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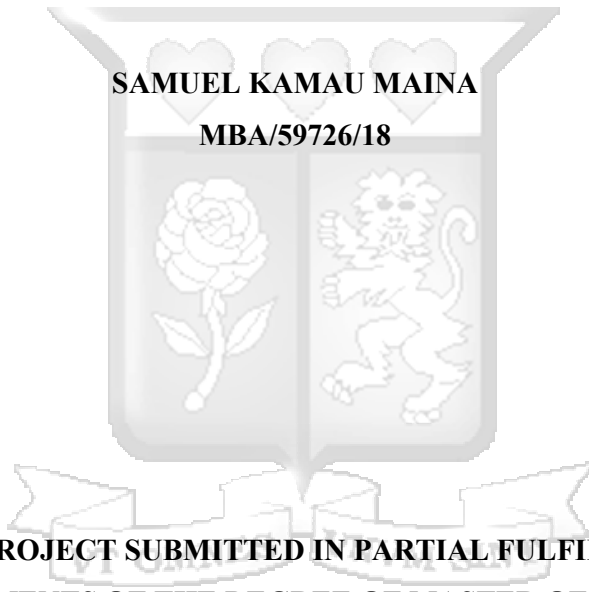
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**STRATEGIC FACTORS INFLUENCING EFFECTIVE MANAGEMENT OF E-
WASTE AMONG WASTE MANAGEMENT FIRMS IN NAIROBI COUNTY**

The watermark is a large, light gray crest of Strathmore University. It features a shield with a rose on the left and a lion on the right. Above the shield are three hearts, and below it is a banner. The text 'SAMUEL KAMAU MAINA' and 'MBA/59726/18' is superimposed on the upper part of the crest.

SAMUEL KAMAU MAINA
MBA/59726/18

**A RESEARCH PROJECT SUBMITTED IN PARTIAL FULFILMENT OF THE
REQUIREMENTS OF THE DEGREE OF MASTER OF BUSINESS
ADMINISTRATION AT STRATHMORE UNIVERSITY**

NOVEMBER 2020

DECLARATION

I, the undersigned, announce that this task is my unique work and has not been submitted for examination in any other institution.

No piece of this venture might be recreated without the authorization of the creator and Strathmore University

SAMUEL KAMAU MAINA

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Sign:

Date: 23-11-2020

Approval

This exploration venture has been submitted for assessment with my endorsement as the university supervisor

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Sign:

Date: 23-11-2020

ABSTRACT

Inside the most recent decade, upgrades in innovation have seen e-squander become the quickest developing problem in the global economy. This has resulted in increasing environmental, health, and economic challenges to developed and developing countries. With increasing technological advancement in Kenya, e-waste has become a key policy challenge to the government and firms on how to effectively manage the increasing e-waste. The current study sought to examine how strategic factors have influenced effective e-waste management in Nairobi County. The study specifically examined how managerial capacity, institutional capacity, and resource capacity influence effective e-waste management in Nairobi City County. The findings of the study are expected to be of importance to the management of waste management firms in Nairobi City as it will help in their formulation of policies geared towards effective implementation of e-waste management practices. The study was anchored on the theory of waste management and the resource-based view theory. The study adopted a descriptive research design with the population of the study being drawn from 150 registered solid waste management firms in Nairobi County. The unit of observation for the study was the managers of the 150 firms. The study employed a census survey of the 150 managers. The study relied on structured questionnaires to collect quantitative data that was utilized in solving the research problem. The study pre-tested the research instrument with 10% of the sample respondents. The collected research data was analyzed using measures of central tendency, correlation analysis, and regression tests. The results were presented using bar graphs, charts, and tables. The study was able to obtain a response rate of 64%. The study has limited. The findings of the study indicate that strategic factors (managerial capacity, institutional capacity, and resource capacity) lead to 38.5% effective e-waste management. The study concludes that resource capacity and institutional capacity have a significant positive effect on effective e-waste management. The research further concludes that management capacity has an insignificant negative effect on effective e-waste management. The study recommends that waste management firms should seek collaborations with stakeholders in the county who can help improve their waste management programs. The study further recommends that management teams in waste firms should enhance their financial resources mobilization which can be key to enhancing investment in better infrastructure.



Keywords: Managerial Capacity, Institutional Capacity, Resource, E-Waste Management

DEDICATIONS

I dedicate this work to my mother and father, Catherine and Michael Maina, who first taught me the value of education and critical thought.



ACKNOWLEDGEMENTS

This thesis is not a product of the author alone but rather a collective undertaking of individuals who in one way or another contributed an effort, no matter how small, in making this study a reality. I wish to recognize the role played by my lecturers. A special tribute undoubtedly goes to Dr. S. Wagura Ndiritu ,my supervisor for his tireless efforts in guiding and correcting my work. I would also like to acknowledge the respondents who took time to provide information which led to the realisation of this thesis. I thank my family members for their support and patience throughout the duration of my study. Lastly, I thank my fellow students, colleagues, relatives and friends who assisted me in one way or the other to make this work a success. God bless you all. In spite of the assistance accorded to me from these people I am solely responsible for this thesis. It is a product of my efforts

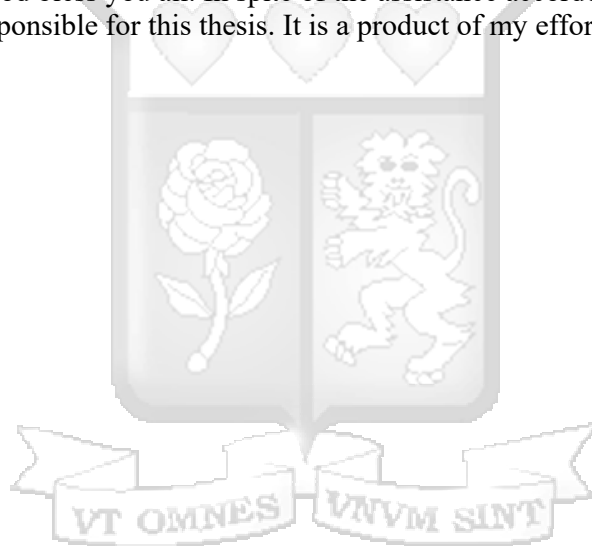


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ABBREVIATIONS AND ACRONYMS

ANOVA	Analysis of Variance
CA	Communication Authority
D-W	Durbin Watson Statistic
ICT	Information Communication and Technology
NACOSTI	National Commission for Science Technology and Innovation
SPSS	Statistical Package for Social Sciences
USA	United States of America
VIF	Variance Inflating Factor



OPERATIONAL DEFINITION OF TERMS

Electronic waste	Expired electronic and electrical products that are no longer useful
E-waste management	Proper administrative, operational activities used in dealing with and removal of e-waste
Institutional capacity	This refers to the firm's capacity to adequately collect, store and conduct waste treatment adequately
Managerial capacity	This alludes to the unmistakable capacities and abilities showed by the administration that are key to meeting firm goals
Resource capacity	This refers to the firms' individual unique resources at the disposal of the firm that helps in the attainment of the organization goals
Strategic factors	These are the components of a firm which enables it to adapt to a dynamic condition all together to apply the techniques of firm flexibilities to effectively to enable it to realize benefits towards performance

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Innovation and development in the field of science, especially information and technology, have led to diverse changes in all spheres of life (Kanda & Taye, 2009). These changes have simultaneously impacted lives positively in enhancing efficiency and productivity as well as negatively on environmental well-being due to waste generated from electronic and electrical equipment (Mureithi & Waema, 2008). Further, the development in the utilization of the web, coupled with the decrease in its price, has also encouraged many people in creating and created nations to adopt the use of ICT related electronics. These factors, together with the high obsolescence rate of ICT equipment, have prompted an upsurge of the e-squander created in the world (Lundgren, 2012).

‘E-waste’ as a term was first used in the 1980s in reference to the environmental degradation that resulted in developing countries arising from imported hazardous products (Asiimwe & Åke, 2012.). E-waste, otherwise referred to as WEEE (Waste Electrical and Electronic Equipment), includes components consumable and sub-assemblies that are loosely discarded out of date electrical and electronic devices (Waema & Tocho, 2008). Lundgren (2012) posits that e-waste comprises the largest waste stream and that the quantity of e-waste worldwide is on the rise due to the proliferation of communication tools and other technological products. According to Robinson (2015), Europe, the United States of America, Australia, China, and Latin America are the leading e-waste producers in the world. The high obsolescence rate of electric and electronic wastes makes e-squander one of the quickest developing waste streams (Arora, 2013). United Nations Environmental Programme - UNEP (2015) indicates that every year the world generates about 41 million tons of e-waste from products like computers and smartphones. Predictions by UNEP show that by 2017, the amount of e-waste may increase to about 50 million tons.

Trochim, Wen, and Chen (2015) note that 26% and 21% of the used electronic items are recycled carefully in European countries and the United States of America- USA. The study further shows that China and India have the highest rate of e-waste disposal. Peralta and Fontanos (2016) indicate that rapid industrialization and advancements in technology have led to the accumulation of e-waste disposal in the region due to the poor regulations, weak institutional factors, and increasing unemployment pressure. According to Osibanjo and Nnorom (2007), noted that while the development in the ICT industry has been rapid, the life-

span of the products is unsustainably low, leading to the production of tonnes of electronic waste. This increase in e-waste products has resulted in the emergence of a new challenge for most economies; how to effectively manage this waste because there is evidence that this type of waste is hazardous and negatively impacts human health and the environment (E-Waste Management in Kenya, 2016). It is postulated that computers, mobile devices, and televisions will generate as much as 9 million tonnes of e-waste by 2015 (Asiimwe & Åke, 2012).

Electronic equipment and other ICT products are more expensive in developing economies resulting in an increase in the demand for second-hand electronic equipment. Further, due to the low income per capita in developing countries, the citizens lack the financial power to purchase new electronics. Some of the imported electronics may have reached their end-of-life period and may be imported illegally (Obisanjo, 2015). African countries are the recipients of e-waste that is illegally exported to third world countries from the developed ones on the pretext of 'digital integration.' The majority of these imports end up being ineffective because they have extensive defects. These countries lack effective e-waste management frameworks meaning that the by-products cannot be re-used or disposed of effectively, leading to environmental degradation and health problems for the people involved in waste management, together with members of the surrounding environment. They have resorted to the collection, recycling, and subsequently dismantling of e-waste (Ban, 2015).

1.1.1 Strategic Factors

Strategic factors are the various components of a firm which enables it to adapt to a dynamic environment in order to apply the techniques of firm flexibilities to effectively to enable it to realize benefits towards performance (Hallgren, Olhager, & Schroeder, 2011). The relationship between an organization's strategic factors such as its structure, information technology, dynamic capabilities, firm resources, and leadership characteristics and its performance depend upon the level of its contingent nature (Furrer, Thomas, & Goussevskaia, 2009). This study will encompass strategic factors as managerial capacity, institutional capacity, and resource capacity.

The different rates of development, income levels, and innovation within institutions and countries have been attributed to leadership qualities (Bloom & Van Reenen, 2010). Good management practices have resulted in increased profit generation and higher sustainability scores, highlighting the influence of managerial capabilities among institutions worldwide. A strategy is involved with an institution's ability to successfully integrate the firm's resources and capabilities with the environment to ensure the attainment of firm goals. Managers are

charged with the task of formulating the most effective strategy to ensure that the firm is able to accomplish its goals and obligations, thus becoming sustainable over the long-term (Johnson, Scholes & Whittington, 2006). The management encompasses the strategic approach of a firm towards its approach to environmental conservation. The management capacity is an indicator of the management's ability to institute effective e-waste management practices.

Wernerfelt (1989) posited that firms which have unique resources have a higher probability of gaining competitive advantage and accomplishing both financial and non-financial goals. Barney (1986) states that resources include all assets, organizational processes, information accrued, employees, among other elements that work together towards attaining firm goals. Resource capacity in this study will allure the firm's capacity to integrate these resources effectively to ensure effective e-waste management. Institutional capacity is a product of effective decision-making, integrated planning, and resource management. These three factors impact a firm's ability to effectively carry out e-waste management and understanding factors that contribute to effective e-waste management is a key goal of this study.

Kwatra, Pandey, and Sharma (2014) indicated a lack of procedures and policies for the management of e-waste as well as lack of enforcement of the available policy framework. Saxena and Raj (2014) note that the majority of African countries have been unable to implement sustainable and operative e-waste management systems due to low institutional capacity, lack of education and awareness, inadequate technologies, poor institutional structures, inadequate or absence of policies and regulatory frameworks. Joro (2015) examined material waste management and noted that it is a major problem in the Ethiopian construction industry, which is highly affected by a lack of adequate resources. Cheru (2011) indicated that the absence of monetary assets, institutional shortcomings, and inappropriate determination of innovation, transportation frameworks and removal alternatives are the factors leading to low performance in waste management.

From the review of the various factors, it is clear that infrastructural capacity and institutional capacity, according to Saxena and Raj (2014); financial resources according to Cheru (2011), managerial capacity according to Joro (2015). The current study examined how institutional capacity, managerial capacity and resource capacity affect e-waste management in Nairobi.

1.1.2 Management of E-Waste

E-waste is electrical and electronic products that have become obsolete and must be disposed of. Electronic waste (e-waste) is defined as all forms of electrical equipment and appliances

that are past their working capacity; hence, unusable (UNEP, 2015). Davis and Herat (2008) posit that E-waste also is known as Waste of Electrical and Electronic Equipment (WEEE), can be characterized as old, finish-of-life or disposed of machines that utilization power. They consist of materials manufactured using plastics, aluminum, glass, cadmium, mercury, iron among other materials which, in the long-term, have been found to have a negative impact on the environment and on human and animal well-being due to their high levels of toxicity (Orisakwe & Frazzoli, 2010). Waste management is defined as the collection, transport, recovery and disposal of waste material, including supervision of disposal sites to ensure environmental regulations are adhered to (Pongrácz, Phillips, & Keiski, 2004).

In this investigation, E-squander alludes to electrical and electronic gear, entire or to a limited extent disposed of as waste by the customer or mass purchaser similarly as rejects from collecting, renovation and fix forms. Ineffective e-waste disposal has been evidenced to create significant environmental and human life. The high levels of toxic substances result in diverse health complications and therefore, there is a requirement for an administrative structure to address these challenges (Kanda & Taye, 2009). Electronic waste is considered to be a rapidly expanding issue by recyclers for instance, there are more than 30 million cell phone handsets in Kenya because of the quick movement of innovation in the portable business, according to the (Communication Authority of Kenya, 2015).

The ubiquity of electrical appliances in modern life is an indication of the likelihood of an increase in the volume of electronic waste, which is already considered one of the challenges of the 21st century (Veit & Bernardes, 2015), and has become an important environmental and health consideration in urban planning and management in the recent years. Whiney & Webb (2008) noted, with concern that in developed countries, e-waste grows at a 3% - 5 % rate annually. E-waste establishes a noteworthy worldwide human health and environmental issue, negatively impacting vulnerable groups (Frazzoli, Orisakwe, Dragone, & Mantovani, 2010). Against this background, appropriate policies for enhancing e-waste disposal management practices have been at the center of new international human health and environmental management and discussions (Nyakang'o, 2015).

National Environmental Management Authority (NEMA) has created e-squander guidelines which will help the nation in controlling e-waste by enrolling makers, permitting of recyclers and forestalling passage of unacceptable electrical and electronic gear. These guidelines have stretched out duty to makers to the uncovered expense of reusing of the items usually known

as broadened maker obligation. Presently, there are two authorized offices in the Country which are attempted e-squander the board (National Solid Waste Management Strategy, 2015).

Kenya produces 11,400 tons of E-Waste from fridges, 2,800 tons from TVs, 2500 tons from PCs, 500 tons from printers and 150 tons from cell phones (UNEP, 2014). In spite of the fact that there have been activities by legitimate firms to oversee electronic waste, for example, Nokia, Samsung and Techno through their reusing plan and PC for schools through the renovation program, the act of overseeing Electronic waste is mostly managed by the informal sector. These operators in the sector lack adequate skills. The process is highly toxic and impacts antagonistically to both the earth and human wellbeing. The absence of clear removal instruments has brought about unnecessary stocks being held by the buyer. Safaricom begun a recover contrive, which failed taking into account the region of arrangement centers and nonappearance of care and motivating forces to buyers (Igwe, 2013). The current study examined the effective waste management based on the economic, environmental, health and sustainability impact in the waste management process.

1.1.3 Waste management firms in Kenya.

Kenya, being a developing country has been struggling with the menace of e-waste. According to Otieno & Omwenga (2015), the e-waste produced in the country has been increasing on a daily basis with most of it being dumped together with solid waste into dumpsites. This exposes the environment to the dangerous effects of e-waste (Otieno & Omwenga, 2015). The Kenyan government, in its effort to increase digital access removed tax levies from imported electronics Kenya, promoted ICT integration into its institutions and implemented the e-government strategy. This resulted in a huge demand for electronic products countrywide and with the success witnessed in ICT development and product offering, the emerging issue is the lack of an effective policy framework designed to ensure effective management of e-waste (Kihoro, 2015). The year 2007 saw Kenya importing an estimated 5500 tonnes of electronic equipment, recording a 200% growth of IT equipment imported into the country. However, approximately 60% of the products were beyond repair (M. Mureithi and T. Waema, *E-waste Management in Kenya*). The waste generated from the utilization of technological devices remains in storage due to the absence of a legislative framework or policy as well as practical e-waste management which results in an environmental sore and health risks problem (Otieno and Omwenga, 2015). Kimeli (2014) notes that lack of proper electronic waste management as led to an increase in pile up in garbage which results in health problems and environmental pollution. There still

lacks an effective, realistic solution to the effective management of e-waste within the country. This study aimed to examine the strategic factors that determine effective management of e-waste in Nairobi County.

Kenya has no regulatory framework and policy for effective e-waste management. Companies such as WEEE Center, Practical Action, Nokia and Computers for schools Kenya have taken measures to recycle e-waste. Safaricom even instituted a take back scheme to encourage e-waste disposal. However, the informal Jua Kali sector is the main player in recycling and repurposing of e-waste (Ajega & Genga, 2019). However, the guidelines put forward by the National Environmental Management Authority (NEMA) in 2010 have rarely been implemented. The guidelines were formed to streamline the process of e-waste collection and disposal. The guidelines include environmental protection policies, environmental awareness, categories of e-waste, e-waste treatment protocols, and disposal measures (NEMA, 2010). These guidelines were formulated with the input of multiple industry players to ensure proper representation and inclusion, ownership and effective implementation. There are two main categories of e-waste; based on function and based on the composition of their elements. Most of the companies operating in the country function by sorting and recycling the collected waste (Kimeli, 2014).

The lack of a comprehensive policy for e-waste management has resulted in the emergence of a number of players in the public sector. However, the players in the informal sector lack the requisite skills and competencies to effectively handle e-waste (NEMA, 2010). Additionally, most of the firms operating in the region are unregistered and lack transparency in their reporting. The inability to adhere to the guidelines put forward by NEMA have resulted in consumers holding a large volume of e-waste in storage (Ajega & Genga, 2019). Additionally, lack of coordination among firms and government institutions has resulted in a highly ineffective system of waste management in the country. Programs that have been instituted by private players such as the Safaricom take back scheme failed due to poor strategy formulation on how to make contact with the consumers holding e-waste (Mwathi, 2014).

1.2 Statement of the Problem

Inside the most recent decade, upgrades in innovation has seen e-waste become the quickest developing division in the worldwide economy (Robinson, 2015). This has not been without outcome as e-waste has multiplied exponentially (Oluwa, 2018). As indicated by International Telecommunications Union (2017), the nations on the planet joined produced a stunning 44.7 million metric tons (Mt), or a likeness 6.1 kilograms for every occupant (kg/inch), of e-waste yearly in 2016, contrasted with the 5.8 kg/inch created in 2014. Oluwa

(2012) asserts that the European Union, the United States, Japan, and other developed countries started dealing with this menace during the 1990s by setting up e-waste recycling facilities and tightening the regulatory framework on disposal of e-waste.

However, not all the developed countries have the capacity for handling the increasing levels of e-waste and some are not willing to recycle the e-waste on their own backyard, with the Greenpeace International calling 65% to 75% of EU e-waste 'the hidden flow' due to the practice of exporting e-waste for re-use and recycling to Asian and African countries (Petridis, Petridis, & Stiakakis, 2020). They thus resorted to exporting these e-wastes to developing countries especially in Africa and Asia, most of which do not have adequate legal frameworks to deal with e-wastes (Palmeira, Guarda, & Kitajima, 2018). The lack of preparation by African countries to handle such an overwhelming quantity of e-waste has resulted in most African countries, Kenya included becoming a dumpsite for these wastes, creating a major challenge to management of e-waste (Lambrechts & Hector, 2016). Despite this, a literature review carried out by Maphosa and Maphosa (2020) showed that most African countries have no policies aimed at managing e-waste. Further, there is minimal insight on the effect of the strategic factors within waste management firms that influence their capacity to effectively manage e-waste (Ajega & Genga, 2019). This creates a gap that this study sought to solve.

The empirical literature on determinants of e-waste management in China demonstrates that natural mindfulness, demeanour towards reusing, cost of reusing and societal norms influenced e-waste recycling (Wang, Guo, & Wang, 2016). Adediran and Abdulkarim (2012) studied the challenges of electronic waste management in Nigeria and found out that lack of infrastructure, stakeholder involvement and financing constraints limited e-waste management. Olum (2018) conducted an analysis of electronic waste management in Uganda and found that effective control on disposal, adherence to environmental guidelines, structural capacity and assurance from the management and stakeholders was key to better waste management. Locally, Gillwald, Tocho and Waema (2013) found out that level of awareness, adequate squander the executives innovation, financing, removal observing and partner joint effort was key to effective e-waste management framework. Otieno and Omwenga (2015) examined the challenges to E-waste management in Kenya and indicated that lack of awareness, poor policies, lack of legislative, lack of infrastructure and high cost led to poor waste management. The above empirical studies have highlighted a number of factors that have influenced e-waste management; however, the studies have not focussed on e-waste management firms within Nairobi County. This lack of comprehensive empirical evidence focusing on the firms creates an empirical gap that motivates this study. The study solved the gap by examining the strategic

factors influencing effective management of e-waste in solid waste management firms Nairobi City County.

1.3 General Objective

The main objective of the study was to examine the influence of strategic factors on the effective management of e-waste among waste management firms in Nairobi County

1.3.1 Specific Objectives

- i. To establish the effect of managerial capacity on effective management of e-waste in waste management firms in Nairobi County
- ii. To determine the effect of institutional capacity on effective management of e-waste in waste management firms in Nairobi County
- iii. To establish the effect of resource capacity on effective management of e-waste in waste management firms in Nairobi County

1.4 Research Questions

- i. What is the effect of managerial capacity on effective management of e-waste in waste management firms in Nairobi County?
- ii. What is the effect of institutional capacity on effective management of e-waste in waste management firms in Nairobi County?
- iii. What is the effect of resource capacity on effective management of e-waste in waste management firms in Nairobi County?

1.5 Significance of the Study

The study is of key importance to various stakeholders within the e-waste management ecosystem in Kenya.

1.5.1 To waste management firms

The findings of the study are expected to be of importance to the management of waste management firms in Nairobi County as it will help in their formulation of policies geared towards effective implementation of e-waste management practices.

1.5.2 To county officials

The study findings are also expected to foster policy development and execution among county officials in designing regulations and guidelines that can help in streamlining waste management functions within the devolved unit.

1.5.3 To Academicians

The results of the study are anticipated to foster the available knowledge materials and enhance the empirical studies which can form the basis for future reference material.

1.6 Scope of the Study

The study contextually focussed on a review of the strategic factors that influence the effective management of e-waste. The study focussed on how managerial capacity, resource capacity and institutional capacity effect on e-waste management. The study geographical scope was limited to an examination of the 150 solid waste management firms operating within Nairobi City County. The study theoretical scope was limited to the theory of waste management and the resource-based view theory. The methodological scope of the study was anchored on a quantitative research approach. The time scope of the study was limited to one week at the beginning or end of the month when most waste management firms are considered busiest.



CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter focuses on the discussion of the relevant literature in line with the themes of the research. The chapter presented the various theories that guided the research as well as the various empirical studies. This chapter further presented a review of the research gaps and the conceptual framework depicting variables interaction. The chapter finally outlined the operationalization of the study variables.

2.2 Theoretical Review

According to Leedy and Ormrod (2005), a theory is an organised body of ideas and values which aim to support a specific occurrence. Anfara (2006) defines a theoretical framework similar to empirical or quasi-empirical of physical processes and social which exist at various levels applied to the understanding of the phenomena.

2.2.1 Theory of Waste Management

The waste management theory (WMT) by Pongrácz (2002) is centred on the expectation that garbage removal the executives is to prevent squander from making dangers human wellbeing and the environmental degradation of the urban area. The waste management theory stipulates the conservation of resources, averting waste creation and encompasses the aim of transforming waste into non-waste (Pongrácz, Phillips, & Keiski, 2004). The WMT, thus, provides a response to conceptual uncertainty by explaining waste, theories and provides guidelines for identifying the waste disposal management approaches; provides a basis for knowledge on how and when to pick and amalgamate waste management disposal approaches; predicts the effects of the utilization of the waste disposal management options and helps in the legislation (Pohjola & Pongrácz, 2002).

In this regard, the best definition of e-waste becomes essential in constructing a sustainable plan for e-waste disposal management. However, there may be a conflict with the objectives of waste counteraction when this definition is utilized in light of the fact that the presence of something cannot be kept from emerging (Pohjola & Pongrácz, 2002). At the point when discarded material is allocated the name of 'squander', it is treated in that capacity; regardless of the need for waste prevention. The innate philosophical ramifications of such definitions is, however, unable to facilitate a sustainable e-waste disposal management system (Pongrácz, 2002).

In this manner, there is a need to utilize another definition for waste and garbage removal the executives which can explain why waste is made and which can offer a veritable answer for

the issue. While waste disposal management emphasis on the use of the 3-Rs (Reduce, Reuse and Recycle) principle and aims at extracting and maximizing benefits from commodities and reducing the quantity of waste generated, it is however, not always implemented (Pongrácz, 2002).

The practical values of Waste Management Theory are furnishing responses to theoretical inquiries by clarifying waste and ideas, giving a manual for picking waste administration alternatives, giving an establishment to how and when to choose and incorporate waste administration choices and anticipating the results of the utilization of waste administration activities. A dive into the values of the waste management theory show its influence in enabling companies to attain their waste management goals; thereby reducing environmental damage and conserving resources through reuse of waste where possible. The theory's main principles include provision of waste management options, provision of timeline to effectively adopt waste management practices, promotion of recycling, ensuring environmental protection, and predicting outcomes of waste management policies. The theory was critical in this study in enabling the examination of drivers of effective e-waste management policies among the waste management firms operating within Nairobi City County. The theory helped in identifying the key constructs to a viable e-waste management executives' framework inside the firms.

2.2.2 Resource-Based View Theory

According to Barney (1991), Resource-Based view envisages factors that sustain competitive advantage and generate superior performance which nature persists overtime. The theory consolidates the inward centre capabilities and outside industry structure viewpoints on the methodology of competitive advantage (Barney & Clark, 2007). The theory supports strategic management practices because it assumes that a firm's system of production and its efficiency play a critical role in competition as compared to its products in the market place (Abok, Gakure, Waititu, & Ragui, 2013).

According to Waiganjo, Mukulu and Kahiri (2013), resource-based approach improves resource capability and helps a company to accomplish a key fit among assets and open doors to get included worth to its performance by effective utilization of resources. Barney and Clark (2007) argued that how the association sees the condition of its inward and outside assets and directions the organization of these assets significantly influences vital dynamic and satisfaction of key objectives. The hypothesis attests that it is favourable for a firm to seek after a system that isn't presently being executed by any contending firm. At the point when different firms can't copy a specific methodology, at that point the central firm has an economical upper

hand, according to RBV Theorists (Johnson, Scholes, & Whittington, 2005). Penrose (1959) noted that the development of a firm thinks about all assets and particularly productive and administrative globally. Therefore, resource-based theory influences managers to new business models. So as to make esteem, firms must secure, amass, join and adventure assets.

Vanessa and Xavier (2013) contend that associations which control uncommon yet significant assets that are incompletely imitable and not substitutable have a maintainable upper hand. Therefore, the resource-based theory has been embraced in this examination to frame the frame of reference when analysing how waste management firms strategically develop and exploit one-of-a-kind assets and capacities and constantly keeping up and reinforcing those assets to help achieve the desired outcome. The resources that an institution has control over are key to the realization of organizational goals. This study explores strategic factors that determine e-waste management in terms of institutional capacity, resource capacity and managerial capacity within the waste management firms. This theory is key to providing a clear image of how e-waste companies can exploit their competencies to ensure superior performance and effective e-waste management.

2.3 Empirical Review

This section was instrumental in the review of previous empirical research papers with a focus on the various knowledge, contextual, and empirical gaps that the current research sought to solve.

2.3.1 Institutional Capacity and Effective E-waste Management

Mallawarachchi and Karunasena (2012) conducted a study on electronic and electrical waste administration in Sri Lanka. The study applied a multiple case study design with cross-case analysis and code-based content analysis being utilized in the study. The study relied on interview schedules in data collection. The findings indicate that lack of awareness, capacity building, lack of organizational commitment and poor monitoring and evaluation led to poor electronic waste management. The study focuses on the national policy within Sri Lanka while the current study examines strategic factors affecting waste management in individual firms in Nairobi.

Joshi and Ahmed (2016) looked into the status and difficulties of metropolitan solid waste administration in India. The investigation concentrated on how solid waste generation affects the urban environment within India towns. The study adopted a survey research design with both quantitative and qualitative data being utilized in the study. The study indicates that adopting decentralized waste processing units and having an elaborate recycling system was key to improving solid waste management. The study further indicates that enhancing the

capacity of municipal workers in terms of availability of infrastructure and adequate resources are key to improving waste management. However, the study focuses an assessment of solid waste management companies within Indian municipal firms, while the current study examines e-waste management within individual firms in Nairobi City.

Mejabi (2014) studied institutional e-squander the board through an examination of practices at two tertiary organizations in Nigeria. The study adopted a quantitative research design with a structured research questionnaire being utilized in the data collection. The study applied descriptive statistics, chi-square tests and regression analysis. The study indicates that e-waste management has been less than optimal due to lack of institutionalism of waste disposal approaches. The study further indicates that the institution should focus on adopting green disposal which will enable reusability and recycling options. The study focuses on academic institutions, while the current study sought to examine how strategic factors influence e-waste management in Nairobi County.

Kitila and Woldemikael (2019) conducted a study on waste electrical and electronic hardware the board in the instructive organizations and government segment workplaces of Addis Ababa, Ethiopia. The study sampled 72 respondents from various government service departments and utilized both primary and secondary research data. The study indicates that the increase in an electronic waste generation was predicted by increased obsolescence rate and breakage of equipment. The study notes that reusing, refurbishing and recycling were key to electronic waste management. The study further indicates that the shortage of storage facilities and limited recycling and refurbishing centres was a key challenge to e-waste management. The study focuses on government agencies in Ethiopia, while the current study examined e-waste management within waste management firms in Nairobi.

Kimeli (2014) studied the factors affecting E-Waste administration in Kenya with a focus on mobile phones disposal in Nairobi County. The study applied a cross-sectional research design and sampled manufacturer service centres registered in the County. The study relied on both primary and secondary research data. The results indicate that there was a limited scope of the county government in the collection of e-waste and recycling solutions which led to poor e-waste management. The study also indicates that the organization in charge of management lacked safe waste management and poor disposal techniques. The study focuses on manufacturer role in e-waste management while the current study examines the registered e-waste management firms.

2.3.2 Managerial Capacity and Effective E-waste Management

Davis and Garb (2015) conducted a case study on the rationale and principles for partnering with the informal e-waste industry. The study focused on firms in Israeli and Palestine with a review of the approaches adopted on e-waste practices. The study indicates that lack of managerial collaboration led to disconnection and interaction in waste management. The study further indicates that the lack of synergistic strengths limited the scope of e-waste management. The study indicates that e-waste can be improved through synergistic solutions that can improve livelihoods, wellbeing and ecological effects of e-waste management. The study focused on firms in Israeli while the current study examines e-waste management in Kenya.

Ganguly (2016) in a study, examined E-waste management in India. The study adopted a case study research design with an assessment of the e-waste industry in India being conducted using an analytical review of interviews and public reports. The study indicates that for proper e-waste management, there is a need for firms to adopt better disposal practices, conduct stakeholder consultation and design e-waste guidelines. The study also notes that adopting new innovative practices such as green information technology concepts will help reduce waste and management costs. The study did not examine how specific strategic factors impact e-waste management.

Parvathamma (2014) conducted an investigative examination on issues and arrangements of strong waste administration in India. The study adopted a survey research design with both descriptive and inferential statistics being utilized in the research. The results of the study indicate that the decision-making process within the firms was key to effective waste management and disposal. The study further notes that firms need to implement a holistic approach towards the reuse of waste to produce energy and recycling of the waste. The study, however, focuses on general waste management while the current is centered on e-waste management drivers among Kenyan firms.

Mahamba (2015) research focussed on characterisation and the board of non-formal strong waste administration removal destinations in Zimbabwe. The study adopted a non-experimental descriptive research design with observations, interviews and official records being utilized in the data collection. The study applied both descriptive and inferential techniques. The results of the study indicate that gross incompetence in the management of waste, corruption and political interference hampered solid waste management. The study indicates that increased funding, stakeholder involvement, transparency and efficiency within the municipalities are paramount to effective waste management. The study focuses on

municipality governments, while the current study examines the management of e-waste by Kenyan firms.

Makori, Nzulwa and Kwenia (2018) studied the challenges confronting the usage of medicinal services squander the board ventures in Kenya. The study employed a descriptive research design with purposive sampling being utilized in selecting public health respondents. The study utilized both descriptive and inferential statistics in the analysis. The study indicates that quality management, monitoring and evaluation and availability of technology had a significant effect on e-waste project management. The study indicates that having technical staff that can handle waste management is key to efficiency in the projects. The research focuses on health waste management while the current focusses on e-waste management in Nairobi County.

2.3.3 Resource Capacity and Effective E-waste Management

Bob, Padayachee, Gordon and Moutlana (2017) focused on upgrading advancement and mechanical capacities in the administration of E-squander in the South African government sector. The study utilized a survey-based case study design with key informant interview guides being utilized in the study. The findings of the study indicate that current practices of e-waste management have been unsustainable and undesirable due to the lack of adequate financing and government support. The study further indicates there is a lack of clear responsibility, policies, procedures and control over e-waste management. The study further indicates that improving the technological infrastructure can be instrumental in the management of e-waste. The study only focuses on the public sector, while the current study examined the effective management of e-waste in Nairobi County.

Omokaro (2016) conducted a study on building abilities among e-scrappers in casual electronic waste administration among Nigerian e-scrappers. The study conducted a survey research design with video-based interviews being conducted among 29 respondents. The analysis of the data indicates that financial security and societal recognition predicted informal e-waste management. The study indicates that developing capabilities based on market demands and enhancing extraction technologies is key to electronic waste management. The study focused on informal e-waste management and collected data using interviews while the current study examines registered e-waste management firms in Nairobi and collected data using questionnaires.

Mmereki, Li and Li'ao (2015) the study focussed on challenges and prospects on waste electrical and electronic equipment management in Botswana. The study utilized a qualitative approach in examining the best strategies for e-waste management. The findings indicate that absence of financing, constrained framework, access to innovations and subsidies as well as

the absence of technical and logistical integration were key challenges to e-waste management. The study indicates that establishing pre and post-processing facilities will lead to better e-waste management. The study fails to take into consideration how managerial capacities and institutional capacity can influence e-waste management which is the focus of this study.

Koka (2017) conducted an evaluation of elements prompting helpless gadgets squander the executives in Arusha City, Tanzania. The study employed a survey research design and sampled 120 respondents from government and private institutions. The collected data was analyzed using descriptive and inferential techniques. The findings indicate that helpless requirement strategy and guidelines, absence of sufficient innovations, insufficient human and money related assets, just as absence of mindfulness on appropriate administration, affected electronic waste management. The study indicates that proper budgeting and better financial resources mobilization can improve waste management. The research was carried out in Tanzania while the present research concentrates on e-waste management in Nairobi County which has a higher technological penetration in the region.

Mwathi (2014) carried out a research on issues affecting effective management of electronic waste in Nairobi Central Business District. The study utilized a descriptive survey design with the Cyber Cafes in Nairobi, forming the population of the study. The study relied on both content analysis and quantitative analysis. The results of the study indicate that inadequate financial resources limited the management of electronic waste. The study further notes that technology and technical skills of dealing with e-waste were key to improving the effectiveness of the process. The study indicates that improving the available infrastructure on waste collection and waste management can lead to an effective management process. The study focuses on Cyber Cafes, while the present examination inspects e-waste management firms in Nairobi.

2.4 Summary of Literature and Research Gaps

The review of the empirical literature has identified some key research gaps that this study focussed on solving. Joshi and Ahmed (2016) investigated the status and challenges of municipal solid waste management in India. The study did not focus on e-waste management within Kenyan firms. Kitila and Woldemikael (2019) carried out a study investigating e-waste management in Ethiopia. The study focuses only on government firms, while the current study will focus on private and public firms in Nairobi. Mahambe (2015) looked into the characterisation and management of non-formal solid waste management disposal sites in Zimbabwe. The study's focus on municipal institutions makes its findings irreplacable in the current study. Makori, Nzulwa and Kwena (2018) challenges facing the implementation of

healthcare waste management projects in Kenya. The study was based on health waste management practices and not on e-waste practices. Mwathi (2014) investigated issues affecting effective management of electronic waste in Nairobi Central Business District. The study looked into e-waste management within cyber-cafes and not on waste companies.

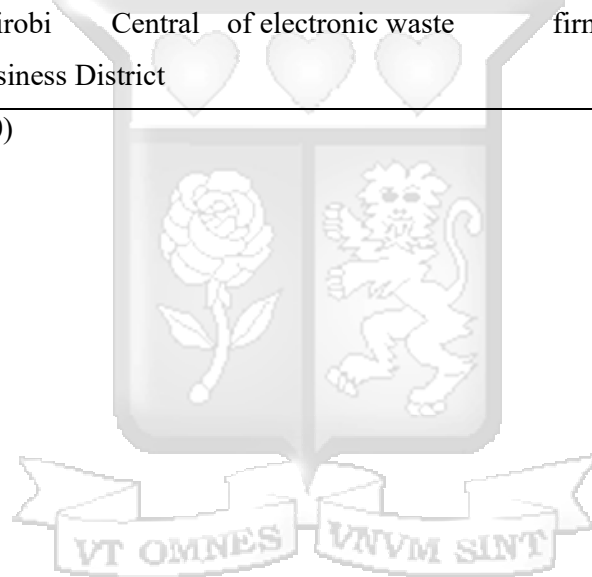
A summary of the research gaps is presented in Table 2.1 below:

Table 2.1 Summary of Research Gaps

Author	Title	Findings	Research Gap and Focus of this study
Joshi and Ahmed (2016)	Status and challenges of municipal solid waste management in India	Enhancing availability of infrastructure and adequate resources are key to improving waste management	The study focuses only on solid waste management within municipal firms while the current study examines e-waste management within individual firms in Nairobi City
Kitila and Woldemikael (2019)	Waste electrical and electronic equipment management in Ethiopia	The study notes that reusing, refurbishing and recycling were key to electronic waste management	The study focuses on government agencies in Ethiopia while the current study examined e-waste management within waste management firms in Nairobi
Mahamba (2015)	Characterisation and management of non-formal solid waste management disposal sites in Zimbabwe	Gross incompetence in the management of waste, corruption and political interference hampered solid waste management	The study focuses on municipality governments while the current study examines the management of e-waste by individual waste management firms in Kenya

Makori, Nzulwa and Kwena (2018)	Challenges facing the implementation of healthcare waste management projects in Kenya	The study indicates that having technical staff that can handle waste management is key to efficiency in the projects	The research focuses on healthcare waste management while the current study focuses on effective e-waste management in Nairobi County
Mwathi (2014)	Issues affecting effective management of electronic waste in Nairobi Central Business District	The results of the study indicate that inadequate financial resources limited the management of electronic waste	The research focuses on Cyber Cafes while the current study examines e-waste management firms in Nairobi

Source: Author (2020)



2.5 Conceptual Framework

A conceptual framework is a depiction or framework that outlines the interaction between the variables under investigation within the research (Creswell & Creswell, 2017). The conceptual framework below presents the interaction between strategic factors and effective e-waste management.

Independent Variables

Dependent Variable

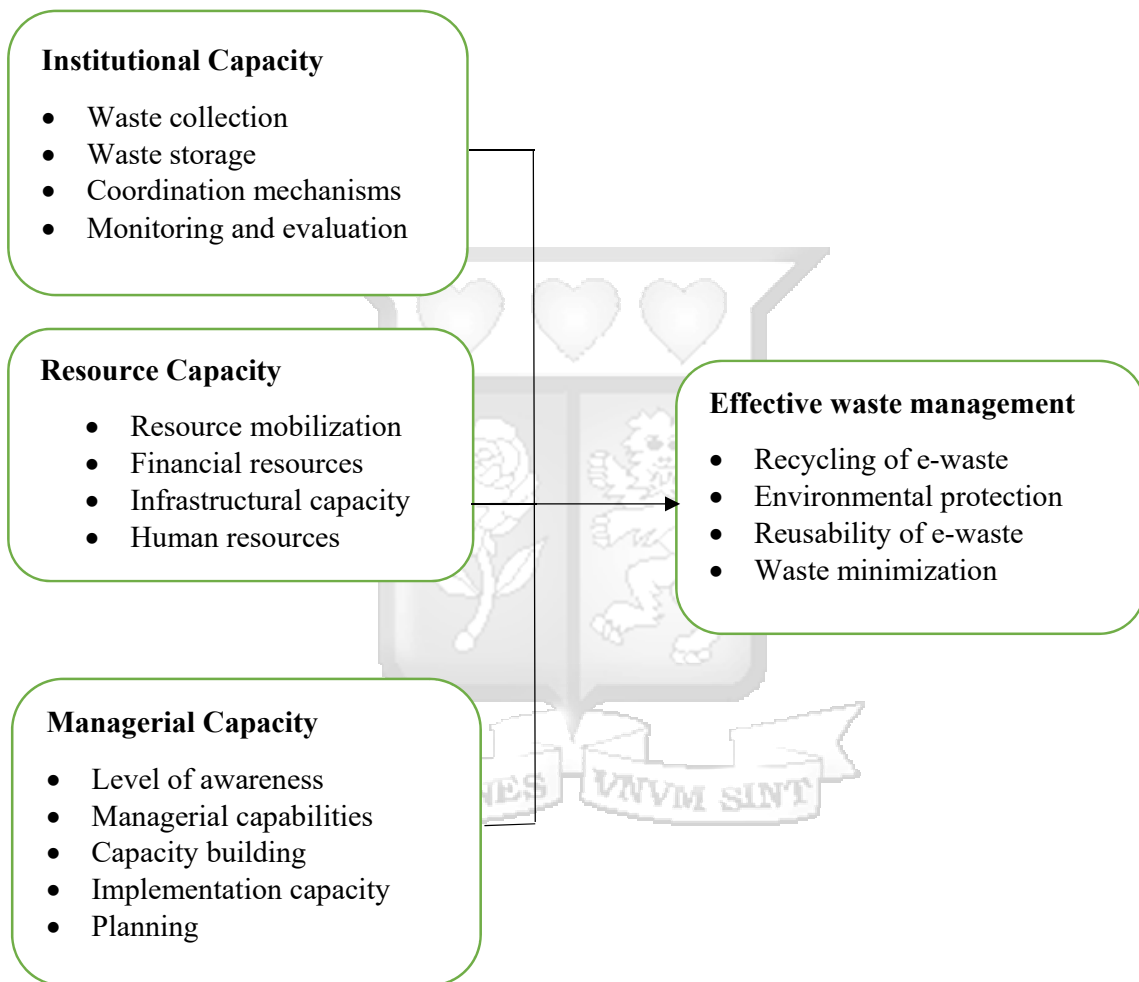


Figure 2.1 Conceptual Framework

Source: Author (2020)

The above conceptual framework presents the conceptualization of the study variables: strategic factors and effective e-waste management. The strategic factors were assessed in terms of institutional capacity, managerial capacity, and resource capacity.

2.6 Operationalization of Variables

The dependent variable for the study was the effective e-waste management while the assessed predictor variables were institutional capacity, resource capacity and managerial capacity. The variables are operationalized as shown below:

Table 2.2 Operationalization of Variables

Variable	Constructs	Research Questions	Author
Institutional Capacity	- Waste collection - Waste storage - Coordination mechanisms - Monitoring and evaluation	What is the effect of institutional capacity on effective management of e-waste in Nairobi County	Joshi and Ahmed (2016)
Resource Capacity	- Resource mobilization - Financial resources - Infrastructural capacity - Human resources	What is the effect of resource capacity on effective management of e-waste in Nairobi County	Kitila and Woldemikael (2019)
Managerial Capacity	- Level of awareness - Managerial capabilities - Capacity building - Implementation capacity - Planning	What is the effect of managerial capacity on effective management of e-waste in Nairobi County	Mahamba (2015)
Effective waste management	- Recycling of e-waste - Environmental protection - Reusability of e-waste		Makori, Nzulwa and Kwena (2018)

- Waste minimization

Source: Author (2020)

2.7 Chapter Summary

This chapter consists of a review of both theoretical and empirical literatures. The factors affecting effective waste management are discussed in this chapter. Based on work of literature reviewed the conceptual framework and operationalization of the variables is also presented.



CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter concentrates on the blueprint that guided the research process. The chapter specifically outlined the research design that was utilized in the study, the population of the research, the sampling techniques and sample size, the data collection instrument and procedures. The chapter also presented the data analysis and presentation, the test for linear regression assumptions and the ethical considerations observed in the study.

3.2 Philosophical review

This research adopted the positivism theory, which proclaims that “factual” knowledge can only trustworthy when obtained through physical observation and incorporating measurement. Studies that utilized this theory limit the researcher to getting and interpretation of data through an objective approach, with the findings being observable and quantifiable. **Invalid source specified..** The philosophy helped in establishing the association between the study variables using quantifiable statistics.

3.3 Research Design

Kothari (2014) describes research plan as the theoretical structure inside which examination is directed. Waiganjo, Mukulu and Kahiri (2013) explain that the purpose of the research design is to provide a road map for data collection and analysis as well as acquire answers to different questions. This study adopted a descriptive research design. Burns, Grove and Gary (2015) explain that descriptive research design is concerned with identifying and describing the relationship of causation as they are. The current study being in the field of social science fits well in the research design. According to Creswell and Creswell (2017), cross-sectional studies are proper where in general destinations are to set up whether there is a significant association among variables at some point.

3.4 Target Population

A target population is a group of events, individuals or items of interest who share at least one attributes practically speaking that are important to the specialist (Kothari, 2014). The target population for this study comprised of all the solid waste management firms in Nairobi City County. There are currently 150-registered waste management firms within the County (Nairobi City County Government, 2018). This study considered the managers of the firms as they are key in the institution of effective e-waste management, which is the focus of the current study.

3.5 Sampling Technique and Sample Size

A sampling frame refers to a list of sampling units from where the population of the study is derived from (Creswell & Creswell, 2017). The sampling frame for the study consisted of the 150 solid waste management firms within Nairobi City County. Sampling is the process of choosing the smallest number of units of the population (Lavrakas, 2008). Creswell and Plano (2007) argue that sampling is that part of the statistical practice concerned with individual selection or observation. Kothari (2014) defines a sample as a subset of a large population and argues that a good sample should have the characteristic of the population. The study adopted a census survey of the 150 managers drawn from the 150 solid waste management firms within the county. The study considered managers as respondents in the study. This is because they are in the right position to give correct and all the information required in the study.

3.6 Data Collection Instrument

Kothari (2014) contends that that research topic, issue questions, subjects, goals, research structures, information to be gathered and anticipated outcomes decide the selection of instruments and apparatuses to be utilized in an examination. According to Waiganjo, Mukulu and Kahiri (2013), there are a few information assortments instruments that a specialist can take part in during the time spent gathering information for an investigation. Amongst them include questionnaires that can be structured and unstructured. Structured questionnaires were used to collect primary data from the sampled respondents to capture the various variables of the study. The questionnaire was planned in accordance with the variables of the research incorporating all the operationalized research constructs. The researcher adopted a questionnaire tool with a five-level Likert scale from; neither agree nor disagree, strongly disagree, disagree, agree and strongly agree. Questionnaires were considered because they are an effective method of collecting data on samples and can easily be analyzed (Creswell & Creswell, 2017).

3.7 Data Collection Procedure

Data collection is characterized as a method by which data is gotten from the chosen subjects of examination (Mugenda & Mugenda, 2008). Therefore, the procedure of gathering information is essential in any investigation since data gathered can precisely be dispersed and furthermore aid the progression of significant stages. The study sought clearance from the Strathmore University Institutional Ethics Review Committee (SU-IERC) before embarking on the data collection. The study also ensured that the research permit is sought from the National Commission for Science Technology and Innovation. The study relied on a self-administered technique in the data collection process. This ensured that there is a personal

appeal in the data collection process. The data was collected via a drop and pick method to allow for an adequate response time. This was reinforced by use of Google forms where physical questionnaires utilization was not possible. This was supported by the utilization of research assistants who were debriefed on the study variables before being considered in the research process.

3.8 Research Quality

A pilot test is a trial test designed to check logistics (reliability and validity of particular results) and collect information prior to conducting a large study aimed at improving the latter's quality and efficiency. The study conducted a pilot test, with 10% of the sample respondents who were randomly selected. They were not involved in the findings of the final study. Pre-testing of research instruments is a pre-imperative advance to be followed during instrument structure as it helps in the distinguishing proof of expected issues with the instrument uncovering what works and what does not (Kothari, 2014).

3.8.1 Reliability Tests of Research Instrument

To measure the reliability of the questionnaire used in the study, the Cronbach alpha statistic was calculated for Likert scale questions. Cronbach's alpha statistic is between 0 and 1. The closer the Cronbach's alpha is to 1, the better questionnaire reliability. This is because a high alpha is caused by a high variance, which means there is a wider variance of the responses and makes it easier to differentiate amongst responses (Burns, Grove, & Gary, 2015). According to Field (2009), a questionnaire with a Cronbach's alpha of 0.7 is taken as reliable (Saunders, Lewis, & Thornhill, 2012).

The questionnaire was adopted if it achieves the 0.7 Cronbach's alpha. The study conducted a pretest with 11 participants and the results indicated that; institution capacity ($\alpha = .715$), resource capacity ($\alpha = .820$), management capacity ($\alpha = .705$) and e-waste management ($\alpha = .885$). These results indicated that the research instrument had met the criterion for internal consistency; hence it was adopted for the main research.

3.8.2 Validity Tests of Research Instrument

Saunders, Lewis and Thornhill (2012) indicate that validity is the ability of the questionnaire to produce accurate results after measuring what it was supposed to measure. Validity exists if the data measures what they are supposed to measure. A thorough review of the literature was done to ensure content validity. Content validity examines whether the items in the questionnaire signify the construct, which is being measured in addition to the scoring, formatting, and wording of the instrument (Sekaran, 2010). Whereas to ensure face validity,

the questionnaires were given to E-waste business research experts to review and critique. Their suggestions and inputs were included.

3.9 Data Analysis and Presentation

Data Analysis is defined as a mechanism for reducing and organizing data to provide findings that require interpretation (Burns, Grove, & Gary, 2015). The data analysis process involved examining the data after collection to ensure its completeness, consistency and usability. The collected research data was analyzed using a mix of descriptive and inferential statistics using SPSS 23. Descriptive statistics in the form of means and standard deviations were computed on the variables of the research. The study conducted an inferential analysis to determine the association between the variables. The study utilized correlation analysis to determine the association of variables and regression analysis to examine the magnitude of the relationship. The study adopted the below regression model:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \epsilon$$

Where: Y = Dependent Variable (effective e-waste management in Nairobi City County)

Independent variables, which include:

X₁ is institutional capacity

X₂ is the managerial capacity

X₃ is resource capacity

α = the constant

β_{1-3} = the regression coefficient or change included in Y by each X

ϵ = error term

3.10 Test of Linear Regression Assumptions

The study adopted various diagnostic tests to examine the linear regression assumptions prior to undertaking regression analysis.

3.10.1 Autocorrelation Tests

Test for Autocorrelation was carried out to establish how independent variables correlate with each other and the effect of the relationship amongst the variables. Autocorrelation describes the assumption about errors of prediction that are normally independent of each other (Sekaran & Bougie, 2016). Durbin- Watson statistic was used to measure the autocorrelation of the variables. Gujarat (2009) attested that regression analysis requires the presence of little or no autocorrelation in the data, which is determined by D-W statistics of less than 2.5

3.10.2 Multicollinearity Tests

Multicollinearity was determined by the level of Variance Inflating Factor (VIF) and Tolerance. Preferably, the level of VIF should be less than 10 while the level of tolerance should

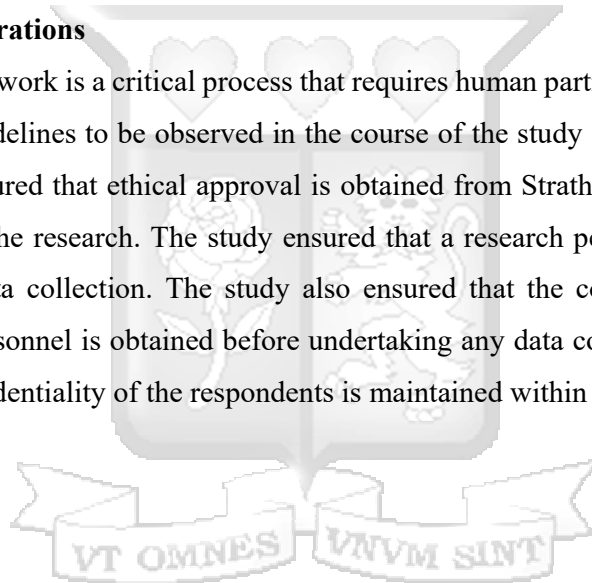
be greater than 0.1, in order to show low levels of multicollinearity (Burns, Grove, & Gary, 2015). Kothari (2014) also advised that the appearance of multicollinearity threatens the internal validity of multiple regression analysis and increases the likelihood of errors in hypothesis testing.

3.10.3 Normality Tests

Normality tests empower the scientist to decide the displaying example of an ordinary circulation and to figure the likelihood of an arbitrary variable overseeing the informational index to be normally distributed (Kothari, 2014). A normality test was completed to decide the state of test dispersion and whether it was like that of a normal curve. Comparable bends show that the information acquired is gotten from a normally distributed population. The research used a normality curve to present the normality tests.

3.11 Ethical Considerations

Undertaking research work is a critical process that requires human participants; hence there is a need for ethical guidelines to be observed in the course of the study (Creswell & Creswell, 2017). The study ensured that ethical approval is obtained from Strathmore Business School prior to undertaking the research. The study ensured that a research permit is obtained from NACOSTI before data collection. The study also ensured that the consent of the E-waste management firm personnel is obtained before undertaking any data collection. The research ensured that the confidentiality of the respondents is maintained within the research process.



CHAPTER FOUR

PRESENTATION OF RESEARCH FINDINGS

4.1 Introduction

This chapter presented the various results of the analysis of the study data. The study relied on frequencies, percentages, means and standard deviation in presenting the summary of responses obtained. The study further adopted a Spearman correlation to determine the type of association between variables and regression analysis to examine the magnitude of research variables.

4.2 General Information

The research analyzed the responses obtained from the research variables using descriptive statistics. The results were presented using tables and charts.

4.2.1 Response Rate

The research pursued to collect research data from 150 waste management firms in Nairobi City County. Creswell and Creswell (2017) indicate that general surveys should have a response rate of upwards of 30% of the sample population. This study was able to record a response rate of 64% (N=96) out of the intended 150 questionnaires. The response rate for the study was hampered by the COVID-19 pandemic, which has resulted in increased closure of businesses within Nairobi County and the country at large. Hence the achieved response rate was deemed sufficient for the quantitative analysis.

4.2.2 Profile of the Firms

The researcher deemed this adequate for statistical analysis. The findings show that, on average, the waste firms had been in operation for 9.45 years in business. The research shows that 84% (N=81) of the participants were male workers, while only 16% (N=15) of the respondents were female workers. The study results indicate that there were a total of 2186 employees within the waste firms in Nairobi City County.

4.2.3 Waste Characteristics

The research examined the various features of the waste collected by the firms, such as the area of collection, type of waste collected and location of waste disposal. The results are shown in the table below.

Table 4.1 Characteristics of Waste Collected

Characteristics			Grouping	Frequency	Percentage
Area of waste collection			Nairobi West	61	63.5%
			Nairobi South	53	55.2%
			Nairobi North	84	87.5%
Type of Waste			E-waste	66	68.7%
			Biodegradable waste	71	73.9%
			Medical waste	16	16.7%
			Food waste	96	100%
			Hazardous waste	33	34.4%
			Other solid waste	73	76.0%
Area of waste disposal			Nairobi West	41	42.7%
			Nairobi South	37	38.5%
			Nairobi North	72	75%
			Kiambu County	41	42.7%
			Machakos County	59	61.5%

Source: Primary data (2020)

Findings shown above indicate that the majority of the firm's 87.5% (N=84) collected their waste from Nairobi North and 55.2% (N=53) of the firms collected waste from Nairobi South. The results further indicate that all the firms were collecting food waste, 76% (N=73) of the firms collected solid waste, 73.9% (N=71) collected biodegradable waste. In contrast, only 16.7% (N=16) of the firm handled medical waste, and 34.4% (N=33) collected hazardous waste. The research shows that 75% (N=72) of the firms disposed of the collected waste in sites within Nairobi North, 61.5% (N=59) disposed of waste in Machakos County, while only 38.5% (N=37) disposed of waste in Nairobi South.

4.3 Descriptive Analysis

The study's aim was to examine how strategic factors, institutional capacity, resource capacity, managerial capacity and effective waste management in Nairobi County. The study employed means, sum and variance in the presentation of the findings on each of the study variables.

4.3.1 Institutional Capacity

The first variable of the study examined the institutional capacity of the waste management firms by focusing on; waste collection, waste storage, coordination mechanisms and their monitoring and evaluation capacity.

Table 4.2 Descriptive Results for Institutional Capacity

Statement	NAA	SE	MDE	LE	Mean	Var
There has been an improvement in the capacity of the firm to manage the collected waste	6.3%	32.3%	51%	10.4%	3.073	1.36
The firm has improved its mechanism for waste segregation within the county	12.5%	29.2%	34.4%	24%	2.698	.95
The firm has expanded its waste storage capacity and handling	6.3%	29.2%	43.8%	20.8%	2.792	.71
There is improved coordination of activities within the firm and other stakeholders in waste management	7.3%	25.0%	45.8%	21.9%	2.823	.74
There is improved monitoring of the waste management activities within the firm	3.1%	25%	43.8%	28.1%	2.969	.66
The firm relies on its evaluation feedback to actively improve its waste management capacity	9.4%	38.5%	30.2%	1.9%	2.646	.86

Source: Primary data (2020)

The study results show 51% of the respondents moderately agreed that the firm had seen an improvement in the capacity of the firm to manage the collected waste. In contrast, only 6.3% indicated the firm had not improved its capacity at all. In regard to the firm has improved monitoring of the waste management activities there 43.8% of the respondents agreed to a moderate extent, while 28.1% indicated a large extent. The results show that 38.5% of the participants noted that, to a small extent, the firm relies on its evaluation feedback to actively improve its waste management capacity. The study further shows that, to a moderate extent,

34.4% of the participants indicated that the firm had improved its mechanism for waste segregation within the county.

4.3.2 Resource Capacity

The second variable of the research studied the resource capacity of the waste management firms through a review of the resource mobilization, financial resources, infrastructural capacity and human resources.

Table 4.3 Descriptive Results for Resource Capacity

Statement	NAA	SE	MDE	LE	Mean	Var
The firm has been able to mobilize adequate resources	3.1%	37.5%	41.7%	17.7%	2.927	4.47
There is an increase in financial resources allocated to the waste management activities	7.3%	37.5%	36.5%	18.8%	2.667	.75
The firm has increased its investment in infrastructure for waste handling	7.3%	37.5%	31.3%	24%	2.719	.84
The firm has skilled staff necessary to support the waste handling activities	4.2%	35.4%	37.5%	22.9%	2.792	.71

Source: Primary data (2020)

The research results show that 41.7% of the respondents, to a moderate extent, indicate that waste firms have been able to mobilize adequate resources while 37.5% indicated they are only able to a small extent. Concerning the firm has the necessary skilled staff to support the waste handling activities, 37.5% of the participants agreed to a moderate extent, 35.4% to a small extent, while only 4.2% indicated not at all. The findings also show 37.5% of the respondents agreed to a moderate extent that the firm has seen an increase in financial resources allocated to the waste management activities. On the contrary, 18.8% indicated that the firm had increased financial resources to a large extent.

4.3.3 Management Capacity

The third variable in the study focused on the management capacity of the waste management firms with the level of awareness, capacity building, planning, implementation capacity and managerial capabilities used in measuring the variable.

Table 4.4 Descriptive Results for Managerial Capacity

Statement	NAA	SE	MDE	LE	Mean	Var
There is improved managerial awareness of the various solid waste management techniques	6.3%	30.2%	46.9%	16.7%	2.740	.66
There is improved managerial capabilities among solid waste management firms	5.2%	40.6%	35.4%	18.8%	2.677	.71
The firm normally undertakes capacity building to train staff on solid waste management firms	9.4%	31.3%	41.7%	17.7%	2.958	9.1
There is improved implementation of solid waste management services within the firm	7.3%	37.5%	41.7%	13.5%	2.615	.660
There is an enhancement in the planning capacity of the firm towards solid waste management	3.1%	32.3%	47.9%	16.7%	2.781	.573

Source: Primary data (2020)

With regard to the firm normally undertakes capacity building to train staff on solid waste management firms most of the respondents, 41.7% agreed to a moderate extent, 31.3% indicated to a small extent. Concerning there is an enhancement in the planning capacity of the firm towards solid waste management, most of the respondents, 47.9%, indicated to a moderate extent while 3.1% indicated to no extent at all. Regarding there is improved managerial capabilities among solid waste management firms, most of the participants, 40.6%, agreed to a small extent, 35.4% to a moderate extent and 5.2% to no extent at all. The findings further indicate there is improved managerial awareness on the various solid waste management techniques as shown by moderate extent agreement among 46.9% and 16.7% large extent agreement.

4.3.4 Effective Management of E-waste

The dependent variable of the research was the effective management of e-waste management, which was operationalized using recycling of waste, environment protection, reusability and waste minimization.

Table 4.5 Descriptive Results for Management of E-waste

Statement	NAA	SE	MDE	LE	Mean	Var
The firm regularly undertakes recycling of e-waste management to reduce environment damage	14.6%	24%	42.7%	18.8%	2.802	.65
The firm adheres to environmental protection practices in handling e-waste	5.2%	31.3%	40.6%	22.9%	2.885	.71
The firm encourages reusability in a bid to promote better e-waste management	5.2%	39.6%	32.3%	22.9%	2.740	.78
The firm has been able to play an active role in reducing the quantity of e-waste within the city	5.2%	22.9%	40.6%	31.3%	2.854	.65

Source: Primary data (2020)

The research indicates that to a moderate extent, 40.6% of the respondents agreed that the firm has been able to play an active role in reducing the quantity of e-waste within the while only 5.2% indicated it did not at all. The study shows agreement among 40.6% of the respondents that, to a moderate extent, the firm adheres to environmental protection practices in handling e-waste. Concerning the firm encourages reusability in a bid to promote better e-waste management, there was an agreement to a small extent among 39.6% of respondents and to a large extent among 22.9% of participants. The research further indicates that, to a moderate extent, 42.7% of the respondents indicated the firm regularly undertakes recycling of e-waste management to reduce environmental damage.

4.4 Correlation Analysis

The study applied a correlation analysis to determine the type of effect between the study variables. The results of the analysis are presented in Table 4.7 below.

Table 4.6 Correlation Results

		Institutional Capacity	Resource Capacity	Managerial Capacity	E-waste Management
Institutional Capacity	Pearson Correlation	1			
	Sig. (1-tailed)				
	N	96			
Resource Capacity	Pearson Correlation	.440**	1		
	Sig. (1-tailed)	.000			
	N	96	96		
Managerial Capacity	Pearson Correlation	.469**	.307**	1	
	Sig. (1-tailed)	.000	.001		
	N	96	96	96	
E-waste Management	Pearson Correlation	.492**	.518**	.225*	1
	Sig. (1-tailed)	.000	.000	.014	
	N	96	96	96	96

** . Correlation is significant at the 0.01 level (1-tailed).

* . Correlation is significant at the 0.05 level (1-tailed).

Source: Primary data (2020)

The study sought to establish the effect of institutional capacity on effective e-waste management, and the results indicate there is a moderate positive and significant association between institutional capacity and effective e-waste management ($P = .492$, $\text{Sig} = .000 < .05$). Joshi and Ahmed (2016) contend that improving organizational capacity is instrumental to better waste management in individual firms. The research further analyzed the effect of resource capacity on effective e-waste management, and findings show that there was a moderate positive and significant effect of resource capacity on effective e-waste management ($P = .518$, $\text{Sig} = .000 < .05$). Mwathi (2014) also found out that resource availability was key to effective waste management within firms in Nairobi Town. The study further examined the effect of management capacity on effective e-waste management. The results indicate that there is a weak positive and significant effect of management capacity on effective e-waste management ($P = .225$, $\text{Sig} = .014 < .05$). Makori, Nzulwa and Kwena (2018) in their study also showed that improving quality management practices were key to enhanced handling of waste in Kenya.

4.5 Tests for Linear Regression Assumptions

The study undertook a diagnostics examination prior to conducting the regression analysis. The study adopted autocorrelation, multicollinearity and normality tests.

4.5.1 Autocorrelation Tests

The study undertook autocorrelation tests to determine how independent variables correlate with each other and the effect of the relationship amongst the variables.

Table 4.7 Autocorrelation Results

Model	Durbin-Watson
1	2.187

a. Predictors: (Constant), Managerial Capacity, Resource Capacity, Institutional Capacity

b. Dependent Variable: Effective Management of E-waste

Source: Primary data (2020)

Gujarat (2009) indicates that Durbin-Watson statistics of less than 2.5 indicates there is no autocorrelation between the study variables. The findings of the study indicate that in both sets of regression models, the D-W statistic was 2.187 and 1.981, which is less than 2.5 showing there is no autocorrelation among the variables of the research.

4.5.2 Multicollinearity Tests

The study conducted collinearity tests to establish the level of interdependency between the variables of the study. The study relied on the VIF value in interpreting the collinearity statistics.

Table 4.8 Multicollinearity Results

Model	Collinearity Statistics	
	Tolerance	VIF
(Constant)		
Institutional Capacity	.683	1.463
Resource Capacity	.794	1.260
Managerial Capacity	.767	1.303

a. Dependent Variable: Effective Management of E-waste

Source: Primary data (2020)

Burns, Grove and Gary (2015) indicate that preferably, the level of VIF should be less than 10, while the level of tolerance should be greater than 0.1. The study results show the variables of the study had a variance inflation factor of below ten and tolerance values greater than 0.1. The findings indicate institutional capacity ($VIF = 1.463$, $TV .683 > 0.1$), resource capacity ($VIF = 1.260$, $TV .794 > 0.1$) and managerial capacity ($VIF = 1.303$, $TV .767 > 0.1$)

4.5.3 Normality Tests

The research examined the normality test was carried out to determine if the observations utilized in the study meant the normal distribution assumption. The study applied the P-P plot to examine the normal curve of the research data.

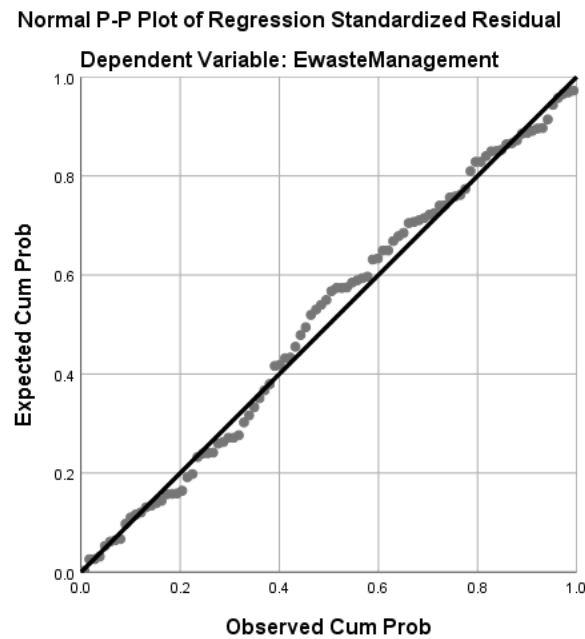


Figure 4.1 Normal P-P Plot

Source: Primary data (2020)

The above figure indicates that the observed values followed the normal curve indicating that the data utilized in the research did not violate the assumptions of normality.

4.6 Regression Analysis

The study adopted simple linear regression to determine the level of interaction between the independent variables and the effective e-waste management within Naiorbi City County.

Table 4.9 Simple Linear Regression Analysis

Variable	Regression Summary	Anova	Regression Coefficient
Institutional capacity	R= .492 R ² = .242	F= 29.958 Sig = .000	B ₁ = .236, t = 5.473, Sig = .000
Resource capacity	R= .518 R ² = .269	F= 34.557 Sig = .000	B ₂ = .467, t = 5.879, Sig = .000
Management Capacity	R= .225 R ² = .050	F= 4.997 Sig = .028	B ₃ = .151, t = 2.235, Sig = .028

a. Dependent Variable: Ewaste Management

Source: Primary data (2020)

The results above show that institutional capacity ($R^2 = .242$) has a positive and significant effect on e-waste management. The findings further show a $B_1 = .236$ indicating change in institutional capacity will lead to a .236 change in effective e-waste management. The findings revealed that resource capacity ($R^2 = .269$) has a positive and significant effect on e-waste management. The findings further show a $B_2 = .467$ indicating change in resource capacity will lead to a .467 change in effective e-waste management. Lastly results indicated that management capacity ($R^2 = .050$) has a positive and significant effect on e-waste management. The findings further show a $B_3 = .151$ indicating change in management capacity will lead to a .151 change in effective e-waste management.

4.7 Regression between Strategic Factors and the Effective Management Of E-Waste

The general objective of the research was to tests the relationship between the strategic factors and the effective management of e-waste. The study adopted an ordinary least square regression analysis. The regression technique was adopted after ensuring that the study variables and observations of the research meet the assumptions of least square regression.

Table 4.10 Regression Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.598 ^a	.358	.337	2.32192	2.187

a. Predictors: (Constant), Managerial Capacity, Resource Capacity, Institutional Capacity

b. Dependent Variable: Effective Management of E-waste

Source: Primary data (2020)

The results of the regression analysis above indicate a coefficient of determination ($R^2 = .358$) which shows that holding other factors constant 35.8% of the variations in management of e-waste are determined by the strategic factors.

Table 4.11 ANOVA Summary

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	275.987	3	91.996	17.064	.000 ^b
	Residual	496.002	92	5.391		
	Total	771.990	95			

a. Dependent Variable: Effective Management of E-waste

b. Predictors: (Constant), Managerial Capacity, Resource Capacity, Institutional Capacity

Source: Primary data (2020)

From the results of the ANOVA results, it is noticeable that the generated significance value is .000, which is less than the critical value 0.05 at a 95% confidence level. This implies that the model is statistically significant. The model also shows a calculated F-value of 17.064, which is higher than the critical value of 2.76, showing that the model is statistically significant in predicting the relationship between strategic factors and effective management of e-waste.

Table 4.12 Regression Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	5.029	1.036		4.857	.000
Institutional Capacity	.168	.048	.351	3.467	.001
Resource Capacity	.344	.085	.382	4.072	.000
Managerial Capacity	-.038	.064	-.057	-.598	.551

Dependent Variable: Effective Management of E-waste

Source: Primary data (2020)

The resultant regression equation was;

$$Y = 5.029 + .168X_1 + .344X_2 + -.038X_3 + 1.036$$

Based on the first objective the findings indicate a $\beta_1 = .168$, Sig .001<.05, which implies that institutional capacity significantly influences effective management of e-waste. The results show that a unit change of institutional capacity will result in a .168 change in the effective management of e-waste. The study results further show $\beta_2 = .344$, Sig .001<.05, which shows that the second objective resource capacity significantly influences effective management of e-waste. The findings indicate that unit change in the level of resource capacity will lead to a .344 change in the effective management of e-waste. The regression coefficients results showed $\beta_3 = -.038$, Sig .551>.05, indicating there is an insignificant negative effect of the third objective managerial capacity on effective management of e-waste.

4.8 Summary

The study adopted quantitative analysis techniques with descriptive, correlation and regression analysis being adopted in the research. The study was able to obtain a response rate of 64%, which was deemed sufficient for the research. The study shows that most of the participants in the study were female employees within the waste management firms. The results show that, on average, the firms have been in operation for at least 9.45 years. The study indicates that 87.5% of the waste was collected from the Nairobi North area. Further findings show that the

common type of waste collected by the firms was food waste, solid waste, biodegradable waste, e-waste and hazardous waste. The study results show that most of the firms disposed of their waste in Machakos County, Nairobi West and Kiambu County. The results of the regression analysis show that 35.8% of the variations in the management of e-waste are determined by strategic factors.



CHAPTER FIVE

DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

The fifth section of the investigation contains the synopsis and conversation of the outcomes. The part further introduced the end and proposals. This was organized in accordance with the exploration objectives.

5.2 Discussion

This section focus on the discussion of the results of the study in line with the objective of the research findings. The study was grounded on the theory of waste management, which explains how firms select and integrate waste management options. The study further relied on the resource-based view theory, which shows that the various unique resources and capacities of the firm are critical to strengthening the firm undertaking of its operations. From the results of the study it was evident that the unique firm capabilities as conceptualized in terms of institutional capacity, resource capacity and managerial capacity have a significant contribution to effective e-waste management. That shows as advocated in the resource based view theory application of unique firm resources can foster the performance of the firm and enhance the competitiveness.

5.2.1 Institutional Capacity

The findings of the study indicated there is a positive and significant influence of institutional capacity on the effective e-waste management in Nairobi County. The participants of the study showed that firms had expanded the waste storage capacity and handling. The results are in line with Joshi and Ahmed (2016), who found out that enhancing the capacity of the firms through investment in infrastructure and adequate resources was critical to better solid waste management. The findings of the study indicate there was an improvement in the coordination of activities and other stakeholders in waste management. Contrary to the above results, Mejabi (2014) showed that lack of proper institutionalism and coordination within firms limited their e-waste management practices. The study results show that waste management firms have been able to increase their capacity to manage their collected waste as well as segregation of the collected waste. In comparison, in a study in Ethiopia, Kitila and Woldemikael (2019) found out that limited capacity for recycling and reusage limited the firm's capacity to manage electronic waste. The research results showed that firms were able to monitor waste management activities and relied on evaluation feedback to improve waste management

capacity. These results are in contrast with earlier assertions by Mallawarachchi and Karunasena (2012), who found that lack of awareness and capacity building led to poor e-waste management within firms.

5.2.2 Resource Capacity

The results showed there is a positive and significant influence of resource capacity on the effective e-waste management in Nairobi County. The research participant indicates agreement that the firm was able to mobilize adequate resources and was able to increase financial resources allocated to waste management activities. In contrast, Bob, Padayachee, Gordon and Moutlana (2017) in their research found out that most firms in South Africa lacked adequate financing, which limited their e-waste management capacity. The research shows that participants agreed that the firm has increased investment in infrastructure for waste handling. The findings were not in line with, Mmereki, Li and Li'ao (2015), who suggested that the absence of financing, limited infrastructure and absence of logistical support affected e-waste management in waste firms. The study findings also indicated that the firm has recruited skilled staff necessary to support waste handling activities. Mwathi (2014) also found out that availability of adequate infrastructure and technical skills among employees were key to effective management of e-waste. In contrast, Koka (2017) found out that in Tanzania, there was poor electronic waste management as a result of lack of adequate technologies, human and financial resources.

5.2.3 Managerial Capacity

The findings of the study indicated there is a positive and insignificant influence of managerial capacity on the effective e-waste management in Nairobi County. The results show an agreement among participants that there is improved awareness management of solid waste management techniques. The study showed agreement there was an improvement in the management capabilities among solid waste management firms. The findings do not augur with Davis and Garb (2015), who showed that lack of synergy, managerial collaboration led to a lack of effective e-waste management. However, Ganguly (2016) suggested that improved managerial practices and innovative capacity led to better e-waste management in Indian firms. The findings indicate agreement that firms normally train their staff on solid waste management and enhanced planning capacity of the firms. The study showed agreement that the firm has improved the implementation of solid waste management services. Parvathamma (2014) showed that the adoption of a holistic approach was critical to better solid waste management.

Makori, Nzulwa and Kweni (2018) suggested that improving managerial capacity was essential for the implementation of better waste management practices.

5.3 Conclusions

The study concludes that strategic factors have a positive and significant effect on effective e-waste management in waste firms in Nairobi County. The study concludes that institutional capacity has a positive and significant effect on effective e-waste management. The study notes that improving storage capacity, monitoring capacity and enhancing coordination activities between firms is key to better waste management. The research concludes that resource capacity has a significant and positive effect on effective management of e-waste. The study found out that enhancing financial resource allocation, investment in infrastructure and having a skilled staff is critical for better waste handling. The study further concluded that managerial capacity has an insignificant effect on the effective management of e-waste. The study holds that managerial awareness, capacity building and the planning capacity in the firm are not adequate to support e-waste management.

5.4 Recommendations

With the ever-increasing usage of electronic devices and changes in consumer preferences, there is an expectation that e-waste is expected to be a continuing challenge for policymakers in the country. The study recommends that the government should create support programs that will offer more incentives to waste management firms that will help in enhancing their resource capacity as well as increase the number of firms involved in waste management. The study further recommends that state authorities and county governments should collaborate with waste firms in designing regulations that will guide the handling of waste management as well as support streamlining the waste management industry. This will help in enhancing professionalism in waste management within the industry.

To the waste management firms, the study results show there are key areas of improvement that can be adopted by the firms. In order to foster their institutional capacity, the research recommends that waste management firms should consider forming alliances with homeowner's associations who can help in expanding the firm's ability to collect more waste as well as segregate e-waste from other domestic waste at the point of collection. Further, the study recommends that waste management firms should foster their coordination with healthcare providers as this will improve their ability to handle biomedical waste, which results showed only a few firms collect and handle.

The research further recommends that waste management institutions should seek alternative channels of financing, which can help in improving their financial capabilities. This will allow the firms to increase investment in infrastructure to collect and handle e-waste at a larger scale. The study further recommends that the management of e-waste firms should foster their understanding of the various e-waste types and the different techniques in the management of e-waste, which will be essential to improving the firms' capacity. The research further recommends that e-waste firm's management should design firm-specific plans to handle e-waste that is aligned to the resource and institutional capacities. This will inherently result in the effective management of e-waste.

5.5 Limitations of the Study

The study was hampered in the data collection since majority of the e-waste management firms have temporary offices which made it difficult to access the managers of the firms. This was solved by seeking prior appointments with managers who run mobile offices within the city. Further, with the onslaught of the pandemic, the study had to rely on electronic data collection in most of the sites which was affected by lack of familiarity with the tools used by some of the respondents. This was addressed by the researcher personally assisting the participants in recording their responses.

5.6 Suggestion for Further Research

The study results showed that most firms within the County are not handling hazardous and medical waste. This study recommends that a specific study should be conducted to examine the factors affecting medical waste management as well as identify the effectiveness of the guidelines in place for medical waste management. Further, there is minimal examination of any/if in existence the efficacy of the regulatory framework guiding e-waste management within the country. The study also noted that most of the firms handling solid waste do not have a segregation site. There is need for further studies to be conducted to investigate the challenges faced by waste management firms in dealing with e-waste in Kenya.

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APPENDICES

Appendix I: Informed Consent Form

Title of the Proposed Study:

STRATEGIC FACTORS INFLUENCING THE EFFECTIVE MANAGEMENT OF E-WASTE AMONG WASTE MANAGEMENT FIRMS IN NAIROBI CITY COUNTY

Section I:

Investigator:

SAMUEL KAMAU MAINA

MBA/59726/18

Institutional Affiliation: **Strathmore Business School (SBS)**

Section II: Information Sheet–The Study

2.1: Why is this study being carried out?

The research is being undertaken as a partial requirement for the academic award of Masters of Business Administration Degree. The intent of the research will be purely for the academic purposes and no research data sought will be utilized beyond that parameter. *The results of the study will be shared with relevant waste management firms within the country with a view of fostering the management of electronic waste which is an environmental scourge and health hazard.*

2.2: Do I have to take part?

No, your participation in the study will be upon your own willingness. Even upon consent to take part in the study, the respondent can decline to take part in the study at any point within the course of the exercise. The study will ensure that all participants are aware of their rights to cease their participation at any point of the research.

2.3: Who is eligible to take part in this study?

The study will only be open to waste management firms within the **Nairobi City County**. Only firm that are active in the waste management business will be considered in this study.

2.4: Who is not eligible to take part in this study?

The research will not consider waste management firms that do not undertake any form of electronic waste management

2.5: What will taking part in this study involve for me?

The researcher will only seek your opinion in filling up selected items on the **influence of strategic factors on the effective management of e-waste among waste management firms in Nairobi City County**. The researcher will require you to go through the items in the questionnaire and respond to them to the best of your knowledge and without bias. The responses obtained will be for the mentioned academic purposes only.

2.6: Are there any risks or dangers in taking part in this study?

The study poses no risk whatsoever to the participants of this research.

2.7: Are there any benefits of taking part in this study?

The findings of the research are expected to be of importance to multiple stakeholders within the waste management industry. The study will be beneficial to the owners/manager of waste management firms, to the county government, NEMA, as well as to future researchers and academicians.

2.8: What will happen to me if I refuse to take part in this study?

There is no risk to non-participants whatsoever. Participation in the study is entirely voluntary.

2.9: Who will have access to my information during this research?

All the accessed research data will be treated with utmost confidentiality and will not be disclosed to any person who is not party to the research process. *The study will ensure that all the responses obtained are securely protected using cloud storage services. The results of the study will further be only accessed by Strathmore University for examination purposes only. The participants will also not be required to indicate their identities to ensure that their anonymity is maintained throughout the study process.*

2.10: Who can I contact in case I have further questions?

Any query can be directed to me Sam Maina on **+254 723 310444**. *Any further information can be sought from my Research Supervisor **S. WAGURA NDIRITU** through the Strathmore Business School.*

If you want to ask someone independent anything about this research please contact:

*The Secretary–Strathmore University Institutional Ethics Review Board, **P. O. BOX 59857, 00200, Nairobi, email ethicsreview@strathmore.edu Tel number: +254 703 034 375***

I, _____, have had the study explained to me. I have understood all that I have read and have had explained to me and had my questions answered satisfactorily. I understand that I can change my mind at any stage.

Please tick the boxes that apply to you;

Participation in the research study

I AGREE to be part of the research ()

I DO NOT AGREE to be part of the research ()

Storage of information on the completed questionnaire

I AGREE to have my completed questionnaire stored for future data analysis ()

I DON'T AGREE to have my completed questionnaire stored for future data analysis ()

Participants Name:

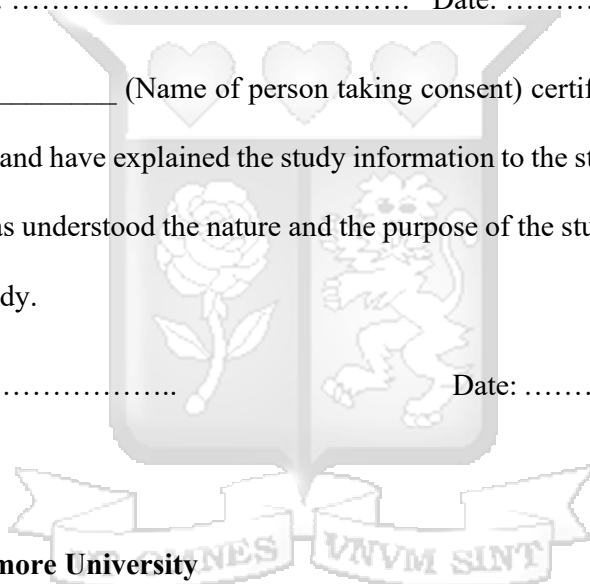
Participants Signature: Date:

I, _____ (Name of person taking consent) certify that I have followed the SOP for this study and have explained the study information to the study participant named above, and that s/he has understood the nature and the purpose of the study and consents to the participation in the study.

Signature: Date:

Name: **Sam Maina**

MBA- Strathmore University



Appendix II: Questionnaire

PART A: GENERAL INFORMATION

1) What is the age of your firm?

2) What is the gender of the executive manager of the firm?

Male ☐

Female ☐

3) How many employees do you have within your firm?

4) Which area do you collect waste from within the County?

Nairobi West ☐

Nairobi South ☐

Nairobi North ☐

5) What type of waste do you deal with?

E-waste ☐

Biodegradable waste ☐

Medical waste ☐

Food waste ☐

Hazardous waste ☐

Other solid waste ☐

6) Which area do you dispose waste collected from Nairobi City County?

Nairobi West ☐

Nairobi South ☐

Nairobi North ☐

Kiambu County ☐

Machakos County ☐

PART B: INFLUENCE OF STRATEGIC FACTORS ON THE EFFECTIVE MANAGEMENT OF E-WASTE AMONG SOLID WASTE MANAGEMENT FIRMS IN IN NAIROBI CITY COUNTY'

Please tick the level of agreement of the following statements.

Please indicate in the table with a tick (√) or across (×) with a scale of

Use 1=not at all, 2= small extent, 3=moderate extent, 4=large extent.

No	Institutional Capacity	1	2	3	4
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7)	There has been an improvement in the capacity of the firm to manage the collected waste				
8)	The firm has improved its mechanism for waste segregation within the county				
9)	The firm has expanded its waste storage capacity and handling				
10)	There is improved coordination of activities within the firm and other stakeholders in waste management				
11)	There is improved monitoring of the waste management activities within the firm				
12)	The firm relies on its evaluation feedback to actively improve its waste management capacity				

Please indicate in the table with a tick (√) or across (×) with a scale of Use 1=not at all, 2= small extent, 3=moderate extent, 4=large extent.

No	Resource Capacity	1	2	3	4
13)	The firm has been able to mobilize adequate resources				
14)	There is an increase in financial resources allocated to the waste management activities				
15)	The firm has increased its investment in infrastructure for waste handling				
16)	The firm has skilled staff necessary to support the waste handling activities				

Please indicate in the table with a tick (√) or across (×) with a scale of Use 1=not at all, 2= small extent, 3=moderate extent, 4=large extent.

No	Managerial Capacity	1	2	3	4
17)	There is improved managerial awareness on the various solid waste management techniques				
18)	There is improved managerial capabilities among solid waste management firms				
19)	The firm normally undertakes capacity building to train staff on solid waste management firms				
20)	There is improved implementation of solid waste management services within the firm				

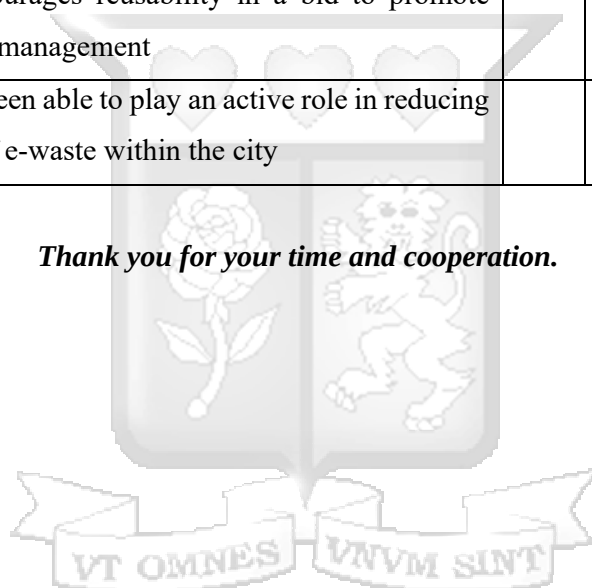
21)	There is an enhancement in the planning capacity of the firm towards solid waste management				
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Please indicate in the table with a tick (√) or across (×) with a scale of

Use 1=not at all, 2= small extent, 3=moderate extent, 4=large extent.

No	E-waste Management	1	2	3	4
22)	The firm regularly undertakes recycling of e-waste management to reduce environment damage				
23)	The firm adheres to environmental protection practices in handling e-waste				
24)	The firm encourages reusability in a bid to promote better e-waste management				
25)	The firm has been able to play an active role in reducing the quantity of e-waste within the city				

Thank you for your time and cooperation.



Appendix III: NACOSTI Permit

 REPUBLIC OF KENYA	 NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION
Ref No: 135799	Date of Issue: 28/March/2020
RESEARCH LICENSE	
	
This is to Certify that Mr.. Samuel Kamau Maina of Strathmore University, has been licensed to conduct research in Nairobi on the topic: STRATEGIC FACTORS INFLUENCING THE EFFECTIVE MANAGEMENT OF E-WASTE AMONG WASTE MANAGEMENT FIRMS IN NAIROBI CITY COUNTY for the period ending : 28/March/2021.	
License No: NACOSTI/P/20/4677	
135799	
Applicant Identification Number	Director General NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION
	Verification QR Code
	
NOTE: This is a computer generated License. To verify the authenticity of this document, Scan the QR Code using QR scanner application.	

Appendix IV: Strathmore University Ethical Committee Review Approval



28th July 2020

Dr Kamau, Samuel
samuel.kamau@strathmore.edu

Dear Dr Kamau,

**RE: Strategic Factors Influencing the Effective Management of E-Waste
Among Waste Management Firms in Nairobi City County**

This is to inform you that SU-IERC has reviewed and **approved** your above research proposal. Your application approval number is SU-IERC0688/20. The approval period is **28th July 2020 to 27th July 2021**.

This approval is subject to compliance with the following requirements:

- i. Only approved documents including (informed consents, study instruments, MTA) will be used
- ii. All changes including (amendments, deviations, and violations) are submitted for review and approval by SU-IERC.
- iii. Death and life threatening problems and serious adverse events or unexpected adverse events whether related or unrelated to the study must be reported to SU-IERC within 72 hours of notification
- iv. Any changes, anticipated or otherwise that may increase the risks or affected safety or welfare of study participants and others or affect the integrity of the research must be reported to SU-IERC within 72 hours
- v. Clearance for export of biological specimens must be obtained from relevant institutions.
- vi. Submission of a request for renewal of approval at least 60 days prior to expiry of the approval period. Attach a comprehensive progress report to support the renewal.
- vii. Submission of an executive summary report within 90 days upon completion of the study to SU-IERC.

Prior to commencing your study, you will be expected to obtain a research license from National Commission for Science, Technology and Innovation (NACOSTI) <https://oris.nacosti.go.ke> and also obtain other clearances needed.

Yours sincerely,


Dr Virginia Gichuru,
Secretary; SU-IERC

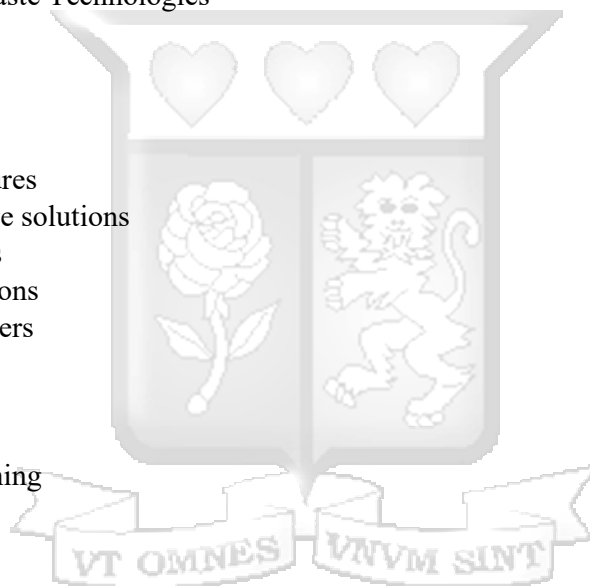
Cc: Prof Fred Were,
Chairperson; SU-IERC



Ole Sangale Rd, Madaraka Estate. PO Box 59857-00200, Nairobi, Kenya. Tel +254 (0)703 034000
Email info@strathmore.edu www.strathmore.edu

Appendix V: List of E-waste Management Firms

1. Junky bins
2. Sanyo enterprises
3. A Print Waste Paper
4. BlueFlame Energy solutions
5. Green Desk
6. Drakota Ke
7. Ecopost
8. Sanford and Daughters
9. Bentos Energy
10. Romeo and Reuse
11. Shemiland Wastepaper
12. Autonation Metals
13. HEB Enterprises
14. Alternative Waste Technologies
15. Greencare Ltd
16. Lasertech ltd
17. Ngara e-waste
18. Thuo e-waste
19. Lipslock ventures
20. Lujusa Garbage solutions
21. Nesco services
22. Ecovard solutions
23. Jiangsu Plumbers
24. Usafipus
25. Parapet
26. Colnet
27. Jacalizba cleaning
28. GM Cleaning
29. Demart
30. Cleantime
31. Ella Cleaning
32. Rosetub Cleaning
33. Dutylex
34. Geencare Inventive
35. Biosyte Waste Disposal
36. Lee e-waste dealers
37. Astaldi Waste Water
38. Autonation
39. Scrub and Surf
40. Jaepco cleaning
41. Jewaka Garbage collectors
42. Helkon Kenya
43. SuperBroom services
44. Eco Trash Ltd
45. Hygiene Bins
46. City Bins



47. Ponya
48. Metro Bins
49. Takataka solutions
50. Creative Consolidated
51. Mersa Cleaning
52. Aminah Mellea
53. Bunny Bins
54. Mammoth
55. Timothy Cleaning
56. Smartlink Services
57. Hy-Tech Bins
58. Reliable Refuse Disposal
59. Prime Bins
60. Brown Bins Enterprises
61. Black Bins Agency
62. Boredo Suppliers
63. Three Bins
64. Heritage Garbage Collectors
65. Masters Management Services
66. Sabiti Cleaning Services
67. Dial-a-Home Limited
68. Smart City Cleaners
69. Daima Bins Services
70. Dawac Bin Services
71. Evabo Services
72. Boulevard Bins
73. Nairobi Garbage Collectors
74. Garbage Dot com
75. AllyBins Garbage Management
76. December Waste Services
77. Leinard Services
78. Taima Limited
79. Bio-safety incineration ltd
80. Tranbiz waste solutions
81. Plenser limited
82. Tenitech Kenya
83. Health Advantage Kenya
84. Genap BV
85. Matthews Environmental Solutions Ltd
86. Kamongo Waste paper
87. Enviroserve Lenya ltd
88. Weee Center
89. Sanergy waste transfer solutions
90. Green City Incinerators
91. Metachem EA
92. Boiler Consortium
93. Josa Bin Enterprises



- 94. Pan Cat Kenya Ltd
- 95. Hygetech Services Ltd
- 96. Jymtich Care Services
- 97. Smart City Cleaning
- 98. Abcon Limited
- 99. Ngong Garbage

