

**A DESKTOP ANALYSIS OF SUSTAINABLE BEST PRACTICES REGARDING
ELECTRONIC WASTE MANAGEMENT IN SOUTH AFRICAN ORGANISATIONS**

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DECLARATION:

In accordance with Rule G5.6.3, I hereby declare that the above-mentioned treatise/dissertation/thesis is my own work and that I have not previously been submitted to another University or for another qualification



.....
SIGNATURE

09/09/2025
.....

DATE

DEDICATION

This study is dedicated to Harlow and Blake. You can do anything you put your mind to.

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ABSTRACT

Electronic waste (e-waste) has become the fastest-growing waste stream worldwide, raising serious concerns for both environmental sustainability and public health. Within the South African context, many organisations continue to experience difficulties in implementing sustainable e-waste management practices, even though regulatory measures such as the Waste Act and Extended Producer Responsibility (EPR) are in place. This study conducts a desktop review of five e-waste organisations - Oricol Environmental Services, EnviroServ, WasteAid, eWASA, and ERA NPC - to evaluate their practices and policies. The research followed a qualitative design, grounded in the interpretivist paradigm and descriptive methodology, and made use of documentary analysis. The findings demonstrate practical ways in which organisations can strengthen sustainable e-waste management through compliance, resource recovery, and community engagement.

KEYWORDS: Electronic waste (e-waste), Extended Producer Responsibility (EPR), e-waste organisations, sustainability, policies, and practices.

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CHAPTER 1

INTRODUCTION AND BACKGROUND TO THE STUDY

1.1 INTRODUCTION

The purpose of this study is to provide a desktop analysis of sustainable best practices regarding electronic waste (e-waste) management in South African Organisations. With the rapid rise in the use of electronic devices, modern life has become increasingly reliant on technology – fuelling innovation, convenience, and economic progress (Al-Hamadani, Hossan, Rahman, 2015). Yet, this growth comes at a cost. E-waste refers to discarded electrical and electronic equipment (EEE), including devices that have reached the end of their useful life (Atilano-Tang & Montefalcon, 2023). It has rapidly become the fastest-growing waste stream globally (Al-Hamadani, et al., 2015). Many of these discarded items contain harmful substances such as lead, cadmium, and mercury, which, if not properly handled, pose significant threats to both environmental sustainability and public health (Baldé, Forti, Gray, Kuehr, Stegmann, 2017).

In the South African context, the e-waste challenge has become increasingly critical. The national e-waste stream comprises a diverse range of products, including mobile phones, laptops, household appliances, audiovisual equipment, lighting devices, medical electronics, batteries, power tools, and residential climate control systems (eWASA, 2024). According to recent estimates, South Africa generates approximately 360,000 tonnes of e-waste annually, with the Gauteng province accounting for an estimated 55% of this volume (Strickland, 2024).

Although several private and public sector initiatives had emerged to tackle e-waste, existing research suggests that many South African organisations – particularly those not directly involved in waste management – still demonstrate limited awareness and commitment to sustainable e-waste practices (Moyo, Lubbe, Ohei, 2023). Many organisations in South Africa do not incorporate e-waste considerations into their procurement, operations, or disposal plans (Mouton & Roux, 2023). In order to advance environmentally sound and responsible approaches to e-waste management, it is essential to critically assess the existing practices employed by South African organisations and compare them with more sustainable and efficient models currently recognised in global best practice frameworks (Moyo, et al., 2023).

Furthermore, empirical research on how organisations manage their e-waste is scarce. There is a lack of data on whether organisations adopt internal e-waste policies or whether they outsource this responsibility to specialised firms. The limited scope of existing academic literature highlights the need for further investigation. A desktop analysis of best practices among leading South African e-waste management companies can provide valuable insights into what is working and where improvements are needed.

This study will focus on five prominent organisations in South Africa that play an active role in e-waste management: Oricol Environmental Services, EnviroServ, WasteAid, the EPR Waste Association of South Africa (eWASA), and the E-waste Recycling Authority (ERA) Non-Profit Company (NPC). These organisations offer diverse perspectives on e-waste handling in South Africa. The analysis of these organisations will be based on publicly available sources, including their sustainability reports, regulatory compliance documentation, and outlined operational procedures, in order to evaluate their contributions to sustainable e-waste practices.

This chapter opens by presenting the problem statement and clearly defined research objectives, including the primary, secondary, and methodological objectives. Definitions of key concepts will be provided. The chapter concludes by outlining the significance of the research and providing an overview of the structure of the study.

1.2 PROBLEM STATEMENT

The improper disposal and inadequate management of electronic waste in South Africa present serious risks to both environmental integrity and public health (ERA NPC, 2025). Many e-waste materials contain toxic substances—such as lead, cadmium, and mercury—which have the potential to leach into surrounding soil and water systems, resulting in long-term ecological contamination. This leads to the contamination of ecosystems and food chains (Caravanos, Clark, Fuller, Lambertson, 2011). Informal e-waste processing – common in areas with inadequate regulation – often involves open burning or acid baths to extract valuable metals. This releases toxic fumes and residues that pose severe respiratory, neurological, and developmental health risks to workers and surrounding communities (Cesaro, Belgiorno, Gorrasi, Viscusi, Vaccari, Vinti, Jandric, Dias, Hursthouse, Salhofer, 2019).

Although various public and private sector organisations claim that they have adopted sustainable approaches to e-waste management, there remains a notable lack of comprehensive research assessing the effectiveness, consistency, and long-term viability of these practices (Atilano-Tang & Montefalcon, 2023). A comprehensive desktop analysis is needed to assess the best practices adopted by leading e-waste management companies.

However, a critical gap exists in understanding how typical South African organisations – those organisations not operating directly within the e-waste sector- handle their e-waste disposal. Many of these companies operate without well-defined internal policies or structured systems to manage electronic waste effectively. In many instances, obsolete electronic equipment is either stored indefinitely within office premises or warehouses, handed over to informal recycling operators, or discarded alongside general waste. This often results in e-waste being deposited in landfills, where it presents enduring environmental risks due to the presence of hazardous materials (Moyo, et al., 2023). Other organisations may outsource e-waste disposal to external contractors without verifying their compliance with environmental regulations, raising concerns about downstream accountability and traceability (Moyo, et al., 2023).

Furthermore, there is limited research on the standards, procedures, and compliance levels followed by these organisations, as well as the challenges they face in managing e-waste responsibly. Despite notable legislative advancements — such as the National Environmental Management: Waste Act of 2008 and the implementation of Extended Producer Responsibility (EPR) regulations—South Africa continues to face challenges with consistent enforcement. Furthermore, awareness and understanding of these legal requirements remain limited, particularly among businesses outside of the environmental and waste management sectors (Moyo, Sadan, Lötter, Petersen, 2022).

This highlights the need for a comprehensive desktop analysis that not only investigates the best practices of leading e-waste management organisations, but also evaluates how typical South African organisations handle e-waste and engage with sustainability requirements.

The main research question of this study is: *What are the sustainable best practices for electronic waste (e-waste) management implemented by South African organisations?*

1.3 RESEARCH OBJECTIVES

1.3.1 PRIMARY OBJECTIVE

To conduct a desktop analysis of sustainable best practices regarding e-waste management in South African organisations.

1.3.2 SECONDARY OBJECTIVES

To support the achievement of the primary objective, three secondary objectives (SO) have been established:

SO¹: To identify five organisations in South Africa regarding their sustainable e-waste best practices.

SO²: To conduct a desktop analysis regarding sustainable e-waste best practices.

SO³: To determine best sustainable e-waste practices for organisations in South Africa.

1.3.3 METHODOLOGICAL OBJECTIVES

To accomplish the primary and secondary objectives outlined above, the following methodological objectives (MO) are:

MO¹: To conduct an in-depth literature review on the nature and scope of sustainable e-waste management practices.

MO²: To determine the most suitable research methodology in addressing the specified research problems and objectives of the study.

MO³: To collect qualitative data through a desktop or documentary analysis amongst five institutions in South Africa regarding sustainable best e-waste practices.

MO⁴: To analyse the qualitative data obtained from the desktop study.

MO⁵: To draw conclusions and make recommendations to the stakeholders regarding sustainable best e-waste practices.

1.4 DEFINITIONS OF KEY CONCEPTS

1.4.1 ELECTRONIC WASTE (E-WASTE)

Electronic waste (e-waste) refers to electrical and electronic equipment (EEE) that has reached the end of its useful life and is no longer considered functional, desirable, or valuable (Moyo, et al., 2022). According to the United Nations University (UNU), e-waste comprises a broad spectrum of devices—ranging from mobile phones, computers, and televisions to batteries, refrigerators, power tools, and various other consumer electronics—that have become obsolete or unusable (Forti, Baldé, Kuehr, Bel, 2020). While many of these products contain economically valuable materials such as gold, silver, and copper, they also harbour toxic substances like arsenic, mercury, cadmium, and lead. Without proper management, these hazardous components can pose serious threats to environmental systems and human health (Ichikowitz & Hattingh, 2020).

1.4.2 SUSTAINABILITY

Sustainability is a multidimensional concept that integrates environmental, social, and economic considerations. It is generally understood as the capacity to fulfil present needs while safeguarding the ability of future generations to meet their own, thereby promoting long-term ecological balance and societal well-being (Botha, Badenhorst-weis, Bimha, Chodokufa, Cohen, Cronje, Eccles, Grobler, Le Roux, Rudansky-Kloppers, Strydome, Van Wyk, Young, 2016). Within the realm of electronic waste (e-waste), sustainability involves rethinking traditional waste management models—particularly the linear “take-make-dispose” approach—and moving towards a circular economy. This alternative model emphasises extending product life cycles, using resources more efficiently, and adopting environmentally responsible end-of-life disposal practices (Atilano-Tang & Montefalcon, 2023). Sustainable e-waste management therefore involves designing products for longevity, ensuring responsible resource use, reducing waste generation, and promoting safe recycling or reuse of materials (Goyal & Gupta, 2024).

1.4.3 ELECTRICAL AND ELECTRONIC EQUIPMENT (EEE)

Electrical and electronic equipment (EEE) includes a diverse range of devices that operate through the use of electric currents or electromagnetic fields to perform their intended functions. This category includes consumer, commercial, and industrial technologies such as computers, mobile phones, household appliances, lighting systems, and medical instruments

(Cui & Jørgen Roven, 2011). These devices have become essential to contemporary life, supporting communication, healthcare, productivity, and everyday convenience. However, once such equipment becomes obsolete, damaged, or no longer desired, it enters the waste stream and is classified as electronic waste, or e-waste (Baldé, et al., 2017).

1.5 SIGNIFICANCE OF THE STUDY

The study will contribute to the knowledge base regarding sustainable e-waste practices in South Africa. By evaluating how leading e-waste companies operate and how typical organisations manage their e-waste, the research aims to bridge existing knowledge gaps in policy implementation, corporate responsibility, and environmental compliance.

The findings of this study are expected to offer meaningful insights for policymakers, businesses, and environmental organisations by highlighting best practices in e-waste management, identifying existing gaps, and informing the development of more sustainable and effective management systems. In this way, the research aims to support the creation of more efficient, enforceable, and contextually relevant waste management policies that align with both national legislative frameworks and international sustainability standards.

Importantly, the study intends to go beyond analysis by proposing a practical framework or model for sustainable e-waste management. This framework will integrate lessons from leading practices and identify core principles that organisations – especially those outside the specialised e-waste sector- can adopt to manage their e-waste more responsibly. The model will serve as a guide to help organistaions implement traceable, compliant, and environmentally sound e-waste practices

1.6 STRUCTURE OF THE STUDY TO FOLLOW

Chapter One provides the foundation for the study by offering an introduction and background to the study. It presents the problem statement that motivates the investigation, followed by a clear outline of the primary, secondary, and methodological research objectives. Key terms and concepts relevant to the study are then defined. The chapter also discusses the significance of the research and concludes with an overview of the structure of the treatise.

Chapter Two presents a literature review of the study. It begins with an introduction and historical overview of e-waste management, followed by a brief overview of theories related to e-waste. Following this, the nature of e-waste management is discussed under the following topics: key components of e-waste management system, goals of e-waste, types of e-waste best practices, e-waste and legal compliance, the benefits of effective e-waste management system, the link between e-waste and sustainability, the challenges of e-waste management, and current trends in e-waste.

Chapter Three outlines the research methodology that underpins the study. It begins with an introduction, followed by a detailed explanation of the research design and methodology used in this study. The chapter provides a discussion on the population and sampling techniques that will be employed during the study, with convenience sampling being the chosen method. Subsequently, this chapter elaborates on the primary and secondary data collection methods employed. A discussion on the techniques of data analysis is provided, with thematic analysis being utilised in this study. Finally, this chapter highlights the ethical considerations that had to be undertaken to conduct this study and concludes with a summary.

Chapter Four begins with an introduction and proceeds to present the empirical findings from the study – which will be a thematic analysis of the best practices regarding e-waste. The chapter concludes with a summary that reflects on the main insights drawn from the findings.

Chapter Five provides a comprehensive overview of the study. It begins with an introduction and then draws together insights from the literature review and the empirical findings to formulate well-grounded conclusions and practical recommendations. The chapter also revisits the research objectives, evaluating the extent to which they were achieved through the study. It concludes with a summary that reflects on the overall contributions and implications of the research.

The following chapter, Chapter two, presents a literature review that provides a historical overview of e-waste management, discusses theories related to e-waste, and examines various aspects of the nature of e-waste.

1.7 SUMMARY

In this chapter, the foundation for the study was established by providing an introduction and background to the research. The problem statement was presented, followed by a detailed outline of the primary, secondary, and methodological research objectives. Key concepts

relative to the study, such as e-waste, sustainability, and EEE were defined. The chapter also highlights the significance of the research and concludes with an overview of the structure of the study.

CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION

The previous chapter provided a detailed introduction and background to the study. It outlined the problem statement, highlighting the key research question. The research objectives were also presented. Key concepts were defined, and a discussion on the significance of the research followed this. The chapter concluded with the structure to follow.

E-waste refers to discarded electrical and electronic equipment (EEE), including devices that have reached the end of their useful life (Atilano-Tang & Montefalcon, 2023). In this chapter, a literature review is provided, and a historical overview of e-waste will be presented. Following this, theories related to e-waste, such as the stakeholder theory, the circular economy model, and the theory of planned behaviour, will be analysed. Thereafter, the nature of e-waste management will be discussed where key components of e-waste, goals of e-waste, types of e-waste, e-waste and legal compliance, benefits of effective e-waste management systems, challenges of e-waste, the link between e-waste and sustainability, and current trends in e-waste, will be discussed in depth. The above encompasses the theoretical framework.

2.2 HISTORICAL OVERVIEW OF E-WASTE

The emergence of electronic waste, commonly known as e-waste, is intrinsically tied to the acceleration of technological advancement during the latter half of the 20th century (Widmer, Oswald-Krapf, Sinha-Khetriwal, Schnellmann, Böni, 2005). As innovations in electronics became more frequent, and devices more affordable and accessible to a broader global population, the rate of consumption increased sharply. This surge in usage, however, was accompanied by a parallel rise in the rate of obsolescence, as products were rapidly replaced or discarded in favour of newer models (Baldé, et al., 2017).

Historically, the disposal of unwanted electronic devices was managed through simple means—often involving landfilling or incineration. These practices, while convenient at the time, had severe environmental consequences, including the release of toxic substances such as lead, mercury, and cadmium into soil, water, and air systems (Widmer, et al., 2005). The

long-term implications of these methods only became fully recognized as the volume of discarded electronics continued to grow.

The global approach to e-waste management has evolved considerably since then. In the earlier phases, waste handling practices were typically informal, fragmented, and lacked any regulatory oversight. This often led to significant health and environmental risks, particularly in low-income regions where informal recycling was most prevalent. Countries like Japan were early pioneers in recognising the urgency of the issue. Japan established robust legal frameworks grounded in the principles of the circular economy, particularly the emphasis on reducing, reusing, and recycling—the 3Rs. A cornerstone of this approach was the adoption of Extended Producer Responsibility (EPR), a policy that places the onus on manufacturers to take responsibility for the disposal and recycling of their products once they reach the end of their useful life. (Franz & da Silva, 2022).

Following Japan's lead, the European Union instituted some of the world's most robust e-waste policies, notably the Waste Electrical and Electronic Equipment (WEEE) Directive (Acquis, 2025). This directive established legally binding targets for collection, recycling, and recovery of electronic goods and has served as a model for both EU member states and non-member countries aiming to develop their own regulatory systems (Franz & da Silva, 2022).

In contrast, the United States has yet to implement federal-level e-waste legislation. Instead, regulation is delegated to individual states, resulting in a patchwork of policies that vary widely in scope, stringency, and enforcement capacity (Franz & da Silva, 2022). This decentralized approach has been criticized for its inefficiencies and for failing to address the issue comprehensively.

In recent years, several emerging economies—including India, Brazil, and China—have attempted to confront the growing e-waste crisis by adopting EPR frameworks. However, these countries often grapple with persistent structural challenges such as the dominance of the informal recycling sector, lack of infrastructure, and limited enforcement capacity (Franz & da

Silva, 2022). These factors continue to impede the effective implementation of e-waste policies, despite the existence of formal regulations.

South Africa presents a unique case within the broader global context. While the introduction of the National Environmental Management: Waste Act (2008) and subsequent EPR regulations marks a critical step forward, significant implementation challenges remain. Enforcement mechanisms are often weak, and many stakeholders—particularly those outside the traditional waste management sector—demonstrate limited awareness or understanding of their responsibilities under these policies (Moyo, et al., 2022). Moreover, internal e-waste policies within many South African organisations are either underdeveloped or entirely absent, reflecting a broader need for education, capacity-building, and institutional alignment (Moyo, et al., 2023).

The historical trajectory of e-waste management thus reveals both progress and persistent gaps. While regulatory and technological advances have enhanced the capacity to manage e-waste more sustainably, disparities in implementation and global coordination continue to pose significant challenges. As digital consumption escalates, particularly in developing economies, the need for more inclusive, enforceable, and integrated e-waste strategies becomes increasingly urgent.

2.3 THEORIES RELATED TO E-WASTE

2.3.1 CIRCULAR ECONOMY MODEL

The circular economy (CE) model represents a fundamental departure from the traditional linear economic paradigm, which is structured around the sequential process of resource extraction, production, consumption, and disposal—commonly summarized as “take-make-dispose” (Elgarahy, Eloffy, Priya, Hammad, Moustafa, Maged, Elwakeel, 2024). In contrast, the CE proposes a fundamentally regenerative model of economic activity—one designed to extend the lifespan of resources. This system prioritises keeping materials in circulation for as long as possible. Through strategies such as careful product design, repair, reuse, and closed-loop recycling, the CE aims to significantly reduce waste and lessen the strain on natural resources. (Geissdoerfer, Savaget, Bocken, Hultink, 2017).

In the context of e-waste, the CE offers a compelling framework for addressing the environmental and material inefficiencies associated with the growing volume of discarded electronic devices. Central to this approach is the idea of designing products with extended lifespans, modularity, and ease of repair. By designing products with longevity and ease of disassembly in mind, manufacturers enable more efficient recovery of valuable materials once those products are no longer in use. This approach helps to limit the volume of waste directed to landfills and reduces reliance on informal recycling practices, which are often environmentally and socially harmful (Forti, et al., 2020).

One of the core operational pillars of CE in e-waste management is Extended Producer Responsibility (EPR), which shifts the burden of post-consumer product management from municipalities to producers. This model incentivizes manufacturers to incorporate design features that facilitate end-of-life processing—such as standardized components, minimal use of hazardous substances, and improved recyclability (Pro Alliance, 2022). Moreover, the integration of eco-design standards encourages innovation in product development while aligning environmental performance with market competitiveness (Geissdoerfer, et al., 2017).

2.3.2 STAKEHOLDER THEORY

Stakeholder theory offers a broader lens through which to understand the responsibilities of organisations within society. It challenges the traditional shareholder-centric model by asserting that businesses do not operate in isolation, but within a network of relationships involving various stakeholder groups—each of which plays a role in the organisation's long-term success and sustainability (Gutterman, 2023). The stakeholder theory posits that organisations must consider the interests of all parties affected by their operations, not just shareholders (Freeman & McVea, 2001).

In the context of e-waste, stakeholder theory provides a useful framework for recognizing the shared responsibilities associated with the life cycle of electronic products. Managing e-waste effectively is not solely a technical or regulatory issue—it is a collective challenge that requires coordinated input from manufacturers, consumers, governments, recyclers, and civil society (Cao, Puntaier, Gillani, Chapman, Dewitt, 2024). For instance, producers are expected to design products that are durable and easier to disassemble; consumers must adopt responsible

disposal behaviours; while regulators are tasked with creating enforceable frameworks that guide safe and efficient recycling (Baldé, et al., 2017). Each group's actions influence the broader environmental and social outcomes associated with electronic waste.

2.3.3 THEORY OF PLANNED BEHAVIOUR

The Theory of Planned Behaviour (TPB) offers a valuable lens for examining why individuals choose to engage—or not engage—in specific environmental behaviours, such as recycling e-waste (Aboelmaged, 2021). At its core, TPB posits that human actions are guided by deliberate considerations rather than occurring randomly or out of habit. According to this framework, behaviour is shaped by three interconnected elements: an individual's attitude towards the behaviour, the social pressure they perceive from others (subjective norms), and their perceived ability or control to carry out the behaviour effectively (Kumar, 2019). In the realm of e-waste management, these elements help to explain the psychological motivations and barriers that influence whether people dispose of electronics responsibly.

Attitudes play a pivotal role in shaping behavioural intentions. For example, if individuals perceive e-waste recycling as beneficial to the environment or community, they are more likely to act accordingly. Subjective norms further reinforce this by reflecting the influence of social pressure or cultural expectations. Where recycling is normalised or valued within families, peer groups, or workplaces, individuals may feel more compelled to participate. Perceived behavioural control—essentially, whether individuals feel they have the knowledge, access, or ability to recycle—can either enable or inhibit the transition from intention to action (Suryanto, Nurdin, Andriansyah, Rahayu, Irawati, 2023).

Applying TPB to e-waste management highlights the importance of targeted public awareness campaigns, accessible infrastructure, and community-level engagement strategies. Changing behaviour at scale requires more than regulations; it demands interventions that shift perceptions and remove practical barriers.

2.4 THE NATURE OF E-WASTE MANAGEMENT

Under the nature of e-waste, key components of e-waste, goals of e-waste, types of e-waste, e-waste and legal compliance, benefits of effective e-waste management systems, challenges of e-waste, the link between e-waste and sustainability, and current trends in e-waste, will be discussed.

2.4.1 KEY COMPONENTS OF E-WASTE

An effective e-waste management system comprises several independent components.

2.4.1.1 *Collection*

Collecting e-waste is a vital step in managing and recycling discarded devices. It lays the groundwork for environmentally responsible practices and sustainable resource recovery (Wan Noorakma, Arep, Sultan, 2024). A well-structured collection system is crucial, as it enables the proper sorting and handling of e-waste, ensuring that valuable materials can be reclaimed while reducing the risk of environmental pollution from hazardous components. The initial stage involves gathering obsolete electronics through various channels, including designated collection points, take-back programs, and scheduled pickups (Ichikowitz & Hattingh, 2020).

2.4.1.2 *Pre-treatment*

Once collected, electronic waste undergoes a pre-treatment phase that plays a key role in preparing it for final processing at specialized facilities (Shahabuddin, Uddin, Chowdhury, Ahmed, Uddin, Mofijur, Uddin, 2023). This stage is essential in the overall recycling chain, as it enhances the efficiency of material recovery while ensuring the safe handling of harmful substances (Van Yken, Boxall, Cheng, Nikoloski, Moheimani, Kaksonen, 2011). Pre-treatment generally involves a mix of manual dismantling and mechanical techniques, and in some cases, thermal or chemical methods are applied to effectively separate metals from other materials (Shahabuddin, et al., 2023) (Van Yken, et al., 2011).

2.4.1.3 *Treatment and Disposal*

The treatment and disposal of electronic waste are key elements in managing the growing volumes of discarded devices, with the dual goal of recovering valuable materials and reducing risks to both the environment and human health. Treatment typically involves a combination

of physical, chemical, and thermal processes designed to separate useful metals and plastics from hazardous substances (Wang, 2023). Techniques such as manual disassembly, density-based separation, and magnetic sorting are commonly used to extract valuable elements like gold, silver, and rare earth metals from complex e-waste streams (Gulliani, Volpe, Messineo, Volpe, 2023). Chemical processes, including leaching and solvent extraction, allow for further refinement and recovery of specific metals, while thermal methods like pyrolysis are employed to decompose polymers and reclaim energy from non-metallic components (Gulliani, et al., 2023). These methods are crucial due to the diverse and often toxic composition of e-waste, which requires careful and specialised handling to prevent environmental contamination and human exposure.

The disposal of materials that cannot be recycled, particularly those containing hazardous elements like lead, mercury, and brominated flame retardants, must be carried out under strict environmental controls (Jain, Kumar, Chaudhary, Kumar, Sharma, Singh Verma, 2023). When improperly managed—through open burning or unsanitary landfilling—these substances can leach into soil and water, or be released into the air, causing serious ecological damage and health concerns (Ichikowitz & Hattingh, 2020). Promoting responsible waste disposal practices and reducing dependence on landfills and incineration are crucial steps in minimizing the negative environmental and health impacts associated with improper waste management (Goyal & Gupta, 2024).

2.4.1.4 *Monitoring and Reporting*

Effective monitoring and reporting are essential components of sustainable e-waste management. They offer a systematic means of tracking how e-waste is generated, handled, and processed, while also allowing policymakers and stakeholders to assess whether existing strategies and interventions are achieving their intended outcomes. Through consistent monitoring, authorities and industry stakeholders are better equipped to detect inefficiencies in collection and recycling systems, while also identifying harmful informal practices that often go unregulated. The availability of reliable data through monitoring not only supports compliance with environmental standards but also informs future policy development aimed at reducing the ecological and health risks associated with e-waste (Widmer, et al., 2005)

In addition to ensuring operational oversight, reporting frameworks foster transparency and accountability across the e-waste value chain—from producers to recyclers. Global agreements such as the Basel Convention have highlighted the need for robust reporting structures to manage the transboundary movement of hazardous electronic waste (Geneva Environment Network, 2024). In South Africa, the incorporation of monitoring tools into the Extended Producer Responsibility (EPR) model has become increasingly important. These tools allow stakeholders to assess whether producers are meeting their obligations and help track progress toward national recycling targets (Maharaj & Wichmann, 2021).

2.4.2 GOALS OF E-WASTE

The core goal of e-waste management is to minimise the environmental and health hazards associated with the toxic materials often present in discarded electronic devices (eSmart Recycling, 2024). Effective e-waste management seeks to prevent these outcomes by encouraging safe, regulated recycling and disposal processes that minimize exposure and ensure hazardous materials are treated or contained in an environmentally responsible manner (Nandan, Suresh, Saole, Jeevanasai, Chandrasekaran, Meili, Wan Azelee, Selvasembian, 2023).

A major objective of e-waste management is the recovery of valuable materials from discarded electronic devices, which helps to reduce reliance on newly mined raw materials and reinforces the principles of a circular economy (Elgarahy, et al., 2024). Extracting these materials from end-of-life products not only lessens the environmental degradation associated with mining but also helps preserve finite natural resources. By prioritising material recovery, e-waste management shifts the perception of electronic waste from a liability to a valuable resource, generating economic opportunities while supporting more sustainable patterns of production and consumption (Forti, et al., 2020).

Promoting legal compliance and encouraging more responsible patterns of consumption and production are central goals in the management of electronic waste (Forti, et al., 2020). International agreements, such as the Basel Convention, alongside national legislation, play a crucial role in regulating the cross-border movement of e-waste, curbing illegal dumping, and ensuring that recycling practices meet environmental safety standards (Geneva Environment

Network, 2024). Adherence to these legal frameworks not only strengthens oversight but also motivates both manufacturers and consumers to engage in more sustainable practices—such as designing products that are easier to repair or recycle and extending the usable life of electronic devices (Gupta & Sinha, 2021).

Lastly, engaging stakeholders and raising public awareness are vital for promoting sustainable behaviour in e-waste management across all levels of society. Educating people about the risks associated with improper disposal and the benefits of responsible recycling can inspire more active participation from individuals, businesses, and policymakers alike (Lundgren, 2012). Public awareness campaigns and community-based initiatives are especially effective in boosting e-waste collection rates and discouraging informal recycling practices that pose serious health and environmental risks (Gupta & Sinha, 2019).

2.4.3 TYPES OF E-WASTE

According to eWASA (2024), Cui and Jørgen Roven (2011), e-waste encompasses a broad range of EEE including:

- Consumer electronics including items like mobile phones, computers and televisions.
- Household appliances such as refrigerators or microwaves.
- Lighting equipment
- Batteries, wiring and switches
- Medical devices
- Power tools and industrial equipment
- Home heating and cooling systems

2.4.4 E-WASTE AND LEGAL COMPLIANCE

Legal compliance forms a critical foundation for the safe and responsible management of electronic waste. In the South African context, the National Environmental Management: Waste Act of 2008, along with the Extended Producer Responsibility (EPR) regulations introduced in November 2021, places clear obligations on producers to take responsibility for their products throughout their entire life cycle—including after they have been discarded by consumers (Moyo, et al., 2022). These regulatory measures are designed to mitigate the

environmental and health dangers linked to improper e-waste disposal by encouraging ethical recycling practices and easing the pressure on already strained municipal waste systems.

2.4.5 BENEFITS OF EFFECTIVE E-WASTE MANAGEMENT SYSTEMS

Implementing best practices in e-waste management yields multiple benefits:

- **Environmental Protection:** The proper disposal of e-waste reduces pollution and conserves natural resources through recovering valuable materials and preventing hazardous substances from contaminating ecosystems (Franz & da Silva, 2022) (eSmart Recycling, 2024).
- **Economic Value:** Economic opportunities are generated through material recovery and the creation of green jobs in recycling and refurbishment sectors (Elgarahy, et al., 2024).
- **Regulatory Compliance:** Adopting best practices for managing e-waste helps organisations comply with environmental regulations, reducing the risk of legal penalties while also strengthening their public image as responsible and sustainable entities (Williams-Wynn, 2025).
- **Social Impact:** Implementing effective e-waste practices contributes to safeguarding public health and encourages active community involvement by raising awareness and supporting collection and recycling initiatives (Ali & Akalu, 2022) (eSmart Recycling, 2024).

2.4.6 CHALLENGES OF E-WASTE

Managing e-waste presents a range of complex challenges, particularly in developing contexts like South Africa. One major concern is the dominance of the informal sector in e-waste processing. Much of this waste is handled without adequate safety measures, leading to significant health risks and environmental degradation (Andeobu, Wibowo, Grandhi, 2023).

Another barrier is the limited awareness and engagement among businesses and institutions not directly involved in waste management. Many remain unaware of their responsibilities or the long-term impact of unsustainable disposal practices (Ali & Akalu, 2022).

Technological and financial constraints also pose significant difficulties. The high costs associated with state-of-the-art recycling equipment, along with limited access to these

technologies, often prevent effective recovery of valuable materials from e-waste (Massa & Archodoulaki, 2023).

Moreover, regulatory frameworks are frequently fragmented, and enforcement tends to be inconsistent. This lack of cohesive oversight makes it difficult to ensure compliance and encourages continued informal or improper disposal practices (Moyo, et al., 2022).

Finally, data security remains a pressing issue. Many electronic devices contain sensitive information, and without proper protocols for secure data destruction, organisations face substantial risks related to privacy breaches and information misuse (Advaya, 2024).

2.4.7 LINK BETWEEN E-WASTE AND SUSTAINABILITY

The connection between e-waste and sustainability is grounded in the imperative to reduce the environmental and health hazards associated with the improper disposal of electronic products. Sustainable e-waste management prioritises the safe collection, treatment, and recycling of these materials to prevent pollution, protect ecosystems, and safeguard public health (Nandan, et al., 2023). At the same time, coordinated efforts at regional and global levels—through strong legislation, regulatory enforcement, and technological innovation—are essential to promote responsible recycling practices and ensure that electronic waste is processed in an environmentally sound manner (Serpe, Purchase, Bisschop, Chatterjee, De Gioannis, Garelick, Kumar, Peijnenburg, Piro, Cera, Shevahi, Verbeek, 2024).

Beyond safe disposal, sustainability in e-waste management also involves the recovery and reuse of valuable materials found in discarded electronics. Many devices contain high-value components such as gold, silver, copper, and rare earth elements, which are finite and costly to extract from the earth (Liu, Tan, Yu, Wang, 2023). By efficiently recovering these materials through advanced recycling technologies, the pressure on virgin resource extraction is reduced, greenhouse gas emissions are lowered, and the depletion of natural ecosystems is slowed. This approach supports the principles of a circular economy, where products are designed with longevity, repairability, and recyclability in mind (Tanuja, Srimani, Rao, Sharma, Mashkour, Singh, 2023). Innovations in eco-design and green engineering are helping to close the loop by making it easier to dismantle and recover materials, thereby reducing overall waste and enhancing resource efficiency (Singhal, Jain, Ramacharyulu, Jain, Abdul-Zahra, Manjunatha, Srivastava, 2024).

A truly sustainable e-waste management system also depends on inclusive participation and awareness across all sectors of society (Iyer, 2023). Public education campaigns, community engagement, and strong partnerships between governments, industry stakeholders, and civil society are crucial to fostering a culture of responsible consumption and disposal (Hashim, Salleh, Ibrahim, Mohd Zahari, Cooper, 2024). Encouraging behavioural change—such as returning used electronics for proper recycling—requires clear communication, incentives, and accessible collection systems (Kumar, Holuszko, Espinosa, 2017). In addition, emerging technologies such as biodegradable electronics and the use of renewable materials in product design offer promising avenues for reducing the long-term environmental impact of e-waste (Kumar, et al., 2017).

2.4.8 CURRENT TRENDS IN E-WASTE

2.4.8.1 *Circular Economy Integration*

A key development in e-waste management is the shift toward circular economy principles, which move away from the traditional "take-make-dispose" model (Elgarahy, et al., 2024). This approach promotes reuse, refurbishment, and recycling to reduce waste and extend the life of electronic products (Onyango, 2024). Modular designs are increasingly used by manufacturers to make devices easier to repair and recycle (Schwartz, 2025). Take-back schemes and recycling programmes also play a crucial role by encouraging consumers to return used electronics, enabling the recovery of valuable materials and reducing the environmental impact of extracting new resources (Onyango, 2024).

2.4.8.2 *Multi-stakeholder collaboration*

Tackling the multifaceted challenges of e-waste demands coordinated efforts from all key stakeholders—manufacturers, recyclers, policymakers, and consumers alike (Goyal & Gupta, 2024). An increasingly embraced strategy in environmental policy is Extended Producer Responsibility (EPR), which shifts the responsibility for a product's environmental impact onto the producers themselves. This approach requires manufacturers to take active accountability for their products from design through to end-of-life management, encouraging more sustainable production and disposal practices (Schwartz, 2025). By encouraging eco-friendly design and proper end-of-life disposal, EPR helps to reduce waste and promote sustainability (Goyal & Gupta, 2024).

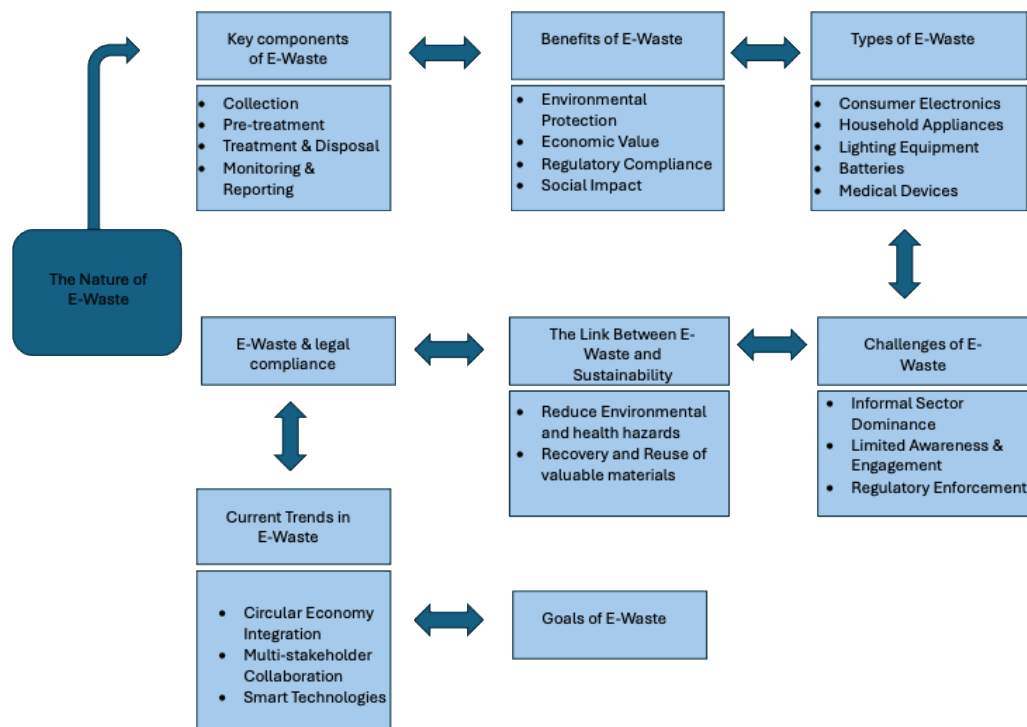
2.4.8.3 *Smart Technologies*

Emerging smart technologies are reshaping the way e-waste is managed by making collection, sorting, and recycling processes more efficient and transparent. Tools such as Internet of Things (IoT) devices, artificial intelligence, and automated sorting systems are increasingly being used to identify and separate materials with greater accuracy (Schwartz, 2025). This reduces contamination, improves the quality of recovered resources, and boosts overall recycling efficiency. Some forward-thinking companies are also adopting blockchain technology to create secure, traceable records of e-waste movement—enhancing compliance with regulations and building trust with consumers (Khan & Ahmad, 2022). Together, these innovations not only lower operational costs but also support environmental sustainability by improving how electronic waste is processed and tracked (eSmart Recycling, 2024).

2.5 THEORETICAL FRAMEWORK OF THE STUDY

The theoretical framework guiding this study is organized in accordance with the structure presented in Figure 2.1 below.

Figure 2.1: Theoretical Framework of the Study



Source: (Researcher’s own construct).

2.6 SUMMARY

In this chapter, a comprehensive literature review was provided. It began with a historical overview of e-waste. Theories related to e-waste, such as stakeholder theory, were described, and the nature of e-waste was thoroughly discussed, including key components like collection, pre-treatment, treatment and disposal, and monitoring and reporting. The goals of e-waste were explored, particularly reducing the environmental risks associated with improper e-waste disposal. Various types of e-waste, including, consumer electronics, household appliances, lighting, batteries, power tools, and home heating and cooling systems were explained.

The benefits of e-waste were highlighted, such environmental protection, economic value, regulatory compliance, and social impact. The risks and challenges of e-waste, including, informal sector dominance, limited awareness and engagement, technological and financial barriers, regulatory enforcement, and data security concerns were discussed.

The connection between sustainability and e-waste was then explored and the current trends in e-waste were reviewed, including circular economy integration, multi-stakeholder collaboration, and smart technologies.

Chapter Three outlines the research methodology and design that is employed in this study. It examines the selected research paradigm, research approach, methodological framework, research strategy, research population and sampling methods, as well as data collection, data analysis procedures, and ethical considerations.

CHAPTER 3

RESEARCH METHODOLOGY AND DESIGN

3.1 INTRODUCTION

Chapter two offered a comprehensive literature review, covering the historical overview of e-waste. The theories related to e-waste were discussed, and various aspects of the nature of e-waste were examined.

Chapter Three of this study will outline the methodology and research design that was used. Research methodology refers to the structured approach researchers use to investigate a problem. It involves selecting appropriate methods and strategies to collect, analyse, and interpret data in a logical and coherent way. This process plays a crucial role in ensuring that the research findings are both trustworthy and accurate, allowing them to make a meaningful contribution to the broader understanding of the subject under investigation (Gill, 2025).

Research methodology can be categorized into three types: quantitative, qualitative and mixed method. Quantitative research focuses on measuring and analysing variables in numerical terms. It seeks to quantify data and generalise results from a sample to a larger population (Goundar, 2012). In contrast, qualitative research explores phenomena related to experiences, meanings, and interpretations. Rather than relying on numbers, it uses descriptive language, interpretive analysis, and logical reasoning to understand complex social or human issues. Its goal is to uncover underlying meanings, emotions, and perspectives within specific contexts (Goundar, 2012). Mixed methods research is a design that brings together both numerical and descriptive forms of data to gain a fuller understanding of a research problem. By combining quantitative methods—which focus on measuring and analysing numbers—with qualitative approaches that explore experiences and meanings, this strategy allows researchers to examine a question from multiple angles. The integration of these methods enhances the depth and reliability of the findings, offering insights that might not emerge from using just one approach on its own (Creamer, 2018).

Research design provides the strategic foundation for a study, guiding the selection of methods and outlining the steps for gathering, analysing, and interpreting data (Creswell, 2014a). It

ensures that the research problem is addressed systematically and coherently, guiding the researcher through the process of inquiry. As Creswell (2014a) articulates, research design involves making a series of interconnected decisions—starting with broad underlying assumptions and extending to the specific methods used for collecting and analysing data. It serves to bring together the different parts of a study in a clear, logical, and cohesive way, ensuring that each element supports the overall research purpose. This structured approach is crucial for ensuring the validity and reliability of the research findings.

The research paradigm and approach, population and sampling, data collection, data analysis, ethical considerations, and a summary will follow.

3.2 RESEARCH PARADIGM

A research paradigm represents the foundational beliefs and assumptions that shape how a researcher views the world and guides the way they approach their study (Kivunja & Kuyini, 2017). It shapes how they think about reality, what they consider to be valid knowledge, and the ways in which that knowledge can be discovered. These philosophical foundations influence every stage of the research process—from the types of questions asked to the methods used and how findings are interpreted. By aligning research decisions with a clear paradigm, scholars ensure that their work is consistent, meaningful, and grounded in a coherent worldview (Creswell & Creswell, 2018).

The types of paradigms are summarised in the table below.

Table 3.1: Types of research paradigms

Paradigm	Definition
Positivism	Positivism sees the world as something that can be measured objectively. It relies on data, experiments, and observations to explain what is happening, often aiming to find general rules or patterns.
Interpretivism	Interpretivism focuses on how people experience and understand the world around them. It values personal meaning and context, using methods like interviews or observations to explore these perspectives.
Critical Theory	Critical theory aims to uncover and challenge inequalities in society. It goes beyond

	understanding the world to actively questioning power dynamics and striving for social change.
Realism	Realism believes that reality exists independently of our thoughts but acknowledges that we can only understand it through our own perspectives. It balances objective truth with human interpretation.

Source: (Creswell & Creswell, 2018) (Saunders, Lewis, Thornhill, 2023).

This study has undergone qualitative research with the paradigm chosen as the interpretivism approach. Interpretivism is a research paradigm within the social sciences that prioritises understanding the subjective meanings individuals assign to their experiences and social interactions. It posits that reality is not an objective entity to be discovered but is socially constructed through language, culture, and historical context (Kouam Arthur William, 2024). Although often linked to direct engagement with individuals, interpretivist approaches are equally valuable in qualitative document and content analysis. This study adopts a desktop-based method to examine how South African organisations understand and apply sustainable e-waste management practices. Interpretivism is well-suited to this task, as it enables a critical reading of policy documents, corporate reports, and academic texts within their broader social, environmental, and regulatory settings (Chasokela, 2024). The focus is not simply on identifying practices, but on uncovering the meanings, intentions, and values that shape organisational strategies. (Saunders, et al., 2023). This paradigm often employs qualitative methods such as interviews, observations, and textual analyses to explore the nuanced and context-dependent nature of social phenomena (Kouam Arthur William, 2024).

Interpretivism is suited for this study as it aligns with the objectives of the qualitative research, which aim to conduct a thorough desktop analysis of sustainable best practices regarding e-waste management in South African organisations.

3.3 RESEARCH APPROACH

There are three approaches to research: descriptive, exploratory, and explanatory. Explanatory research is aimed at exploring phenomena that remain insufficiently understood or underexplored. Its primary purpose is to uncover the underlying reasons and mechanisms behind a particular issue or subject, focusing on the “why” and “what” aspects. This type of

research is especially useful when existing knowledge is limited, offering initial insights that can guide future, more detailed investigations (Akhtar, 2016). Exploratory research is used when a problem is not clearly defined or understood. It seeks to generate insights, uncover underlying motivations, and identify potential variables or relationships that may shape future studies. This approach is flexible and often qualitative in nature, relying on interviews, focus groups, or literature reviews. The goal is to deepen understanding and lay the groundwork for more structured research rather than to provide conclusive answers (Saunders, Lewis, Thornhill, 2023).

This study employs a descriptive research design to systematically examine and present the operational practices of five selected e-waste management organisations. Descriptive research is well-suited to this purpose, as it is concerned with articulating the “what” of a phenomenon—offering a factual representation of observed patterns—rather than exploring underlying causes or theoretical explanations (Manjunatha, 2019).

3.4 APPROACH OF THEORY DEVELOPMENT

An inductive approach is given to the theory of development. Inductive research begins by closely examining specific instances or data and gradually works toward identifying recurring patterns or themes. These insights then serve as the foundation for forming broader generalisations or developing theoretical understandings grounded in the observed evidence (Sheppard, 2021). An inductive approach is beneficial for this study as it allows for the researcher to begin with specific observations – such as conducting a desktop analysis and examining e-waste practices in south African organisations – and then to develop insight based on the empirical observation.

3.5 METHODOLOGICAL CHOICE

There are three types of methodological choices: mono-method, multi-method, and mixed method. A mono-method approach is used when a study draws solely on either qualitative or quantitative data collection, based on what best aligns with the research goals. In contrast, a mixed methods approach combines both qualitative and quantitative techniques within a single study. This integration allows researchers to explore different aspects of their research questions more thoroughly and helps balance the limitations that can arise when relying on

only one type of method. A multi-method approach also employs both forms of data; however, one serves as the primary method while the other plays a supportive or supplementary role, rather than contributing equally to the research design (Melnikovas, 2018).

The methodological choice is a mono method. This study employs a single data collection technique, namely desk research/documentary analysis. Quantitative research focuses on gathering and analysing numerical data in a structured and methodical way. It is used to explore relationships between variables, test existing theories, and uncover patterns or trends within a given population, often aiming for results that can be generalised beyond the study sample. Qualitative research focuses on exploring and interpreting human experiences and social contexts through non-numerical data, aiming to uncover deeper meanings and insights (Kwadwo Antwi & Hamza, 2015). As a mono method design, the research adopts one methodological approach—in this case, qualitative—allowing for focused and in-depth exploration using a consistent form of data.

3.6 RESEARCH STRATEGY

The research strategy adopted in this study is documentary analysis, which provides a systematic means of examining and interpreting existing documents—both in printed and digital formats. This approach is particularly effective for qualitative research, as it allows the researcher to extract meaning, identify patterns, and generate insights based on the content of relevant texts (Bowen, 2009). In the context of this study, documentary analysis is well-suited for investigating e-waste management practices in South African organisations, as it enables the review of organisational reports, policy documents, and publicly available sustainability disclosures to understand how e-waste is currently handled.

This study follows a cross-sectional research design, which involves the collection and analysis of data at a single point in time. a cross-sectional study is observational in nature and is used to examine the presence of specific characteristics or practices within a population at a given moment (Wang & Cheng, 2020). In this case, the research captures a snapshot of how selected South African organisations are addressing e-waste through documented practices and policy frameworks available during the study period.

The techniques applied for data collection and analysis are qualitative in nature, focusing on non-numerical information sourced from publicly accessible documents. These include sustainability reports, corporate environmental strategies, and any publicly available best e-waste management practices in South Africa to be found on websites and other available secondary sources.

The following sections outline the research population and sampling, followed by a discussion of the methods used to collect data. This is then complemented by a review of the data analysis techniques employed in the study. Ethical considerations are also examined, and the chapter concludes with a summary.

3.7 RESEARCH POPULATION AND SAMPLING

The population of the study refers to the portion of the broader target group that is practically accessible to the researcher. The sample, in turn, is the subset selected from this population to take part in the study (Majid, 2018). Probability sampling is a technique in which participants are chosen from the entire population using a random selection process. This approach ensures that each individual has an equal chance of being included in the sample, which helps enhance the representativeness and reliability of the research findings. In contrast, non-probability sampling relies on non-random techniques to choose participants, meaning that the chances of selection are not known and may be zero for certain members of the population (Leedy & Ormrod, 2016).

The population for this study is all e-waste organisations in South Africa engaging in sustainable e-waste practices and have publicly available policies and practices on the internet (World Wide Web), annual and sustainability reports, or any other material resources. This study employs convenience sampling. Convenience sampling is a non-probability approach where participants are selected based on their accessibility and willingness to take part in the study. Instead of using random selection, this method relies on individuals who are readily available to the researcher, making it a practical but less representative sampling technique (Etikan, Musa, Alkassim, 2016). In this study, the sample is five e-waste organisations in South Africa engaging in sustainable best practices, and information regarding these organisations are available on their websites and in other published secondary data sources.

3.8 DATA COLLECTION

The data collection strategy will take two forms, namely secondary and primary research. Primary research refers to the process where a researcher gathers new data directly from original sources to explore a particular question or issue. This often includes techniques like interviews, surveys, direct observation, or experiments. As Creswell (2014b) notes, such data is specifically collected by the researcher to meet the distinct goals of their study. Secondary research refers to the process of examining information that has already been gathered and published by other sources, including academic journals, government publications, websites, books, internal records, and industry reports. It plays a key role in offering background insight, highlighting patterns, and reinforcing or challenging the results of primary investigations. As noted by Saunders, Lewis, and Thornhill (2023), such data is particularly useful for building context and drawing comparisons in a research study.

In this study, secondary data is gathered from a range of sources, including books, academic journals, credible websites, and reports published by e-waste organisations—such as their sustainability and annual reports. The analysis of five e-waste organisations and their waste management practices draws on both primary and secondary research methods, as it involves reviewing published materials while also interpreting data relevant to the specific aims of the research.

3.9 DATA ANALYSIS

Data analysis is a multi-step process that typically includes reviewing, organising, and restructuring collected data to address the core aims of the research. It transforms raw data into meaningful insights, whether through qualitative interpretation or quantitative measurement. As Miles, Huberman, and Saldaña (2014) note, this process is essential in identifying themes, patterns, and relationships that help bring clarity to complex data sets. Depending on the nature of the research, the analysis may involve summarising data, identifying correlations or trends, comparing variables across different groups, or predicting potential outcomes (Neuman, 2014). The process must be carefully aligned with the research objectives to ensure relevance and reliability. Patton (2015) highlights that a purposeful and reflective approach to analysis strengthens the validity of findings, particularly in qualitative studies. In quantitative contexts, structured analysis helps researchers assess statistical relationships and draw generalisable

conclusions. Data analysis is not just about processing numbers or categories—it is about making informed decisions and drawing meaningful conclusions based on systematic inquiry (Babbie, 2020). In this study, data analysis focuses on drawing out meaningful insights from a range of sources gathered during the data collection stage, with the aim of developing a well-rounded literature review on e-waste. To support the primary research component, the researcher will apply both documentary and thematic analysis, enabling a deeper exploration of how institutions in South Africa manage and engage with e-waste practices.

Thematic analysis offers a structured yet flexible approach for identifying patterns and meaning within qualitative data. It begins with generating codes—small, meaningful segments of data that capture elements relevant to the research focus. These codes are then grouped to form broader themes, each anchored by a central idea that reflects a key aspect of the data. Themes not only help organise the analysis but also guide the interpretation of deeper insights related to the research question. Rather than simply describing the content, thematic analysis allows the researcher to explore underlying meanings and connections within the data (Nowell, Norris, White, Moules, 2017). In this study, the researcher seeks to uncover recurring patterns or key themes in the way selected e-waste institutions approach the management of electronic waste. The analysis may also involve describing and reflecting on the specific strategies these organisations use to implement their e-waste practices, providing insight into both shared and unique methods across institutions.

3.10 ETHICAL CONSIDERATIONS

Ethical considerations in research serve as a guiding framework that shapes the way a study is designed and conducted. These principles include voluntary participation, informed consent, anonymity, confidentiality, minimisation of harm, and the responsible sharing of findings (Resnik, 2024). As this study does not involve human participants, formal ethical clearance related to individual consent was not required. Nonetheless, all information is presented in a professional and respectful manner, ensuring that no harm is caused to individuals, authors, or organisations referenced.

To maintain academic integrity, all secondary sources are properly acknowledged through accurate referencing, demonstrating respect for the intellectual contributions of others and

avoiding plagiarism. The data used in this study was carefully selected from trustworthy sources such as academic journals, books, institutional websites, and relevant online materials. The research also complies with the ethical standards established by Nelson Mandela University, including the completion and signing of the required ethical clearance documentation (Form E). A Turnitin report is included to further confirm that the content is original and free from plagiarism.

3.11 SUMMARY

Chapter Three provided a comprehensive overview of the research methodology and design, offering clear insight into the overall approach of the study. It outlined the research population and explained the use of convenience sampling as the method for selecting relevant sources or institutions. The chapter also detailed both the primary and secondary methods used to gather data, followed by an explanation of the data analysis process, in which thematic analysis was applied to interpret qualitative findings. Ethical considerations were also carefully examined, ensuring the study adhered to recognised academic standards. The next chapter, Chapter Four, will present the empirical findings and offer a detailed interpretation of the collected data.

CHAPTER 4 FINDINGS AND INTERPRETATION OF DATA

4.1 INTRODUCTION

In Chapter Three, the research methodology was outlined, with particular emphasis placed on thematic analysis as the principal approach to data analysis. Thematic analysis enables researchers to systematically explore qualitative data by identifying patterns and recurring ideas that are relevant to the research objectives. Rather than merely summarising the content, this method supports deeper interpretation by organising findings into coherent themes that reflect underlying meanings within the data (Nowell, et al., 2017). Within the context of this study, the purpose of using thematic analysis is to uncover common practices, strategies, or trends in how selected South African organisations approach e-waste management.

This chapter presents the empirical findings of the study, drawing primarily on secondary data obtained from organisation reports and official organisational websites. These sources reflect the operational procedures, compliance strategies, and sustainability goals of the five organisations under review. The chapter opens with a demographic overview of each organisation and proceeds to examine their specific e-waste policies and initiatives. Cross-cutting themes are identified and explored. The chapter concludes with a thematic summary that contextualises the findings within broader sustainable waste management discourse.

4.2 DEMOGRAPHIC PROFILE OF FIVE SELECTED E-WASTE ORGANISATIONS IN SOUTH AFRICA

Table 4.1 provides a demographic profile of the five selected e-waste organisations in South Africa.

Table 4.1 Demographic profile of five selected e-waste organisations in South Africa.

Organisation	Location	Type	Year Established	Core Services
Oricol Environmental Services	Durban, national footprint	Private	2001	Waste collection, recycling, hazardous waste handling
EnviroServ	Johannesburg, nationwide	Private	1979	Integrated waste management, including

				hazardous and e-waste
WasteAid South Africa	Johannesburg	NGO/Non-profit	2008 In South Africa since 2020	Waste education, e-waste awareness, community recycling projects
eWASA	Durban	Industry association/NPO	2008	Coordination of EPR, e-waste compliance support
ERA NPC	Cape Town	Non-profit	2018	Collection, refurbishment, recycling of ICT and consumer electronics

Source: (Oricol, 2025a) ; (eWASA, 2025a) ; (ERA, 2025) ; (EnviroServ, 2025a); (WasteAid, 2025)

4.3 FINDINGS REGARDING E-WASTE POLICIES AND PRACTICES AT ORICOL

Oricol Environmental Services is a prominent South African waste management company that provides comprehensive e-waste management solutions aligned with national and international best practices. The company's e-waste policies emphasize sustainable waste diversion, resource recovery, and regulatory compliance, reflecting South Africa's National Environmental Management: Waste Act (NEM: WA) and the Extended Producer Responsibility (EPR) framework. Oricol's vision of "turning waste into a resource®" underpins its strategic approach to e-waste, where the focus is on minimizing landfill disposal and maximizing recycling and reuse opportunities (Oricol, 2025b).

4.3.1 E-WASTE COLLECTION AND PROCESSING PRACTICES

Oricol offers specialised collection and disposal solutions tailored to the needs of industrial and commercial clients. These services encompass the secure collection, temporary storage, and transportation of a wide range of e-waste. Oricol supplies certified containers to ensure the safe handling and containment of hazardous components during transit (Oricol, 2025c).

Once the e-waste is collected, it is transported to Oricol's licensed treatment facilities, which are equipped with the infrastructure to safely dismantle and process complex electronic items

(Oricol, 2025c). This includes the careful segregation of hazardous components such as lithium-ion batteries, mercury-containing lamps, and printed circuit boards (Oricol, 2025d). The proper separation of these materials is essential to prevent the release of hazardous substances—including lead, cadmium, and mercury—into the environment (Oricol, 2025c).

Central to Oricol's approach is a strong commitment to internationally recognised standards: their processes are certified under ISO 14001 for environmental management, ISO 45001 for occupational health and safety, and ISO 9001 for quality assurance. Adherence to these frameworks reinforces the integrity and reliability of their e-waste disposal practices, ensuring that they not only meet but often exceed environmental and safety expectations (Oricol, 2025d).

4.3.2 DATA DESTRUCTION AND COMPLIANCE

An integral aspect of Oricol Environmental Services' e-waste management offering is the secure destruction of data-bearing devices such as hard drives, mobile phones, and other electronic media. This service directly addresses corporate concerns regarding data privacy, information security, and legal compliance—factors that have become increasingly central to corporate governance and risk management. Oricol employs industry-standard physical shredding and degaussing technologies to ensure that all sensitive data is irreversibly destroyed prior to any recycling or material recovery processes. To support client compliance and accountability, the company issues verifiable certificates of destruction, which serve as formal documentation for audit trails and legal reporting (Oricol, 2025e).

4.3.3 FLOURESCENT LAMP RECYCLING AND HAZARDOUS WASTE MANAGEMENT

Oricol Environmental Services has established a specialised system for the recycling of fluorescent lamps and other mercury-containing waste through its ORIPACK collection initiative. This programme facilitates the secure collection, transport, and processing of such waste, with particular emphasis on mitigating the environmental and health risks posed by mercury. During the recycling process, mercury is safely extracted under vacuum conditions, and the remaining components—including glass, metals, plastics, and phosphor powder—are systematically separated for reuse or further processing (Oricol, 2025f).

4.3.4 PERFORMANCE AND IMPACT

In 2023, Oricol reported that it successfully diverted approximately 73% of the waste it collected—equivalent to nearly 119,563 tonnes—from landfill disposal (Eastern Cape Industrial Business News, 2024). This milestone underscores the organisation’s ongoing commitment to waste minimisation and the promotion of resource recovery, firmly positioning Oricol as a leader in South Africa’s sustainable waste management sector.

4.4 FINDINGS REGARDING E-WASTE POLICIES AND PRACTICES AT ENVIROSERV

EnviroServ Environmental Services incorporates e-waste management within its hazardous waste division, focusing on the compliant collection, transport, and disposal of electronic items (EnviroServ, 2019). By partnering with certified downstream recyclers, the company ensures the responsible recovery of valuable materials and safe treatment of hazardous components. Regular audits and transparent reporting processes support its adherence to environmental regulations and reinforce its commitment to legal compliance and sustainability (Cape Business News, 2024).

4.4.1 E-WASTE COLLECTION AND PROCESSING PRACTICES

EnviroServ offers an integrated e-waste management solution, functioning as a one-stop service provider for the secure and compliant handling of e-waste. Through its partnership with Tarsus Dispose-IT, the company provides nationwide collection services—ranging from large-scale bulk pickups to individual item retrieval—tailored to client needs (EnviroServ, 2025b).

Once e-waste is collected, EnviroServ ensures that it is processed at authorised and compliant facilities where hazardous components—such as batteries, mercury-containing lamps, and printed circuit boards—are carefully separated and treated in line with established environmental regulations (EnviroServ, 2025c). In addition to safe disposal, EnviroServ prioritises the recovery of valuable resources, including copper, aluminium, silver, and various plastics, by working with certified downstream recyclers. These partnerships support the diversion of e-waste from landfill and enable the reintegration of recovered materials into

productive use, aligning with the principles of the CE and South Africa's broader sustainability goals (EnviroServe, 2025d).

4.4.2 DATA DESTRUCTION AND COMPLIANCE

A notable aspect of EnviroServ's approach is its strict compliance with data protection legislation, particularly the Protection of Personal Information (PoPI) Act. To ensure secure handling of sensitive data, the company offers both onsite and offsite data destruction services, with certificates of compliance issued to confirm adherence to legal standards. This practice not only addresses environmental responsibilities but also mitigates clients' legal and reputational risks associated with data-bearing electronic devices (EnviroServ, 2025b).

In addition to secure data disposal, the company facilitates critical processes such as the decommissioning and commissioning of equipment, asset migration, and the destruction of sensitive devices. These services are designed to minimise operational disruptions and mitigate organisational risk (ITWeb, 2019). Importantly, each data destruction process is accompanied by a compliance certificate, providing formal assurance that all data has been irreversibly destroyed (EnviroServ, 2019).

4.4.3 HAZARDOUS E-WASTE AND SOLAR PANEL DISPOSAL

EnviroServ has broadened its e-waste management capabilities to encompass the responsible handling of solar panel waste, which is increasingly recognised as hazardous due to the presence of toxic substances within the panels. In response to this emerging environmental challenge, the company has obtained the requisite licenses for the collection, transportation, and recycling of end-of-life solar panels (EnviroServ, 2023). Through a carefully managed dismantling process, valuable materials such as glass and metals are recovered, while hazardous components are disposed of in accordance with environmental regulations (EnviroServ, 2023). This specialised service supports the growing shift towards renewable energy in South Africa, ensuring that the environmental benefits of solar power are not undermined by improper waste management (EnviroServ, 2024).

4.4.4 PERFORMANCE AND IMPACT

In 2022, EnviroServ helped divert over 103.1 tonnes of e-waste from landfills. This includes 62.2 tonnes of fluorescent tubes, 6.5k tonnes of fittings/covers, 21.2 tonnes of electronics, and 13.2 tonnes of batteries (EnviroServ, 2022). In addition, EnviroServ has modernised its waste management practices by converting conventional landfills into so-called “green landfills” that incorporate advanced treatment and resource recovery methods. Some of these sites now capture biogas from decomposing organic waste, using it as a renewable energy source. This approach supports South Africa’s energy diversification and helps reduce greenhouse gas emissions in line with environmental and climate objectives. (Satori News, 2024).

4.5 FINDINGS REGARDING E-WASTE POLICIES AND PRACTICES AT WASTE AID

WasteAid South Africa plays a unique role in the e-waste management landscape by combining community development with environmentally responsible practices. Its efforts are rooted in the principles of the CE, placing particular emphasis on repair, reuse, and skills development within underserved and informal communities (Salifu, 2024). Rather than focusing solely on the collection and recycling of e-waste—an approach typical of many conventional waste management firms—WasteAid prioritises extending the lifespan of electronic products. Through training initiatives and practical support, the organisation empowers local individuals to repair and repurpose devices, thereby reducing the overall volume of e-waste entering the waste stream (WasteAid, 2024a).

4.5.1 E-WASTE COLLECTION, PROCESSING, REPAIR AND REUSE PROGRAMMES

WasteAid South Africa adopts a community-centred approach to e-waste collection and processing, with a strong focus on inclusion and local capacity building. Rather than relying solely on formal infrastructure, the organisation partners with informal waste collectors and technicians, equipping them with skills in sorting, repairing, and safely handling electrical and electronic equipment. Through initiatives like the Dixon Repair Programme in Johannesburg, WasteAid trains individuals—often from marginalised communities—to identify reusable components and extend the lifespan of e-waste through repair and refurbishment. This model

not only diverts waste from landfills but also creates sustainable livelihoods in areas where unemployment is high (WasteAid, 2023).

By embedding principles of the CE into its operations, WasteAid promotes reuse as a first step before recycling. By encouraging the restoration of electronic devices, the organisation helps extend their useful life, thereby reducing the volume of waste that would otherwise enter the disposal stream. In the process, potentially hazardous components—such as batteries and mercury-containing lamps—are carefully identified, separated, and directed to authorised recycling facilities. Their work aligns with national and international sustainability goals, recognising that informal waste actors play a pivotal role in addressing South Africa’s e-waste challenges. In doing so, the organisation helps build a more inclusive waste management system that values environmental stewardship and social equity. WasteAid’s programmes also contribute to awareness-raising and behavioural change, encouraging communities to view e-waste not as rubbish, but as a resource (WasteAid, 2024a).

WasteAid South Africa follows a structured, environmentally sound approach to e-waste management, focusing on safe sorting, dismantling, and storage. In Diepsloot, local micro-businesses are trained to disassemble electronic items, recover valuable components, and handle hazardous materials responsibly (Salifu, 2024). This process not only protects the environment but also creates income-generating opportunities (WasteAid, 2024a).

4.5.2 COMMUNITY ENGAGEMENT AND CAPACITY BUILDING

WasteAid’s approach to e-waste management goes beyond the provision of technical skills, placing a strong emphasis on developing community-driven solutions tailored to local contexts. Through collaborative partnerships with municipal authorities and informal sector stakeholders, the organisation supports the creation of accessible collection points and promotes the safe segregation of e-waste at the source (WasteAid, 2023). This work is particularly significant in South Africa, where formal recycling systems capture only an estimated 10–15% of e-waste, with the remainder often handled through informal or environmentally hazardous practices (Mouton, 2020). By facilitating connections between informal recyclers and formal waste infrastructure, WasteAid plays a vital role in improving the safety, efficiency, and sustainability of e-waste processing (WasteAid, 2022). At the same

time, its programmes generate meaningful economic opportunities, especially for marginalised groups such as women and young people, helping to address both social and environmental challenges in tandem (WasteAid, 2024b).

4.5.3 PERFORMANCE AND IMPACT

WasteAid has made notable progress in mitigating the environmental impact of e-waste by successfully diverting substantial volumes away from informal dumping sites. This effort has contributed to a measurable reduction in pollution within key communities. The organisation's initiatives have also fostered meaningful social benefits, notably through the creation of employment opportunities and the enhancement of technical skills among historically marginalised groups (WasteAid, 2024b).

4.6 FINDINGS REGARDING E-WASTE POLICIES AND PRACTICES AT EWASA

The Extended Producer Responsibility Waste Association of South Africa (eWASA) serves as a key player in the country's electronic waste management system. Established in 2008, eWASA operates as a registered Producer Responsibility Organisation (PRO), representing a broad network of producers and distributors across sectors such as Electrical and Electronic Equipment (EEE), Lighting, Portable Batteries, Lubricant Oils, and Paper and Packaging (eWASA, 2025b). The organisation's core mandate is to support its members in fulfilling their obligations under South Africa's EPR regulations, as outlined in the NEM:WA (eWASA, 2025b) (eWASA, 2025c). These regulations place a legal duty on producers to manage the environmental impacts of their products throughout the post-consumer phase, thereby promoting accountability and sustainability across the product lifecycle (eWASA, 2025c).

4.6.1 E-WASTE COLLECTION AND PROCESSING PRACTICES

eWASA adopts a structured and coordinated approach to the management of e-waste, placing particular emphasis on the development of efficient collection systems within both urban and peri-urban settings. Collection begins with strategic partnerships between eWASA, local municipalities, and registered waste collectors. These partnerships facilitate the establishment of accessible drop-off points in both urban and peri-urban communities, often integrated into

municipal waste management infrastructure. For example, eWASA's collaboration with the Nelson Mandela Bay Municipality has enabled the inclusion of e-waste collection services at municipal drop-off sites, making it easier for households and small businesses to responsibly dispose of end-of-life electronics (eWASA, 2023).

Once collected, e-waste is transported to accredited processing facilities that adhere to strict environmental and occupational health standards. At these facilities, materials undergo a systematic dismantling process where they are carefully separated into components such as plastics, metals, glass, and hazardous elements (InfrastructureNews, 2013). Skilled workers, often equipped with personal protective equipment (PPE), handle the disassembly process with precision to minimize the release of toxic substances (BizCommunity, 2014). Hazardous components—such as batteries, mercury-containing switches, and cathode ray tubes—are isolated and treated under stringent safety protocols to prevent contamination and ensure regulatory compliance. These procedures align with the EPR regulations under South Africa's NEM: WA, which eWASA implements as a registered Producer Responsibility Organisation (eWASA, 2025b).

4.6.2 DATA DESTRUCTION AND COMPLIANCE

eWASA implements rigorous data destruction protocols to ensure the secure handling of e-waste, in compliance with South Africa's PoPIA. Recognizing the risks associated with improper data disposal, eWASA mandates that all devices undergo certified data sanitization before recycling. This process includes both software-based data wiping, adhering to standards such as NIST 800-88, and physical destruction methods like shredding or drilling through hard drives, particularly for devices containing sensitive information (GoGreen, 2025) (eWASA, 2025d). These measures are crucial to prevent data breaches and ensure that personal and corporate information is irretrievable (eWASA, 2025d).

eWASA collaborates with certified recyclers and dismantlers who are equipped to handle data-bearing devices securely. These partners are required to provide data destruction certificates, offering verifiable proof of compliance with data protection regulations. This certification process not only safeguards against potential legal liabilities but also reinforces trust among

stakeholders by demonstrating a commitment to data security and environmental responsibility (eWASA, 2025d).

4.6.3 PERFORMANCE AND IMPACT

In 2023, eWASA made significant strides in managing e-waste under the EPR regulations. The organisation reported the collection of 9,789 tonnes of EEE, with 5,640 tons recycled and 226 tons re-used, achieving a 31% diversion rate from the 29,663 tons placed on the market (eWASA, 2023).

In addition to diverting e-waste, eWASA strengthened infrastructure and community support by installing 13 collection containers across five provinces and partnering with several municipalities. These efforts led to the creation of both direct and indirect jobs, while also providing essential resources such as protective gear and waste picker trolleys to support safe and sustainable waste management (eWASA, 2023).

4.7 FINDINGS REGARDING E-WASTE POLICIES AND PRACTICES AT ERA NPC

The E-Waste Recycling Authority Non-Profit Company (ERA NPC) plays a significant role in advancing responsible e-waste management in South Africa. Operating as a registered Producer Responsibility Organisation (PRO), ERA NPC is tasked with implementing the EPR regulations specifically for Waste Electrical and Electronic Equipment and Lighting (WEEEL) (ERA, 2025). Established in alignment with the NEM:WA and the 2021 EPR regulations for WEEE, the organisation supports producers in meeting their legal obligations. Through its coordinated efforts in e-waste collection, recycling, and public education, ERA NPC contributes to the sustainable management of South Africa's growing e-waste stream, promoting environmental responsibility and long-term resource recovery (ERA, 2025).

4.7.1 E-WASTE COLLECTION AND PROCESSING PRACTICES

ERA NPC employs a collaborative and structured approach to e-waste management across South Africa, with a strong emphasis on building accessible and efficient collection networks. The organisation works closely with recycling partners, retailers, and local municipalities to

establish over 100 e-waste drop-off points nationwide, including sites at Makro stores, GeT Metal buy-back centres, and a planned expansion to more than 200 Pick n Pay locations. These efforts are underpinned by funding from producer member levies and are bolstered by public awareness campaigns aimed at encouraging greater participation in e-waste recycling (ERA, 2024).

Once collected, the e-waste is channeled through ERA's infrastructure and partnerships with certified service providers—including recyclers and dismantlers—who ensure that valuable materials are recovered, and hazardous substances are handled responsibly (ERA, 2025). ERA NPC's approach is collaborative, working closely with electronics producers, recyclers, government, and the public to strengthen the entire value chain (GreenCape, 2018). They also invest in public awareness campaigns and support small businesses and vulnerable groups, turning e-waste management into an opportunity for job creation and positive environmental impact (ERA, 2025).

4.7.2 HAZARDOUS E-WASTE AND MULTI-STAKEHOLDER ENGAGEMENT

ERA NPC operates through a collaborative, multi-stakeholder approach, engaging producers, recyclers, refurbishers, government bodies, and retailers to develop and strengthen sustainable take-back systems (ERA, 2024). Through strategic partnerships with established recycling companies such as EWaste Africa, Desco, and Recyclex, ERA enhances the national e-waste infrastructure and supports more efficient recovery processes (MediaUpdate, 2024).

These efforts are guided by the principles of South Africa's EPR regulations, with the dual aim of minimising environmental harm and maximising the recovery of valuable resources, including gold, platinum, copper, and aluminium. By fostering collaboration across the value chain, ERA contributes to a more sustainable and circular e-waste economy (ERA, 2024).

4.7.3 PERFORMANCE AND IMPACT

ERA NPC has made meaningful strides in reducing the volume of e-waste sent to landfills, contributing to improved environmental outcomes and advancing South Africa's commitment to a CE. In 2023, the organisation processed 22% of the Department of Forestry, Fisheries and

the Environment's (DFFE) national e-waste collection target, achieving an impressive 91% collection rate and maintaining a minimal waste-to-landfill ratio of just 1%. ERA's initiatives have delivered both environmental and socio-economic benefits by creating jobs and raising public awareness about responsible e-waste recycling. A standout achievement was the collection of 164 tons of e-waste in just two days through a Takeback Scheme with Makro, showing how effective collaboration and incentives can drive public participation in proper e-waste disposal (ERA, 2023).

4.8 OVERALL COMPARISONS REGARDING E-WASTE POLICIES AND PRACTICES BETWEEN SELECTED COMPANIES

Table 4.2 Overall comparison regarding e-waste policies and practices.

FINDINGS AND INTERPRETATION OF DATA

CHAPTER 4

ORGANISATION	POLICY FOCUS & COMPLIANCE	COLLECTION & PROCESSING PRACTICES	DATA DESTRUCTION & SECURITY	COMMUNITY ENGAGEMENT & CIRCULARITY	PERFORMANCE & IMPACT
ORICOL	Sustainable waste diversion; alignment with NEM:WA & EPR; ISO 14001/45001/9001 certified; regular audits	Certified containers; secure transport; licensed facilities; hazardous segregations; manual dismantling	Physical shredding; degaussing; certificates of destruction; audit trails	Resource recovery; staff training; waste audits; environmental stewardship	73% waste diverted (119,563 tonnes, 2023); leader in waste minimisation
ENVIROSERV	Hazardous waste focus; PoPI Act & National Waste legislation compliance; licensed operations; regular audits	Nationwide collection; bulk/individual pickups; authorised facilities; hazardous separation; solar panel disposal	Onsite/offsite destruction; compliance certificates; PoPIA	CE focus; green landfill initiatives; biogas capture; public reporting	103.1 tonnes e-waste diverted (2022); green landfill; reduced emissions
WASTE AID	CE; community development; informal sector inclusion; aligns with national/international goals	Community-centred; partnerships with informal sector; sorting, dismantling, safe storage; technician training	Challenges in secure data destruction; focus on risk awareness and technician training	Repair/reuse programmes; skills development; job creation; awareness campaigns	Significant diversion from dumps; pollution reduction
EWASA	EPR regulations (NEM:WA); registered PRO; compliance with PoPIA; regular audits	Urban/peri-urban focus; partnerships with municipalities; accredited facilities; hazardous protocol	Certified data sanitization; physical destruction; PoPIA compliance; destruction certificates	Job creation; PPE/trolley donations; community partnerships	9,789 tonnes EEE collected (2023); 31% diversion
ERA NPC	EPR regulations (NEM:WA, 2021); registered PRO; multi-stakeholder engagement; public awareness campaigns	100+ drop-off points; partnerships with retailers/municipalities; certified recyclers; value chain collaboration	Certified partners; data destruction protocols; compliance with PoPIA	Public awareness; incentivized take-back; job creation;	91% collection rate; 1% landfill; 164 tons in 2 days (Makro event)

Source: (Researcher’s own construc

4.9 SUMMARY

Chapter Four provides a detailed account of the empirical findings that emerged from this study. These findings are based on an in-depth analysis of documents published by the five selected e-waste organisations. Sources included content retrieved from their official websites as well as organisation-authored publications. The investigation focused on each institution's approach to e-waste, with particular attention given to their policies and practices. From this analysis, several recurring themes were identified across the organisations. The final chapter, Chapter Five, will offer conclusions drawn from these findings and present relevant recommendations.

CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

5.1 INTRODUCTION

In Chapter Four the findings and interpretation of data were discussed. This study aimed to provide a desktop analysis of sustainable e-waste practices among five South African e-waste organisations. Chapter Five aims to provide conclusions and recommendations for policy makers at South African organisations regarding e-waste best practices. This chapter provides an overview of the study, followed by a discussion of the findings. From this, recommendations will be formulated. This chapter will address the study's contributions and limitations, offering suggestions for further research. Finally, a conclusion will be provided.

5.2 OVERVIEW OF THE STUDY

Chapter One provided the foundation for the study by offering an introduction and background to the study. It presented the problem statement followed by a clear outline of the primary, secondary, and methodological research objectives. Key concepts were defined, and the significance of the research was presented. The chapter concluded with the structure to follow.

Chapter Two presented a literature review of the study. It began with an introduction and historical overview of e-waste management, followed by a brief overview of theories related to e-waste. The nature of e-waste management was discussed under the following topics: key components of e-waste management system, goals of e-waste, types of e-waste best practices, e-waste and legal compliance, the benefits of effective e-waste management system, the link between e-waste and sustainability, the challenges of e-waste management, and current trends in e-waste.

Chapter Three outlined the research methodology that underpins the study. It began with an introduction, followed by a detailed explanation of the research design and methodology used in this study. The chapter provided a discussion on the population and sampling techniques employed during the study, with convenience sampling being the chosen method.

Subsequently, this chapter elaborated on the data collection and analysis methods employed. Finally, this chapter highlighted the ethical considerations and concluded with a summary.

Chapter Four analysed the empirical findings of the study. The chapter began with an introduction, followed by a demographic analysis of the five selected e-waste organisations in South Africa. E-waste practices and policies were discussed for each organisation, making overall comparisons, The chapter concluded with a summary.

5.3 THE ACHIEVEMENT OF PRIMARY, SECONDARY AND METHODOLOGICAL OBJECTIVES

The achievement of the research objectives is summarised in Table 5.1 below, indicating in which chapters they were achieved.

Table 5.1: Research objectives achieved

Objectives	Chapter(s)
Primary Objective:	Achieved
To conduct a desktop analysis of sustainable best practices regarding e-waste management in South African organisations.	Chapters 1-5
Secondary Objectives:	Achieved
To identify five organisations in South Africa regarding their sustainable e-waste best practices.	Chapters 3-4
To conduct a desktop analysis regarding sustainable e-waste best practices.	Chapters 3-4
To determine best sustainable e-waste practices for organisations in South Africa.	Chapter 5
Methodological Objectives:	Achieved
To conduct an in-depth literature review on the nature and scope of sustainable e-waste management practices.	Chapter 2
To determine the most suitable research methodology in addressing the specified research problems and objectives of the study.	Chapter 3
To collect qualitative data through a desktop or documentary analysis amongst five institutions in South Africa regarding sustainable best e-waste practices.	Chapters 3-4
To analyse the qualitative data obtained from the desktop study.	Chapter 4
To draw conclusions and make recommendations to the stakeholders regarding sustainable best e-waste practices.	Chapter 5

Source: (Researcher's own construct)

5.4 SUMMARY OF LITERATURE REVIEW

Chapter Two provided an extensive review of literature on e-waste management and sustainability. the main conclusions can be summarised as follows:

- *Historical and global context:* E-waste has become a significant global concern, driven by the acceleration of technological innovation and the increasing rate at which electronic products become obsolete. Developed regions, notably Japan and the

European Union, have responded by implementing comprehensive regulatory frameworks such as EPR and the WEEE Directive. In contrast, many developing nations continue to face persistent difficulties, including reliance on informal recycling networks, insufficient infrastructure, and weak regulatory enforcement mechanisms.

- *Theoretical foundations:* The CE framework prioritises strategies such as product reuse, material recycling, and eco-design to prolong the lifespan of electronic goods and reduce waste generation. Stakeholder Theory underscores the collective responsibility of key actors – manufacturers, consumers, regulators, and recyclers- in ensuring sustainable e-waste management. Similarly, the TPB provides insight into how individual attitudes, prevailing social norms, and perceptions of behavioural control shape decisions around recycling and responsible disposal practices.
- *Nature of e-waste:* An effective e-waste management system depends on a structured sequence of processes, encompassing collection, pre-treatment, treatment and final disposal, as well as continuous monitoring and reporting. Each of these stages plays a vital role in enabling the safe recovery of valuable materials while simultaneously reducing the risks of environmental degradation.
- *Key goals of e-waste:* The literature highlights several key goals of e-waste management, namely the reduction of environmental and public health risks, the recovery of valuable secondary materials, the promotion of regulatory compliance, and the enhancement of stakeholder awareness. Collectively, these goals are consistent with the broader imperatives of sustainable development and align with the principles underpinning the CE.
- *Benefits of effective e-waste:* The benefits of sustainable e-waste management extend across multiple dimensions, encompassing environmental protection through reduced contamination, economic gains derived from material recovery and employment creation, enhanced compliance with regulatory frameworks, and positive social outcomes such as improved community health and greater public engagement.
- *Challenges:* Key challenges identified in the literature include the dominance of the informal recycling sector, limited awareness and engagement among businesses, financial and technological constraints, inconsistencies in regulatory enforcement, and growing concerns related to data security.
- *Links to sustainability and current trends:* E-waste is directly connected to sustainability goals. Recent developments highlight the growing integration of CE

principles, increased collaboration among multiple stakeholders, and the adoption of advanced technologies – such as artificial intelligence and blockchain- to improve traceability, transparency, and overall efficiency in handling electronic waste.

In summary, the literature indicates that, despite the presence of established best practices and robust policy frameworks internationally, South Africa continues to experience challenges related to compliance, stakeholder awareness, and infrastructural capacity. These findings provide the basis for the thematic analysis conducted in Chapter Four and form the foundation for the recommendations outlined in this chapter.

5.5 CONCLUSIONS AND RECOMMENDATIONS

The following section will discuss the conclusions and recommendations of the study, focusing on sustainable e-waste policies and practices in South African organisations, the goals of e-waste and the benefits of e-waste.

5.5.1 SUSTAINABLE E-WASTE POLICIES AND PRACTICES IN SOUTH AFRICAN ORGANISATIONS

The main research question of this study is: *What are the sustainable best practices for electronic waste (e-waste) management implemented by South African organisations?* This study aimed to explore the sustainable e-waste practices at e-waste organisations in South Africa, supported by a comprehensive literature review that provided an overview of e-waste, the nature of e-waste, and the theories related to e-waste.

The findings of this study suggest that sustainable e-waste management in South Africa is influenced by a mix of regulatory requirements, organisational commitment, and cooperation across the industry. Larger firms such as Oricol and EnviroServ prioritise adherence to national legislation while also incorporating CE principles, particularly through recycling and the recovery of valuable materials. By contrast, eWASA and ERA NPC play a more strategic role by promoting awareness, producer responsibility, and educational initiatives, thereby reinforcing the importance of stakeholder collaboration. WasteAid, though operating on a smaller scale, illustrates how grassroots and community-driven projects can successfully complement broader corporate approaches.

The following recommendations, linked to the five core themes identified in Chapter Four, are offered to assist organisations in establishing effective and sustainable e-waste practices and policies.

- *Policy focus and compliance:* All organisations in South Africa, including those outside the waste sector, should establish formal internal policies for e-waste handling, disposal, and data protection. These policies should be aligned with national legislation—such as NEM:WA and EPR regulations— and global practices. Policymakers must strengthen enforcement mechanisms to ensure consistent compliance across industries. Industry bodies such as eWASA should continue to assist firms with compliance reporting and producer responsibility schemes.
- *Collection and processing:* Organisations should expand partnerships between the formal and informal sectors and improve access to certified e-waste services. Initiatives like those led by WasteAid, which successfully integrates informal collectors into structured recycling systems, should be scaled up. Expanding such partnerships will improve collection rates while creating inclusive and sustainable economic opportunities. Businesses should be encouraged to contract certified service providers, like Oricol and EnviroServ, for the secure collection, recycling, and disposal of e-waste. This would reduce the risks associated with environmental harm and data breaches. There should be increased investment in infrastructure to support regional collection points, improving accessibility for businesses and communities.
- *Data destruction and security:* In light of the increasing data privacy risks, all organisations should implement certified data destruction procedures prior to disposal of electronic devices, in line with standards such as PoPIA. Additionally, sector specific guidelines should be developed and enforced for sensitive areas such as solar panel recycling, hazardous component separation, and data security.
- *Community engagement and circularity:* Public awareness campaigns should be strengthened to emphasize both the environmental and economic advantages of e-waste recovery, fostering greater participation and responsible disposal practices. In addition, organisations should encourage CE approaches, such as refurbishments, reuse, and eco-designs, to extend product life cycles.
- *Performance and impact:* Organisations should adopt transparent monitoring and reporting practices, disclosing quantities of e-waste generated, recycled, or diverted

from landfills. This improves accountability and enables progress to be benchmarked over time.

5.5.2 THE GOALS OF E-WASTE

The primary goals of sustainable e-waste management include reducing environmental harm, recovering valuable resources, and fostering a circular economy. The findings reveal that the selected organisations align their practices with these goals by prioritising safe recycling, promoting reuse, and reducing landfill dependence. It is recommended that organisations prioritise the reduction, reuse, and recycling of electronic equipment. Additionally, procurement policies should favour products designed for longevity and recyclability.

5.5.3 THE BENEFITS OF E-WASTE

Sustainable e-waste management delivers considerable benefits across environmental, economic, and social dimensions. From an environmental perspective, it mitigates soil and water contamination. Economically, it opens avenues for resource recovery and job creation. Socially, it contributes to community health and raises awareness about responsible practices. The case of WasteAid further illustrates how community-focused initiatives can empower local populations while addressing challenges within the informal recycling sector.

It is recommended that e-waste management organisations expand public education campaigns to promote responsible disposal and highlight the economic value of e-waste recovery. Additionally, fostering collaborations between government, the private sector, and NGOs can help maximise these benefits.

5.6 CONTRIBUTIONS OF THE STUDY

The purpose of this study is to provide a desktop analysis of sustainable e-waste practices and policies at e-waste organisations in South Africa. The research findings can provide organisations with appropriate guidelines to implement sustainable e-waste practices and policies. This study contributes to the limited body of literature on organisational e-waste practices in South Africa. Additionally, it can provide further researchers with a framework to follow when conducting research in the e-waste sector.

5.7 LIMITATIONS OF THE STUDY AND SIGGESTIONS OF FURTHER RESEARCH

This study has contributed meaningfully to existing literature on sustainable e-waste practices and policies in the e-waste sector. However, several limitations should be noted. Firstly, this study focused solely on the e-waste sector, meaning the results cannot be generalised to other sectors. Secondly, it was limited to South African e-waste organisations, requiring further research on practices in other geographic regions. Thirdly, the study excludes the perspectives of government regulators, informal sector actors, and consumers. Lastly, current e-waste practices and policies in these organisations may change over time, so ongoing research is essential to stay updated with developments in the e-waste sector.

5.8 CONCLUSION

This chapter provided conclusions and recommendations regarding sustainable e-waste policies and practices in e-waste organisations, the goals of e-waste, the benefits of e-waste, and the risks or challenges of e-waste. This study has achieved its primary objective of providing a desktop analysis of sustainable e-waste policies and practices in organisations in South Africa. The results and recommendations are beneficial as they highlight the importance of e-waste organisations in implementing sustainable e-waste practices. The recommendations on creating sustainable e-waste practices and policies enhancing e-waste's goals and benefits, and mitigating its risks or challenges are essential for promoting sustainable e-waste.

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APPENDIX 1: TURNITIN REPORT

TREATISE WIP CHAPTER 1-5 M COETZEE.docx

ORIGINALITY REPORT

17%	10%	14%	4%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	busman.mandela.ac.za Internet Source	1%
2	"A Vision for Environmental Sustainability: Overcoming Waste Management Challenges in Developing Countries", Springer Science and Business Media LLC, 2025 Publication	1%
3	Submitted to Nelson Mandela Metropolitan University Student Paper	1%
4	Srijan Goswami, Moharana Choudhury, Sangita Agarwal. "Electronic Waste - Impact on Health, Animals, and the Environment", CRC Press, 2025 Publication	1%
5	Submitted to University of Warwick Student Paper	1%
6	Ariva Sugandi Permana. "Urban Engineering", Routledge, 2025 Publication	1%
7	repository.nwu.ac.za Internet Source	1%
8	Mandeverere, Benjamin. "Assessment of Electronic Waste Management in Harare, Zimbabwe", University of South Africa (South Africa) Publication	1%

APPENDIX 2: ETHICS FORM



FACULTY OF BUSINESS AND ECONOMIC SCIENCES
DEPARTMENT OF BUSINESS MANAGEMENT
ETHICAL CONSIDERATION FOR HONOURS TREATISE

INSTRUCTIONS

- Should be completed by study leader and student.
- Must be signed off by the student, study leader and HoD.
- Submit completed form to Ms Kim Alexander.
- Please ensure that a summary of the research methodology section of the treatise is attached to this form (*Complete Annexure A*).
- **Please note that by following this ethics route, the study will NOT be allocated an ethics clearance number.**

SECTION A – STUDENT ACKNOWLEDGMENT

- The student acknowledges that their research project is for academic qualification purposes only. As such, the research report or any sections thereof **may not be published**.
- The student also acknowledges that their research project **will be a desktop study** and will **make use of publicly available documents or secondary data**. No human subjects will be involved in the study as primary sources of data.

Secondary data, in this instance, refers to data that was collected and processed by someone else for some other purpose but is now being used by the researcher for another reason (Tripathy, 2013). Research utilising secondary data that both exists and has been collected in a public, academic database, for example Google Scholar, is considered desktop research, and generally does not require full ethical approval (Creswell & Poth 2017).

SECTION B – STUDENT AND RESEARCH PROJECT DETAILS

Student name & surname	Megan Coetzee
Student number	219032467
Title of treatise	A desktop analysis of sustainable best practices regarding electronic waste management practices in South African organisations
Qualification	Business Management Honours
Department	Business Management
Study leader	Prof EE Smith

SECTION C – ETHICS CRITERIA

<i>(Please tick the appropriate block)</i>		YES	NO
1.	Is there any risk of harm, embarrassment of offence, however slight or temporary, to the participant, third parties or to the communities at large?		x
2.	Is the study based on a research population defined as ‘vulnerable’ in terms of age, physical characteristics and/or disease status?		x
2.1	Are subjects/participants/respondents of your study:		
2.1.1	Children under the age of 18?		x
2.1.2	NMU staff?		x
2.1.3	NMU students?		x
2.1.4	The elderly/persons over the age of 60?		x
2.1.5	A sample from an institution (e.g. hospital/school)?		x
2.1.6	Handicapped (e.g. mentally or physically)?		x
3.	Does the data that will be collected require consent of an institutional authority for this study? (An institutional authority refers to an organisation that is established by government to protect vulnerable people)		x
3.1	Are you intending to access participant data from an existing, stored repository (e.g. school, institutional or university records)?		x
4.	Will the participant’s privacy, anonymity or confidentiality be compromised?		x
4.1	Are you administering a questionnaire/survey that:		
4.1.1	Collects sensitive/identifiable data from participants?		x
4.1.2	Does not guarantee the anonymity of the participant?		x
4.1.3	Does not guarantee the confidentiality of the participant and the data?		x
4.1.4	Will offer an incentive to respondents to participate, i.e. a lucky draw or any other prize?		x
4.1.5	Will create doubt whether sample control measures are in place?		x
5.	Do you wish to publish any research output (i.e. article) from this study?		x

Please note that if ANY of the questions above have been answered in the affirmative (YES) the student will need to complete the full ethics clearance form (MEOS REC-H application) and submit it with the relevant documentation to the Faculty RECH (Ethics) committee.

The student hereby certifies that he/she has given his/her research careful ethical consideration and full ethics approval is not required.

SECTION D – INFORMATION TO BE INCLUDED INTO THE RESEARCH REPORT

(The section below should be edited and aligned to the specifics of the study)

1. ETHICAL CONSIDERATIONS

This study will follow the ethical research considerations that apply to all research in the social sciences, which are defined as moral rules and professional codes of conduct to the collection, analysis, reporting, and publication of information about research subjects (Pietilä, Nurmi, Halkoaho & Kyngäs, 2020:49). The research will, at all times, adhere to the following ethical considerations:

1.1 Informed Consent

Where data is freely available on the Internet, books or other public forum, permission for further use and analysis is implied, however, the ownership of the original data must be acknowledged (Tripathy, 2013).

1.2 Anonymity and Confidentiality

To ensure privacy and to protect individuals or institutions within the secondary data, a privacy plan or protocol will be in place to protect the confidentiality of the users. This may include removing identifiable information, securely storing the data and removing any sensitive information prior to distribution of the outcome of the study (where needed).

1.3 Action and Competence of Researchers

The study will be undertaken in an ethically correct manner. Under no circumstances would the researcher in this study make judgments about data, falsify data or plagiarise.

1.4 Respect of Intellectual Property

Intellectual property is the creation arising from intellectual activity, and this study will acknowledge and reference all ideas and sources used in the study.

1.5 Beneficence

The study topic being researched is for degree purposes only and will not be published.

1.6 Non-Maleficence

Non-maleficence makes sure that what is being done is not harmful and that harm is not done by omitting care or treatment. This study will make sure that no harm will come to anyone connected to the study. This body of work and the documents consulted will also adhere to the Protection of Personal Information Act (PoPIA). POPIA governs the collection, processing and sharing of personally identifiable information (PII).

1.7 Applying for ethical consideration

The researcher will apply for ethical consideration from the **Department of Business Management** (Nelson Mandela University) to have the right to research within the intended domain. The research

APPENDIX 2: ETHICAL CLEARANCE

process, in particular data collection, may only be conducted once ethical clearance has been granted, i.e., the ethics form has been signed by the student, the study leader and the Head of Department.

SECTION E – SIGNATURES AND DATES



STUDENT

22/04/2025

DATE



STUDY LEADER

22/04/2025

DATE



HEAD OF DEPARTMENT

24 April 2025

DATE

REFERENCES

- Cilliers, L. & Viljoen, K. (2021). A framework of ethical issues to consider when conducting internet-based research. *South African Journal of Information Management*, 23(1).
- Creswell, J.W. & Poth, C.N. (2017). *Qualitative inquiry and research design: Choosing among five approaches*, Sage, London.
- Pietilä, A. M., Nurmi, S. M., Halkoaho, A. & Kyngäs, H. (2020). Qualitative research: Ethical considerations. In *The application of content analysis in nursing science research*, Cham. Springer, 49-69.
- Tripathy, J.P. (2013). Secondary Data Analysis: Ethical Issues and Challenges. *Iran Journal of Public Health*. 42(12): 1478–1479.

APPENDIX 3: AI USAGE DECLARATION

ANNEXURE X: GENERATIVE AI AND AI-ASSISTED TECHNOLOGIES IN WRITING PROCESS – USAGE DECLARATION

According to Nelson Mandela University’s Institutional Position Statement on the use of Generative Artificial Intelligence (D_71_24_(2024-02-07), the following are considered recommended uses and unacceptable uses of AI by students and staff.

Recommended uses:

- Search engine
- Enhancing understanding
- Gaining insights
- Gathering information
- Clarifying concepts
- Critically evaluating information

Unacceptable uses:

- Copy and paste generated intellectual work.
- Claiming a generated product (text, image, creation) as your own.
- Generating information for assessments, projects, and assignments, unless this is explicitly instructed by the academic, who has provided clear guidelines in the form of permissions and prohibitions as to the appropriate use thereof as part of an assessment designed around the use of AI.
- Used for unfair advantage – when you are determined to deceive and do not use something in an appropriate manner.
- Making use of AI and not appropriately referencing the sources represented in the generated text, image and/or other product.
- Makes use of AI and does not ensure that the sources represented in the generated text, image and/or other product are accurate and represent the actual work of existing sources.
- Generating information via AI that may or may not represent the intellectual work of another person, people or AI and thereafter making further use of AI to disguise this information and then present it as one’s own.
- When you do not follow permissions and prohibitions provided in assessment guidelines.
- When you are not transparent about its use, do not reference and acknowledge your sources.

Student declaration:

During the undertaking of preparing and writing this mini treatise,

I MEGAN COETZEE, with student number

219032467, declare that *I have not used AI in an unacceptable manner as described by Nelson Mandela University’s Institutional Position Statement on the use of Generative Artificial Intelligence.*

APPENDIX 3: AI USAGE DECLARATION

I further declare that *I have used* ChatGPT and Perplexity *in order to* correct grammar and punctuation, provide synonyms, create ideas and structure my thoughts.

I *also acknowledge* that I am ultimately responsible and accountable for the contents of this mini treatise.

SIGNATURE STUDENT:



DATE:

01/10/2025

[NOTE: Students must declare in their mini treatise the use of AI and AI-assisted technologies in the process of writing their treatise by completing this declaration statement. This statement must be included as an Appendix/Annexure in their mini treatise. AI and AI-assisted technologies do not include basic tools for checking grammar, spelling, references etc. Should AI and AI-assisted technologies not have been used in the process of writing, *not applicable (N/A)* can be entered where the NAME of the AI and the REASON used is requested. Using AI and AI-assisted technologies in their mini treatise without completing this declaration amounts to academic dishonesty. Students should note that the use of AI is detected by Turnitin and in addition to this declaration a Turnitin report is required as an Appendix/Annexure to their mini treatise

APPENDIX 4: LEARNING AGREEMENT



FACULTY OF BUSINESS AND ECONOMIC SCIENCES

**LEARNING AGREEMENT BETWEEN STUDY LEADER AND POSTGRADUATE STUDENT FOR
BCOM HONS MINI-TREATISE QUALIFICATIONS**

The aim of this learning agreement is to provide postgraduate students and their study leaders an opportunity to develop a sound and productive working plan. This document should be read in conjunction with the following Nelson Mandela University Policy documents:

- The General Prospectus
- Faculty of Business and Economic Sciences Prospectus
- University Code of Ethics Policy
- Policy on Intellectual Property
- Promotion of Academic Integrity and Prevention of Plagiarism

These documents are available on the Nelson Mandela University's website (<http://my.mandela.ac.za/default.asp?id=308&IRCno=>).

The Faculty of Business and Economic Sciences requires all postgraduate students and their study leader(s) to complete a learning agreement. Postgraduate students and their study leader(s) should discuss the issues outlined in this agreement, to have clarity and consistency regarding the conduct of the Postgraduate student and study leader. The document should be signed in each other's physical presence.

The postgraduate student and study leader should keep a copy of this learning agreement, and a copy must be sent to the module coordinator (Shelley.Farrington@mandela.ac.za).

PART A: DETAILS OF POSTGRADUATE STUDENT, STUDY LEADER(S) AND QUALIFICATION

NAME & SURNAME:	MEGAN COETZEE
STUDENT NUMBER:	219032467
QUALIFICATION:	BCOM HONOURS BUSINESS MANAGEMENT
YEAR OF REGISTRATION:	2025
DEPARTMENT:	BUSINESS MANAGEMENT
STUDY LEADER:	PROF. ELROY EUGENE SMITH

PART B: ROLES AND RESPONSIBILITIES OF THE POSTGRADUATE STUDENT AND STUDY LEADER(S)

POSTGRADUATE STUDENT:

As a postgraduate candidate, the student is expected to apply him- or herself to meeting the following reasonable responsibilities.

The postgraduate Student accepts and undertake the following responsibilities:

DESCRIPTION	INITIAL
Complete all the required components of the academic programme as stipulated.	MC
Plan and execute the research study as agreed to with the guidance of the study leader (and co-study leader, where applicable).	MC
Ensure that the research proposal (Chapter 1-3) is submitted at the stipulated date.	MC
Adhere to the principles of accepted safety and health standards, ethical research practice as per Nelson Mandela University Code of Conduct for Researchers (IRC 404.01), Policy on Research Ethics (IRC 404.02), specific codes of the discipline (where applicable) and conventions regarding plagiarism as per Nelson Mandela Policy for the Promotion of Academic Integrity and Prevention of Plagiarism (IRC 305.04).	MC
Make regular appointments with study leader(s) to update study leaders(s) on progress or any difficulties encountered in executing the academic project as planned to ensure timeous remedial action where required.	MC
Keep written record of supervision sessions and the decisions agreed to.	MC
Submit regular outputs from the academic project to ensure effective guidance and input by study leader(s).	MC
Ensure that written work submitted has been proofread and of an acceptable academic standard.	MC
Ensure that the necessary amendments or revisions decided upon with study leader(s) are made regularly and resubmitted as agreed for further guidance.	MC
Take responsibility for the final production of the treatise for examination and final submission at the specified dates.	MC
Submit a manuscript to the study leader prior to the time of the approval of examiner reports (for purpose of awarding the doctoral degree).	MC
The postgraduate student has read all the relevant strategic and policy documents related to their relevant qualification.	MC
The postgraduate student has familiarised him- or herself with the Internet-based plagiarism detection service; Turnitin software.	MC
The postgraduate student endeavours to partake in workshops and training related to the research project	MC

STUDY LEADER / CO-STUDY LEADER:

The responsibilities outlined below are reasonable expectations of academics or any other persons who are undertaking the supervision of candidates.

The study leader(s) accepts and undertake the following responsibilities:

DESCRIPTION	INITIAL
Clarify respective roles of student, study leader, and co-study leader (where relevant) to ensure that student and study leader (s) are clear about channels of communication as well as expectations. Preferably such clarification should be contained in a study leader or learning agreement	EEB
Confer or make contact with the student regularly (minimum once a month) to provide academic guidance to ensure the development of research skills and competencies relevant to the discipline and the specific study, and to ensure adherence to university requirements and/or discipline standards.	EEB
Monitor progress of the student and submit reports on student progress as required by the university and by relevant scholarship funding bodies.	EEB

APPENDIX 4: LEARNING AGREEMENT

Keep a record of supervision sessions and provide feedback, within the timeframe agreed upon, to enable student progress.	EEB
Study leaders must maintain an adherence to accepted safety and health standards, as well as ethical research practice as per Nelson Mandela University Code of Conduct for Researchers (IRC 404.01), Policy on Research Ethics (IRC 404.02), specific codes of the discipline (where applicable) and conventions regarding plagiarism as per Nelson Mandela Policy for the Promotion of Academic Integrity and Prevention of Plagiarism (IRC 305.04) and advise their students to maintain these standards as well.	EEB
Provide the relevant information to the student so that the candidate submits the treatise for examination and final submission on the correct date and format.	EEB
The study leader(s) to consult Turnitin report submitted by the student to the internet-based plagiarism detection service; Turnitin software.	EEB

PART C: TERMS OF LEARNING AGREEMENT

FREQUENCY OF COMMUNICATION		
The contact details of the study leader(s) were provided to the postgraduate student.	YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>
Specify frequency and communication channel for meetings (i.e. telephone, email, face-to-face).	Student will keep contact with study leader(s) via e-mail or personal consultation on progress, etc. on regular basis. Reply to emails is crucial.	
In case of the appointment of a co-study leader(s), how will meetings and communication between all be organised?	N/A	
Specify who is responsible for scheduling meetings and how far in advance these meetings should be scheduled.	Study leader should schedule meetings 48 hours in advance. Student can also ask for a meeting or email query.	
Specify the procedure for changing the meeting date and time.	Notice of 24 hours should be given.	
Specify frequency and duration of meetings (approx.).	Regular contact/meetings and duration will depend on purpose of meeting/email contact and task on hand.	
Specify who will set the agenda and take notes.	N/A – Email trail could be used. If used, Teams Meeting could be recorded.	
Clarify whether there will be any expectation regarding regular email communication.	Regular email communication will be necessary.	
Indicate the availability of communication of study leader during period of research and/or ordinary leave.	The study leader(s) will only be available on e-mail during normal leave – student is informed of the dates that the study leader will take leave.	
List the roles, responsibilities of study leader, co-study leader(s) and student.	Refer to roles as indicated in EBML410 Study guide and in this learning agreement	
Comments:		
RESEARCH PLAN / TIMEFRAME		
Specify the research plan and timeframe	As per research proposal.	
Specify how changes to the research plan / timeframe will be dealt with.	Mutual agreement taking note of completion date and registration implications.	
Was the postgraduate student informed of the timeframes	YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>
Specify remedial action if schedule is not adhered to?	Student(s) need to provide acceptable reasons for not adhering to a schedule and negotiate a new time frame with the study leader. The student(s) need to know that the study leader(s) may not be able to fit in a new time schedule on short notice when the student(s) has failed to stick to the	

APPENDIX 4: LEARNING AGREEMENT

	schedule. Study leader(s) will determine what action is needed to continue with studies or will recommend the discontinuation of the study.	
Comments:		
SUBMISSION OF WRITTEN MATERIAL AND FEEDBACK		
Specify how often written work should be submitted to the study leader(s).	Regular update on progress.	
Specify the timeframe for feedback.	48-72 hours	
Specify remedial action if feedback agreement is not adhered to?	Student(s) need to inform the study leader(s) that he/she is in disagreement/not satisfied about the feedback within 2 weeks after receiving such feedback. A discussion on the disagreements must take place. If student(s) do not implement recommendations, study leader(s) will request a full explanation of the reasons for not doing so.	
ETHICS APPROVAL		
	YES	NO
The postgraduate student was informed that all research projects require ethical approval?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
The postgraduate student was informed that it is his/her responsibility to apply for ethics?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Comments:	No formal ethics approval will be required (Only Form E will be used).	
INTELLECTUAL PROPERTY		
	YES	NO
The postgraduate student was informed that all intellectual property resulting from research conducted for postgraduate degrees, including all publications, is governed by the Intellectual Property Policy (IRC 401.01)	<input checked="" type="checkbox"/>	<input type="checkbox"/>
The student was informed that the intellectual property rights resulting from a postgraduate's research shall vest in the University	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Comments:		


The **STUDENT** and the **STUDY LEADER** confirms that:

1. They have read and understood this Learning Agreement,
2. They agree to accept its content for the duration of the study period as per the qualification stipulated above.

SIGNATURES:

Student:

Date:



 ...22-04-2025.....

Study leader:

Date:



 22-04-2025.....