant. This means that the independent variables (REVN, CPMS, and INNV) collectively have a significant impact on the efficiency of parking services in the Harare CBD. The ANOVA results therefore demonstrate that the regression model is statistically significant (p = 0.000), suggesting that the independent variables (REVN, CPMS, and INNV) together have a meaningful effect on the dependent variable (EPSS).

4.6.3 Regression Coefficients

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.599	.279		9.313	.000
	CPMS	-.251	.059	-.266	-2.866	.008
	INNV	.455	.088	.515	5.157	.000
	REVN	.275	.080	.293	3.933	.000
a. Dependent Variable: EPSS						

Table 4.10:Regression Coefficients Results

The coefficients' standardised Beta values provides key information about the strength and direction of the relationships between the independent variables (CPMS, INNV, and REVN) and the dependent variable (Efficient Parking Services (EPSS)). It helps determine how much each independent variable contributes to explaining variations in EPSS.

CPMS (Current Parking Management Services)

The coefficient for CPMS is -0.266, a t-statistic of -2.866, indicating that the effect of CPMS on EPSS is statistically significant and p value = 0.008<0.05. This means that for every one-unit increase in CPMS, the EPSS is expected to decrease by 0.266 units, holding all other variables constant. The negative sign suggests that CPMS has an inverse relationship with EPSS.

INNV (Technological Innovations)

The coefficient for INNV is 0.515, a t-statistic of 5.157 and a p = 0.000 <0.05 indicating a highly significant positive effect on EPSS (p < 0.001).This indicates that for every one-unit increase in INNV, EPSS is expected to increase by 0.515 units, holding all other variables constant. The positive sign suggests that technological innovations positively influence EPSS.

REVN (Revenue Allocation)

The coefficient for REVN is 0.293, a t-statistic of 3.933 and p= 0.00<0.001 which indicates that for each one-unit increase in REVN, EPSS is expected to increase by 0.275 units, holding all other variables constant.

The results show that Technological Innovations (INNV) and Revenue Allocation (REVN) have a positive and significant impact on Efficient Parking Services (EPSS), with INNV having the strongest effect. Conversely, Current Parking Management Services (CPMS) has a negative impact on EPSS, suggesting that inefficiencies or challenges in the current management system may reduce overall parking efficiency. These findings highlight the importance of investing in technological innovations and efficient revenue allocation to improve the parking services in Harare's CBD.

4.7 Confirmation of Hypothesis

Hypothesis	**Results**	**Confirmation**
H_1: The effectiveness of the current parking management system positively influences parking service efficiency in Harare CBD	B= -0.266, t=2.866, p=.008<0.05	ACCEPTED
H_2: Technological innovations significantly enhance parking service efficiency in Harare CBD.	B=0.515 , t=5.157, p=0<0.000<0.05	ACCEPTED
H_3: Proper revenue allocation improves parking service efficiency in Harare CBD.	B=0.293, t=3.933, p=0.000<0.05	ACCEPTED

This study tested three hypotheses to determine the factors influencing parking service efficiency in Harare's Central Business District. The results revealed statistically significant relationships in all three propositions. Overall, the hypotheses support the framework that effective system management, technological integration, and proper revenue allocation are critical to enhancing parking service efficiency in Harare CBD.In line with Education 5.0,

which emphasizes innovation, industrialisation, research, teaching, and community service, this study aligns strongly with the innovation and research pillars. Education 5.0 calls for solutions-oriented education systems that directly address real-world challenges—this research embodies that ethos by proposing innovative, technology-driven models to solve urban parking inefficiencies in Harare's CBD. Through integrating smart technologies such as IoT sensors, mobile apps, and real-time data systems, the proposed parking framework not only introduces novel approaches to urban management, but also serves as a living lab for applied research. This offers practical opportunities for university-industry collaborations, entrepreneurial spin-offs, and community-focused innovation hubs. Furthermore, the framework encourages evidence-based policy formulation and stakeholder engagement, reflecting Education 5.0's goal of making higher education a driver of national development. It opens doors for student-led innovation, interdisciplinary research, and capacity-building in smart city technologies, thereby contributing to a more adaptive, inclusive, and innovation-driven urban environment.

4.8 Discussion of Findings

The study's findings reveal deep dissatisfaction with the parking management system in Harare's Central Business District, consistent with the prevailing literature on urban transport inefficiencies in developing cities. Only a small proportion of respondents indicated satisfaction with the system's ability to meet motorists' needs, while the majority expressed discontent with unclear regulations, inconsistent enforcement, and general disorganisation. These findings are strongly aligned with Smith and Jones (2021), who observed that fragmented parking systems lead to user frustration, reduced compliance, and inefficiencies in service delivery. Similarly, Alkheder et al. (2016) argued that unclear rules and irregular enforcement undermine user confidence and hinder effective space utilisation. The current study therefore reinforces the importance of institutional clarity and regulatory consistency as preconditions for a functional parking management system.

The negative relationship between perceptions of current parking management services and overall efficiency supports Melnyk et al. (2019), who found that overly bureaucratic or poorly coordinated systems can reduce user satisfaction and operational efficiency. This relationship may also reflect the context of Harare, where enforcement is often reactive rather than preventative, a phenomenon also reported by Bandauko et al. (2018). These authors suggest that without clear communication of regulations, enforcement actions appear arbitrary and

counterproductive, diminishing compliance and increasing congestion. The present findings therefore affirm that the problem lies not only in insufficient enforcement but also in the inconsistent and opaque application of existing policies.

With regard to technology, the study found that most respondents viewed technological innovation as a potential solution for improving parking efficiency, though concerns were raised about reliability and integration. This duality reflects global trends. Hsueh-Chan and Chen-Hao (2020) emphasised that smart parking systems, when effectively implemented, can reduce congestion and enhance user experience through real-time data and automated payment systems. However, Shimi et al. (2022) observed that in many developing cities, technological adoption remains partial and fragmented, resulting in limited improvements in operational efficiency. The present study's findings correspond with this pattern: while users appreciate the concept of technology, the implementation in Harare is still rudimentary, lacking advanced features such as sensor-based monitoring and real-time space tracking.

Furthermore, the study's evidence that only a minority believed technology significantly reduces search time supports Tan et al. (2022), who noted that the success of smart parking systems depends heavily on system reliability, integration, and accessibility. The limited efficiency gains identified in Harare may therefore be attributed to technological fragmentation rather than inherent shortcomings of technology itself. This finding adds nuance to the literature by highlighting that the benefits of innovation are contingent upon sustained investment, system interoperability, and user training.

In relation to revenue management, the study found mixed perceptions of transparency and accountability. Although a portion of respondents recognised improvements funded by parking revenue, many remained sceptical of how funds were used. This ambivalence is consistent with Khan and Patel (2024), who emphasised that the absence of visible reinvestment erodes public trust and reduces compliance with parking fees. Melnyk et al. (2019) similarly argued that reinvesting parking revenue into tangible infrastructure, such as improved facilities and digital systems, strengthens the legitimacy of parking management schemes. The study's positive correlation between revenue allocation and parking service efficiency confirms these

arguments, demonstrating that strategic reinvestment has measurable effects on system performance.

Interview data reinforced these findings, with participants highlighting a perceived lack of transparency in how revenue was utilised. This mirrors observations by Litman (2021), who asserted that visible, place-based reinvestment enhances both public confidence and user satisfaction. The present study therefore supports previous scholarship by showing that financial transparency and accountability are crucial to the sustainability of urban parking systems.

The neutrality expressed by many respondents regarding congestion reduction also corresponds with findings from Alkheder et al. (2016) and Bandauko et al. (2018), who noted that parking management alone cannot substantially reduce traffic congestion without complementary transport policies. These include improved public transit, dynamic pricing, and curb-space management. The limited perceived impact in Harare therefore reflects a structural issue in which parking policy operates in isolation rather than as part of an integrated urban mobility framework.

Overall, the findings affirm and extend previous literature in several key ways. First, they underscore the centrality of governance and institutional capacity to effective parking management. As Smith and Jones (2021) observed, operational clarity and consistent enforcement are essential for user compliance. The Harare context illustrates how administrative weaknesses and policy ambiguity amplify inefficiencies. Second, the findings validate the view of Hsueh-Chan and Chen-Hao (2020) that technological innovations can significantly enhance service delivery when properly deployed. However, the Harare experience adds an important contextual dimension: without stable infrastructure and technical reliability, even well-designed technologies yield limited benefits. Third, the findings highlight the significance of revenue governance, supporting Khan and Patel (2024) in arguing that transparent reinvestment in infrastructure and technology directly improves system efficiency and public confidence.

Finally, the study offers a contextual refinement to existing theory by emphasising that urban management solutions developed in technologically advanced cities may not directly translate to developing contexts without adaptation. The gap between positive attitudes toward technology and dissatisfaction with actual performance demonstrates that adoption without adequate localisation or infrastructural readiness can produce frustration rather than improvement. Moreover, the persistent scepticism regarding revenue management shows that transparency and visible reinvestment are not merely administrative preferences but determinants of legitimacy and compliance.

4.9 Chapter Summary

This chapter systematically presented, analysed, and interpreted the research findings, providing an in-depth discussion of the results. Initially, the survey response rate was outlined, followed by a detailed descriptive analysis of the sample's characteristics. Both descriptive and inferential statistical techniques were utilized to address the research objectives, ensuring a comprehensive evaluation of the data. In accordance with the mixed-methods approach, thematic analysis was employed to complement the quantitative findings, thereby enriching the overall interpretation. The selection of specific subtopics for analysis was strategically guided by the study's objectives, ensuring a structured and coherent exploration of the data. This integrated methodological approach served to enhance the rigor, depth, and reliability of the research conclusions.

CHAPTER 5
CONCLUSIONS AND RECOMMENDATIONS

5.0 Introduction

The principal objective of this chapter is to encapsulate the study, synthesizing its findings, conclusions, proposed framework, and recommendations while also offering suggestions for future research. The chapter concludes by reflecting on the discussions and outcomes presented

in preceding sections. A proposed framework, derived from the study's results, will be introduced, followed by a summary of the key conclusions drawn. Additionally, recommendations will be presented, offering potential solutions based on the study's findings, alongside suggestions for areas that warrant further investigation.

5.1 Summary

The study was set out to explore strategies for enhancing parking management in Harare, focusing on leveraging technology to improve service delivery and revenue collection in the city's central district of Harare. The study was driven by three objectives which were, to evaluate the effectiveness of the current parking management systems in the Harare Central Business District, to assess the impact of technological innovations on parking services efficiency in the Harare CBD and to analyse the impact of revenue allocation on the parking services in Harare CBD. The study adopted a mixed research method where surveys and interview were used to collect data from a sample size of 142 respondents for survey and 16 participants for interviews. The data was analysed using SPSS and NVivo. The study made the following findings.

The study reveals significant dissatisfaction with the current parking management system in Harare's CBD. Only 16.9% of respondents agreed that the system meets motorists' needs, while 69% disagreed. Views on enforcement were also divided, with 57.8% dissatisfied with its sufficiency. Additionally, 63.3% of respondents found the system disorganised or unclear. Regarding traffic congestion, 54.2% expressed neutrality, indicating limited perceived impact. Qualitative interviews reinforced these findings, highlighting issues with clarity, enforcement inconsistencies, and poor technological reliability. Interviewees also reported frustration with parking availability and accessibility. The Pearson correlation between EPSS and CPMS was -0.348**, suggesting a moderate negative relationship, where improved perceptions of current management were associated with decreased service efficiency. This indicates that key aspects of the system, such as enforcement and clarity, need substantial improvement to enhance user satisfaction and efficiency.

The study found generally positive perceptions of technology's potential to improve parking in Harare, with 75.4% of respondents agreeing that technological tools could enhance their parking experience, and 74.6% noting that technology helps locate available parking spaces. However, concerns about the reliability of mobile and electronic payment systems were raised, with 28.2% expressing dissatisfaction. Only 31.7% agreed that technology reduces the time spent searching for parking, suggesting that current systems are not fully efficient. Regarding

further technological innovations, 28.8% supported additional developments, while 32.4% were skeptical. Interview responses echoed these findings, highlighting the presence of mobile payment systems but pointing out the lack of advanced solutions like sensors and real-time information. Participants expressed the need for better system integration and more efficient tools. The strong positive correlation (0.753**) between technological innovations (INNV) and parking service efficiency (EPSS) indicates that technological advancements significantly improve efficiency.

The study revealed mixed perceptions regarding the utilisation, management, and transparency of parking revenue in Harare's CBD. While 44.3% of respondents felt that collected funds were visibly used to improve parking facilities, 33.8% disagreed, indicating concerns over the lack of visible infrastructure improvements. Regarding the management of parking revenue, 46.5% believed it was effectively managed, though 34.5% disagreed, highlighting dissatisfaction. On transparency, 59.1% felt the process was clear, but 28.9% expressed concerns. A majority (69.7%) agreed that poor allocation of revenue negatively impacts parking service efficiency. The data suggests that while some improvements are acknowledged, many respondents are skeptical about the effectiveness of revenue management. Interviewees echoed these concerns, noting that parking infrastructure improvements were minimal despite the funds collected. Suggestions for better fund allocation included reinvesting in infrastructure, expanding capacity, and upgrading technology. A positive correlation (0.746**)between revenue allocation and parking service efficiency further emphasised the need for strategic investment and a regression coefficient of 0.293, indicated that for each one-unit increase in REVN, EPSS is expected to increase by 0.293 units, holding all other variables constant.

5.2 Conclusions

The study concludes that the current parking management system in Harare’s CBD is largely ineffective and fails to meet the needs of motorists. With only 16.9% of respondents satisfied with the system's ability to meet their needs, and 69% dissatisfied, the findings highlight significant gaps in service provision. The concerns raised about unclear parking regulations, inconsistent enforcement, and the disorganisation of the system reflect broader challenges observed in similar urban settings. Research by Smith and Jones (2021) also found that disorganised systems lead to higher levels of user frustration and inefficiency in parking management. Furthermore, the moderate negative correlation between perceptions of current parking management services (EPSS) and parking management system effectiveness (CPMS)

(-0.348**) points to a need for substantial improvements in clarity and enforcement to increase user satisfaction and efficiency.

The study also concludes that the potential of technological tools to improve parking management. The positive response to the use of technology, with 75.4% of respondents agreeing that it can enhance their parking experience, aligns with global trends where smart parking solutions are increasingly seen as a way to address urban parking challenges (Lee et al., 2023). However, concerns regarding the reliability of mobile and electronic payment systems and limited effectiveness in reducing search time for parking spaces suggest that current technological implementations are insufficient. This highlights the need for more advanced solutions, such as real-time data integration and parking sensors, which have been shown to enhance parking system efficiency (Tan et al., 2022).

Lastly, the study highlights mixed opinions on the management and allocation of parking revenue. While some respondents perceive the funds to be used for infrastructure improvement, a significant proportion remain skeptical. The positive correlation between revenue allocation and service efficiency (0.746**) reinforces the importance of strategic reinvestment. Similar studies (Khan & Patel, 2024) suggest that better revenue management, focused on expanding parking infrastructure and implementing advanced technologies, could significantly improve service delivery in urban parking systems.

5.3 Proposed Framework

Key Area	Objective	Actions	Expected Outcomes	Responsible Stakeholders	Timeframe
System Design & Management	Improve the clarity, accessibility, and organization of parking facilities.	- Redesign and Improve Signage: Clear, standardized signage and digital maps. - Expand and Optimize Parking	• Clearer navigation • More available parking • Streamlined user experience	City Planning Dept, Harare City Council (HCC), Urban Transport Board	Short to Medium Term (6–18 months)

		Capacity. - Develop integrated parking platforms.			
Technological Integration	Leverage technology to enhance parking efficiency and reduce congestion.	- Implement smart sensors & real-time occupancy tools. - Upgrade mobile and digital payment systems. - Use analytics to inform policy and pricing.	• Better space use • Faster payments • Data-driven decisions	ICT Ministry, Private Tech Firms (PPP), ZINARA	Medium Term (12–24 months)
Revenue Allocation & Transparency	Ensure effective management and transparency of parking revenue.	- Publish revenue reports quarterly. - Reinvest in smart infrastructure and maintenance. - Apply dynamic pricing based on demand patterns.	• Public confidence • Better infrastructure • Fair pricing	Ministry of Finance, Auditor General, HCC Finance Department	Medium to Long Term (12–36 months)
Enforcement & Regulation	Improve enforcement practices and ensure consistent regulations.	- Strengthen parking inspector deployment. - Simplify and unify regulation signage. - Introduce a transparent fine and appeals system.	• Increased compliance • Lower congestion • Fair enforcement	Municipal Police, Legal Affairs Unit, Road Traffic Enforcement Agencies	Immediate to Medium Term (3–18 months)
Community Engagement & Education	Involve the public and raise awareness about parking reforms.	- Roll out mass awareness campaigns via radio, social media, and flyers. - Conduct public forums and digital surveys for feedback.	• Improved user awareness • Higher satisfaction • More inclusive and adaptive system	Public Relations Dept, Local NGOs, Residents' Associations	Ongoing (Start within 3 months)

Table 5.1: Proposed Framework

The proposed model for enhancing parking services in Harare CBD focuses on five key areas: system design and management, technological integration, revenue allocation and transparency, enforcement and regulation, and community engagement. The model aims to improve parking organization, increase space availability, and streamline payment systems through technological advancements like smart sensors and mobile payments. It emphasizes

transparent fund management and reinvestment in infrastructure. Enhanced enforcement practices and consistent regulations will ensure better compliance. Engaging the public through awareness campaigns and feedback mechanisms will ensure the system evolves in line with user needs, boosting overall satisfaction and efficiency.

5.4 Recommendations

Improvement in System Design and Management

- Address the disorganisation and lack of clarity in parking regulations by implementing clearer signage and better-defined parking zones. Regularly update and simplify regulations to reduce confusion.

Enhance Enforcement Mechanisms

- Increase consistency in enforcement practices to ensure fairness and reduce perceptions of inequity, as highlighted by the study's findings on dissatisfaction with enforcement. Deploy more visible enforcement personnel and consider integrating automated systems for monitoring and issuing fines, which would increase the effectiveness and transparency of the system.

Technological Advancements

- Invest in advanced technologies such as parking sensors, real-time data integration, and smart parking apps. This would improve the efficiency of finding parking spaces and address the concerns regarding the current limitations of mobile and electronic payment systems.

Strategic Reinvestment of Parking Revenue

- Ensure that parking revenue is transparently reinvested into parking infrastructure, such as expanding parking capacity and upgrading technology. This would address the skepticism about the allocation of funds . Regular audits and public reports on fund allocation could increase trust among users.

5.5 Areas of Further study

Impact of Smart Parking Technologies on User Experience

- Further research could explore how the implementation of advanced smart parking technologies (e.g., real-time data integration, parking sensors, and automated payment systems) affects user satisfaction, traffic congestion, and overall system efficiency in urban settings like Harare. Comparative studies with other cities that have successfully integrated such technologies could provide valuable insights.

Public Perception and Behavior towards Dynamic Pricing in Parking Management:

- An investigation into the potential adoption of dynamic pricing models (where parking fees fluctuate based on demand and time of day) could shed light on how such systems might influence parking availability, revenue generation, and public perception. This area could help develop a more effective pricing strategy that balances demand, accessibility, and fairness.

Evaluation of Parking Revenue Allocation and Infrastructure Development:

- Further study could focus on the long-term effects of reinvesting parking revenue into infrastructure upgrades, such as the expansion of parking facilities and the implementation of sustainable solutions (e.g., electric vehicle charging stations, green parking solutions). Research could assess the relationship between revenue allocation, infrastructure development, and improved parking service efficiency, as well as public satisfaction with the system.

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APPENDIX I: QUESTIONNAIRE

My name is Cynthia Rafomoyo and I am a postgraduate student at Bindura University of Science Education carrying out a survey entitled "***A Model Towards Improving Parking Services in Harare Central District*** in partial fulfilment of the Master of Leadership and Corporate Governance. May you please answer the following questions voluntarily. Please note that your responses will be used solely for academic purposes and will be kept confidential. All data collected will be kept anonymous. Please answer the following questions honestly and to the best of your ability.

SECTION A: DEMOGRAPHIC INFORMATION (PLEASE TICK THE APPROPRIATE BOX)

1. Age:		**2: Years of Experience**		**3.Qualification**		**4: Gender**		**5: Position**	
+Below 25 Years		1-5 years		Diploma		Male		City Council Official	
26-35 years		6-10 years		Degree		Female		City Park Official	
36-45 years		11-15 years		Masters				City Traffic Manager	
46-55 years		16+ years		PhD				Motorist	
56+ years									

SECTION B

Kindly indicate the extent to which you agree with the following statements, by ticking the appropriate box.

1=Strongly Disagree (SD), 2=Disagree (D), 3=Neutral (N), 4=Agree (A) and 5=Strongly Agree (SA).

No.	**Construct**	**Rating**				
A	**The effectiveness of the current parking management**	1	2	3	4	5

	systems in the Harare Central Business District					
1	The current parking management system adequately meets the needs of motorists in the Harare CBD.					
2	There is sufficient enforcement of parking regulations in the Harare CBD.					
3	The parking system in the Harare CBD is well-organised and easy to understand.					
4	I am generally satisfied with the availability of parking spaces in the Harare CBD.					
5	The current parking management system helps reduce traffic congestion in the CBD.					
B	**The impact of technological innovations on parking services efficiency in the Harare CBD**	1	2	3	4	5
6	Technological tools have improved my parking experience in the CBD.					
7	The use of technology has made it easier to locate available parking in Harare CBD.					
8	Mobile or electronic payment systems are reliable and efficient in Harare CBD parking.					
9	The integration of technology has reduced the time I spend looking for parking in the CBD.					
10	I think further technological innovation could enhance parking services in the CBD.					
C	**The impact of revenue allocation on the parking services in Harare CBD**	1	2	3	4	5
11	Funds collected from parking fees are visibly used to improve parking facilities in Harare CBD.					
12	I believe the revenue from parking is effectively managed by the responsible authorities.					
13	There is transparency in how parking revenue is allocated in the Harare CBD.					
14	The quality of parking services would improve if more funds were reinvested into the system.					
15	Poor allocation of parking revenue negatively affects the efficiency of parking services in the CBD.					
D	**Efficient Parking Services**	1	2	3	4	5
16	Parking spaces in the Central Business District (CBD) are easily accessible during peak hours.					
17	I am usually able to find a parking spot within a reasonable amount of time in the CBD.					
18	Parking areas in the CBD are well-organized and clearly marked.					
19	The current parking system in the CBD helps reduce traffic congestion effectively.					
20	Information about available parking is accurate and reliable.					

END OF QUESTIONNS

APPENDIX II: INTERVIEW GUIDE

My name is Cynthia Rafomoyo and I am a postgraduate student at Bindura University of Science Education carrying out a study entitled ***A Model Towards Improving Parking Services in Harare Central District*** in partial fulfilment of the Master of Leadership and Corporate Governance. May you please answer the following questions honestly and to the best of your ability. Please note that your responses will be used solely for academic purposes and will be kept confidential. All data collected will be kept anonymous.

Kindly answer all questions

1. Can you describe your general experience with the current parking management system in Harare's CBD?
2. What challenges have you encountered when using the existing parking services in the city centre?
3. In your view, what aspects of the current parking management system work well, and which ones need improvement?
4. What technological tools or systems (e.g., mobile apps, parking sensors) have you noticed being used in Harare's CBD parking services?
5. How have these technological innovations affected your ability to find and access parking in the city centre?
6. Do you think the current use of technology has improved the overall efficiency of parking services? Why or why not?
7. From your perspective, how well are the revenues generated from parking services being utilized in Harare?

8. Have you noticed any improvements in parking facilities or infrastructure that you would attribute to better revenue management?
9. In your opinion, what would be the most effective way to allocate parking revenues to improve services in the CBD?
10. How would you describe your experience with the availability and accessibility of parking spaces in the Central Business District?
11. What factors do you think contribute to—or hinder—the efficient management of parking services in the city?
12. In what ways do you think parking services could be improved to better meet the needs of commuters and businesses in