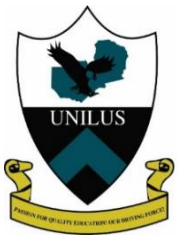


UNIVERSITY OF LUSAKA

SCHOOL OF MEDICINE AND HEALTH SCIENCES

DEPARTMENT OF PUBLIC HEALTH

An exploration of factors leading to improper electrical waste disposal in Matero, Lusaka province

OWEN PEREIRA

STUDENT No: BSPH18213147

BSc PUBLIC HEALTH

SUPERVISOR: Mrs. EVA KANGWA

A research dissertation submitted to the University of Lusaka in partial fulfillment of the requirements of a Degree in Bachelor of Science in Public Health

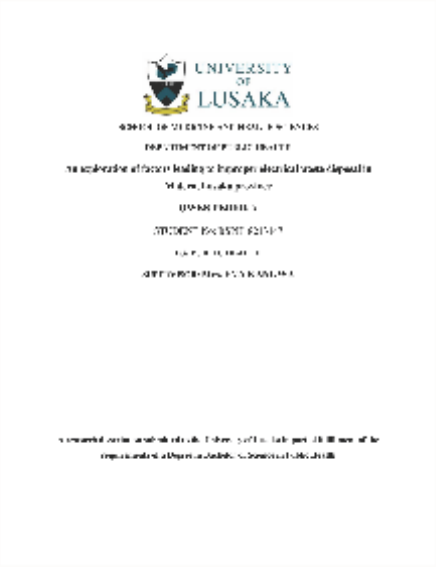
turnitin

Digital Receipt

This receipt acknowledges that Turnitin received your paper. Below you will find the receipt information regarding your submission.

The first page of your submissions is displayed below.

Submission author:	OWEN PEREIRA BSPH18213147
Assignment title:	Research dissertation format/submission (Moodle PP)
Submission title:	OWEN PEREIRA BSPH18213147.docx
File name:	97997_OWEN__PEREIRA_BSPH18213147_OWEN_PEREIRA_BSP...
File size:	279.01K
Page count:	55
Word count:	11,270
Character count:	63,626
Submission date:	30-May-2022 03:57PM (UTC+0200)
Submission ID:	1847222598



DECLARATION

I **OWEN PEREIRA** do hereby declare that this dissertation is my own original work. It has been guided and marked by my supervisor in accordance with the guidelines for Bachelor of Science in Public Health at University of Lusaka. It has not been submitted elsewhere for a degree at this or another University.

Signature 

Certificate of completion

I OWEN PEREIRA do hereby declare that this dissertation is my own original work. It has been guided and marked by my supervisor in accordance with the guidelines for Bachelor of Science in Public Health at University of Lusaka. It has not been submitted elsewhere for a degree at this or another University

I, EVA KANGWA Guided, read this dissertation and approved it for presentation. I am satisfied that this is the original work of the author under the name it is presented. I confirm that the work has been completed satisfactorily and ready for presentation.

Supervisor's signature 

DEDICATION

I wish to dedicate this paper to my late mum, until her death she always encouraged me to pursue greater heights in the world.

ACKNOWLEDGEMENTS

I would like to thank all the people that rendered their support to me during the preparation for this dissertation.

I am sincerely thankful to my supervisor Mrs. Eva Kangwa for her persistent guidance, patience and working tirelessly throughout the entire writing of this dissertation.

I also extend my gratitude to the members of staff from the local authority and the university for the great support that accorded me the opportunity to accomplish my Bachelors program.

Lastly, I am sincerely grateful to my family and friends for the support rendered to me throughout my study at the University of Lusaka and I am greatly indebted to all the participants that allowed me to get information of how they are managing e-waste in Matero.

Table of Contents

List of acronyms

E-WASTE Electronic/ Electronic waste

ICT Information and Communications Technology

ZICTA Zambia Information and Communications Technology Authority

GAO Government Accountability Office

CSO Central Statistical Office

MOH Ministry of Health

List of Tables

List of Figures

ABSTRACT

Introduction: E-waste refers to electrical/Electronic gadgets that are discarded or no longer of use by the purchaser (Sansa-Otim et al. 2012). The rapid climb in electronic and IT trade has increased the volumes of e-waste in Zambia. In most urban areas, due to uncertainty of the ways to treat e-waste, when electronic products reach their end life, electronic junks lie unattended in shops, offices, homes, etc and is commonly mixed with family waste, that is finally disposed of at waste disposal points which may be hazardous as the e-waste is not sorted and separated. In this context, the research aims to explore the factors that lead to improper disposal of e-waste in Matero

Methods: The study utilized a qualitative approach and made use of a cross-sectional study design, data was collected through interview guides and was analyzed through themes and coding. The sample size was 31 and the sampling technique used was purposive sampling. The data collected was analyzed thematically (Thematic analysis).

Findings: It was found that (6%) had attended primary education, (65%) had attended secondary education and (29%) attained tertiary education. Despite majority attaining some level of education, majority of the participants had little or no knowledge on e-waste management. Knowledge on e-waste was highly dependent on the level of education.

The study also revealed that most participants were not aware about e-waste, whereas only a few had an idea on what e-waste was and social factors such as knowledge and education played a pivotal role in management of e-waste as most participants did not know what e-waste was, as e-waste was treated like any other waste. Furthermore, most participants stated that economic factors such as income and infrastructure influenced the management of e-waste, as it was highlighted that the indiscriminate disposal of e-waste is because of the lack of adequate infrastructure and that income is the reason why there is more e-waste in the area and people don't mind the management of e-waste because they know less about its effects as they are only trying to earn a living by dealing with it. Lastly it was noted that personal factors such as attitudes tend to influence the behaviour and practice of waste management in Matero.

Conclusion: The study concluded that social, economic, and personal factors do indeed play a pivotal role in influencing the proper management of e-waste in Matero.

CHAPTER ONE

1.0 Introduction

Electronic waste is a global problem that continues to grow as technology advances. All the elements that go into mobile phones, computers, and TVs can be polluting to the environment and are dangerous to human health if incorrectly disposed of. The increase in information and communication technology has led to various issues regarding the impact of electronic waste on the environment. It is estimated that global e-waste generation is growing by about 40 million tonnes a year (Smith et al. 2006). E-waste refers to electrical/Electronic gadgets that are discarded or no longer of use by the purchaser (Sansa-Otim et al. 2012). Apart from the e-waste produced by their e-consumption (e.g. mobile phones and computers), countries in the Global South are on the receiving end of e-waste from the Global North. Therefore, the issue of e-waste is growing exponentially in Africa.

Most African countries cannot handle and recycle the hazardous materials contained in e-waste. Furthermore, the common practice of disposal of e-waste on dumpsites represents a source of environmental pollution. Due to its toxicity, e-waste creates real health hazards for nearby communities (Gweme, 2015)

Zambia is one of the countries in the world that rank low in urbanization but notwithstanding that the urban population is growing (Ministry of Local Government and Housing, 2010). This growth implies that issues such as e-waste management already demand closer attention. In the Zambian context, the waste management in urban centers has for a long time been centralized (Liyala, 2011), with the use of imported refuse trucks (Rotich, et al. 2006; Okot-Okumu & Nyenje, 2011) that collect waste from sources or transfer point and deliver to designated waste dumps.

The rapid climb in electronic and IT trade has increased the volumes of e-waste in Zambia. In most urban areas, due to uncertainty of the ways to treat e-waste, when electronic products reach their end life, electronic junks lie unattended in shops, offices, homes, etc and is commonly mixed with family waste, that is finally disposed of at waste disposal points which may be hazardous as the e-waste is not sorted and separated. Zambia being a developing country is on the receiving end of e-waste products from developed countries. In this context, the research will explore the factors that are contributing to the improper disposal of e-waste.

1.1 Statement of the problem

The main reason e-waste is seen as a problem is the composition of the waste as computer screens, television screens and cell phones contain harmful materials like lead, mercury, cadmium, and lead which are very harmful to public health and the environment.

E-waste is one of the fastest-growing components of municipal solid waste in Zambia, volumes have increased in Lusaka province due to the growing population, and high consumption of electric and electronic equipment. According to a 2018 ICT survey conducted by (ZICTA), the country disposes 90% of its e-waste in dumpsites and only 10% of the population using electronic devices are aware of the risks associated with careless disposal of e-waste

Due to the increased volumes of e-waste generated in Matero town of Lusaka province, it has become necessary to find ways of reducing e-waste generation. The population explosion and the booming of economic activities demand closer attention with respect to the management of e-waste. Furthermore, since there is a surge in economic activities in the area, there has not been a corresponding growth in the processes related to the management of e-waste. However, some barriers have already been observed in Matero, such as the lack of waste recycling plants. To a larger extent, the perception of waste among residents as an unwanted material with no intrinsic value has dominated attitudes/practices towards disposal which poses a threat to public health and the environment if not stored, collected, and disposed of properly. Therefore the proposed study is aimed at exploring factors contributing to improper electric waste disposal in Matero.

1.2 Justification of the study

The study on factors leading to improper electronic waste disposal will provide evidence-based information on the factors contributing to improper electronic waste disposal in Matero, and Zambia at large.

The findings from the study will be useful to the following; the General population, government, health sectors, ministry of health and policymakers.

General population: The findings from study will be of significance to residents in Lusaka province and other parts of the country in developing good practices and management of e-waste as they will be aware of the factors contributing to improper disposal of e-waste as well as

enable the researcher to have deeper knowledge and understanding on the management of e-waste.

Health sectors: Health practitioners would benefit from this study; as it would help them in advising, and planning for health services for the purpose of making the health system robust and sustainable as they would have the knowledge and information in relation to the factors contributing to improper disposal of e-waste.

Ministry Of Health (MOH): This study would be of great importance to the ministry of health because by informing them on the factors leading to improper disposal of e-waste they will see the need to organize awareness programs aimed at promoting both individual and community health by sensitizing people on the importance of practicing/managing e-waste for the purpose of preventing public health problems such as the incidence of communicable and non-communicable diseases etc

Policymakers: This study will help policymakers to formulate relevant policies on how to manage e-waste in the country.

Government: This study would be useful to the government by educating them on the need to provide concerted health education intervention to improve the attitude and knowledge of people with respect to managing e-waste. This study will also help the government to invest in more evidence-driven policies and programs that support a bright future for the country's youth.

1.3 General research objective

- To explore the factors that lead to improper disposal of e-waste in Matero

1.4 Specific research objectives

- To assess social factors (i.e., education level, knowledge, and motivation) associated with improper disposal of e-waste in Matero
- To understand the economic factors (i.e., income and infrastructure) associated with improper disposal of e-waste Matero
- To assess personal factors influencing improper disposal of e-waste in Matero

1.5 Research questions

- What are the social factors associated with the management of e-waste?

- What are the economic factors associated with the management of e-waste?
- What are the personal factors influencing improper disposal of e-waste?

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Introduction

This chapter brings about the relevance of the literature done by other authors that are similar to the topic. Furthermore, this chapter will show the studies that were done on understanding and describing how e-waste is being managed. The conceptual and the theoretical framework have been represented in this chapter to provide visualization from a diagrammatic perspective.

2.2 Social factors associated with improper disposal of E-waste

Knowledge, attitudes, and behavior

Desa et al. (2011) in their study examined the behavior, attitudes and knowledge in relation to e-waste management among first year students. The findings revealed that good e-waste practices were observed among them as they embedded cleanliness values in them as the often aim at reducing possible manifestation of diseases.

Further studies by Desa et al. (2012) noted that despite the participants showing adequate levels of attitude and behavior towards e-waste management, there is still a need to develop good practices towards the sustainable management of e-waste. In order for this to be realized, a carefully planned out awareness strategy should be initiated to change students traditional behavior and habits.

In the opinion of Welsch and Kuhling (2009), one of the major contributors to environmental problems is the behavior of humans. However, they noted that merely a change in attitude alone would not lead to the desired behavior from the environment per se but it would be certainly the first step on the ladder.

Marinescu et al. (2016) also revealed that individuals that exhibit positive attitudes tend to manage e-waste sustainably as compared to people with a negative attitude. It was also said that those people with good morals will know the right thing to do when it comes to e-waste management compared to people with no morals.

Furthermore, Haron et al. (2018) conducted a similar investigation into the knowledge, behavior, and attitudes with regard to waste management. They acknowledged that people with positive attitudes were more likely to take part in recycling e-waste than those who had a negative attitude. Otto et al. (2018) noted that changing people's behavior regarding how they viewed e-waste lead to a substantial rise in amount of individuals who were taking part in e-waste management. Correspondingly Delcea et al. (2020) stated that having a pro-environment behavior was positively associated with an individual's e-waste recycling behavior among the respondents.

Awareness and cooperation

Sivaramanan (2013) confirmed that the public awareness and cooperation of manufacturers are essential for the advancement of an e-waste management system. And also it is the responsibility of the government to allocate sufficient grants and protect the internationally agreed environmental legislation within their borders. Licensing of certifications like e-stewardship may ensure the security to prevent illegal smugglers and handlers of e-waste

Nduneseokwu et al. (2017) concluded absence of awareness of the E-waste concept was linked with the mismanagement of electronic waste. It was shown that low amounts of awareness of the electronic waste were associated with mismanagement of e-waste, it was also established that people with a lack of knowledge will not know how to dispose of e-waste as those who have some knowledge.

Furthermore after their study, "E-waste management in East African community", Asiimwe et al. (2012) revealed that they had no recycling policy on how the e-waste will be managed hence the mismanagement, moreover studies noted that they may be a need for the usage of the e-waste control policies to guard the environment. In addition, Respondents acknowledged the importance of multilateral environmental agreements in international E-waste management. Similarly, Kimeli et al. (2014) stated that putting management measures to prevent e-waste and its toxic chemicals from accumulating in the environment. It was studied that they will be need of knowing electronic manufacturers as well as importers so that they share responsibilities on how they will manage the environment and how they will recycle the e-waste.

Turaga et al. (2019) showed that people gain some knowledge on how to manage e-waste through public awareness that can be done, via television, radios, newspaper, social medial forums, etc. It was shown that lack of awareness resulted in people not knowing about the

management of e-waste as to compared when they are aware of the problem e-waste may cause. Correspondingly, Rode et al. (2012) showed that a lack of awareness among people in the society led to the mismanagement of electronic waste. It was studied that absence of awareness was a huge problem in most regions therefore they were a challenge in managing e-waste

Motivation

Shevchenko et al. (2019) Respondents studied that motivation will increase the performance of e-waste recycling. However, Okoye & Odoh (2014) also revealed that making people understand what e-waste is and what problems it brings about was a way of motivating them to take part in electronic waste management. Accordingly, Otto et al. (2018) showed that environmental motivation was one of the biggest tools that were used to make sure that people knew why they were getting involved in the management of the environment (Otto et al. 2018).

Also stated that people's behavior has a huge impact on other individuals in that they tend to get stimulated to practice e-waste recycling once they see other people also getting engaged, Similarly, Guruauskiene et al. (2008) also showed that most individuals are motivated by the environmental awareness meaning they should be more of making the environment aware of what e-waste is and what effects it has on the surrounding and public health, people's behavior towards the management of electronic waste is incentive enough for more individuals. Furthermore, Wang et al. (2019) went on and noted that education level, economic income, etc are one of the motivating factors that lead people to get involved in the recycling of e-waste because they understand what it is and can also manage to dispose of it without fail because they have an income they will take of it including its transportation

Education

Askari et al. (2014) study revealed that most people were not educated therefore they lacked knowledge on how treat e-waste. Sikdar and Vaniya (2014), in their study stated, that the government should introduce environmental education in their curriculum to promote recycling, proper disposal of e-waste, and understanding of the adverse effects of e-waste on the human body . The researcher realized that education is the most powerful tool/ medium to ensure environmental protection. Similarly, Okoye et al., (2014) noted that, environmental education was one of the most efficient ways of making people know about the effects of e-waste and how they could manage it.

In slight contrast, Haron et al. (2018) study noted that people who were educated were more likely to engage in recycling behavior than those who were not educated. Shevchenko et al. (2019) study also revealed that people with higher levels of education were likely to engage in e-waste recycling than people who are not educated . In addition, Kaijage et al. (2017) noted that education is linked to the sustainable management of electronic waste. The study noted that education will always have an outcome as it brings about changes in attitude and behavior.

2.3 Public health problems/concerns associated with improper disposal of e-waste

Samarkoon (2014) in his study stated that, "improper handling of e-waste can cause harm to the environment and human health because of its toxic components". According to Bishnoi et al., (2014), most waste will degrade to produce leachate which can ultimately contaminate the water, and make explosive lowland gas In slight contrast, Elbeshishy & Okoye (2019) claimed "that improper disposal of hazardous waste doesn't solely contaminate the soil and local water supply systems but can also pollute the air". In addition, their study also revealed that long-term indiscriminate disposal of e-waste can affect water and soil properties and can ultimately produce dangerous gases such as carbon monoxide and methane gas.

2.4 Laws and Regulations associated with e-waste management

Kahhat et al. (2008) stated in their article that, some states are adopting e-waste regulations, but so far the U.S. does not have a federal regulation that addresses the complete e-waste situation, including residential and non-residential sectors. Federal level policies and regulations present the best way to address the e-waste situation (U.S. GAO, 2005) as they will overcome the lack of regulations in most states and will standardize regulations and policies in the country

Askari et al. (2014) also noted that the absence of policies concerning how to manage e-waste was one of the reasons that led to the mismanagement of e-waste. It was shown that the producers of the electronic appliances which were being supplied to their consumers did not have any laws and regulations to give their consumers upon purchasing the product so that they could be aware of e-waste. Similarly, it was observed that other regions were lacking policies that would have helped in engaging people in e-waste management (Doan et al. 2019). Kaijage et al (2017) also showed that lack of laws and regulations leads to the mismanagement of e-waste.

2.5 Personal factors associated with improper disposal of e-waste

Gender

Delcea et al. (2020) study noted that women and girls do not know how to dispose of e-waste as men. Similarly, Oindo et al. (2016) studies have shown that males are more involved in the recycling of E-Waste than females. Furthermore, Shevchenko et al (2019) went on and also revealed that men get more involved in e-waste recycling than women, However, Rode et al. (2012) noted that, "women were less educated about the effects that result from improper disposal of e-waste hence they lacked knowledge on how to manage it". They revealed that the absence of manpower was limited so managing e-waste was a challenge.

Age

Oindo et al. (2016) Study found that younger people have more knowledge on the recycling of E-waste than older people. Similarly, Okoye & Odoh (2014) noted that younger had more knowledge of technology hence being involved in e-waste management was not as hard compared to older people who do not have enough knowledge of technology. Prakash et al (2010) Showed that people that need to be targeted are those aged 14 and above because in most cases they are the ones that are involved in dealing with e-waste hence there should be an emphasis on how they should be disposing of the electronic waste. However, Ramzan et al. (2019) revealed that, 'in most instances it was shown that people aged 18-30 were the consumers of most the electronic products hence there was a need of asking them how they dispense their dead electronic appliances (e-waste).'

2.6 Economic factors associated with management of E-waste

Income

Haron et al. (2018) study noted that income was a predictor of recycling as people who had income were more likely to take their E-waste material for recycling than those who did not have income. Oindo et al. (2016) study also showed that people who have a good source of income were more likely to take part in recycling than people with low income. Similarly, Shevchenko et al. (2019) studies noted that people with higher income were more likely to get their e-waste materials recycled compared to people with low income. However, Lakshmi et al. (2017) stated that people with higher levels of income were finding it easier to transport their electronic waste materials for recycling. Wath et al. (2010) Also noted that income is a vital necessity in the management of electronic waste in that it helps in coming up with proper ways of disposing of e-waste in that it will involve money and the government can also play a role in its management in that they can help in coming up with policies and also involving technology which can take care

of part of the e-waste, However, Osibanjo & Nnorom (2007) revealed that people with higher income tend to use a lot of electronic appliances hence they contribute to a lot of e-waste products in the community, Correspondingly, Nnorom & Osibanjo (2008) showed that in developing countries there are so much of e-waste issues because they do not have a proper way of disposing of it due to the unavailability of technology and no policies and regulations implemented by the government

Infrastructure

Nduneseokwu et al. (2017) study found that infrastructure was a moderating variable in the relationship between attitudes, perceived control, and environmental knowledge and intention to participate in formal e-waste collection. Correspondingly, Shevchenko et al. (2019) also revealed that environmental knowledge will help people get information that will help them to engage in e-waste recycling. Askari et al. (2014) also stated that lack of infrastructure was also a challenge because there was nowhere to dispose of e-waste materials. Similarly, Doan et al. (2019) also stated that people who were lacking infrastructure did not know where to dump e-waste and did not know how to manage it. Kaijage et al (2017) 'also showed that lack of infrastructure was associated with the mismanagement of electronic waste.' Wang et al. (2012) Noted that limited infrastructure leads to the dumping of e-waste materials anyhow because there is are no containers from the government that has been put in certain areas where people could be dumped their e-waste materials, However, Oteng-Ababio et al. (2010) lack of proper infrastructure as into where the e-waste should be disposed need to make the government aware that there should be need of them coming with some form of the engineered landfill where people can dispose of their electronic waste.

Little work has been carried out on e-waste management in developing countries and previous works have not comprehensively considered Africa or sub-Saharan Africa, Zambia in particular. It is worth noting that Zambia has become a significant recipient of secondhand electronics, therefore there is a need to bridge the gap in knowledge inequalities by exploring the factors contributing to improper e-waste disposal in Zambia.

2.7 THEORETICAL FRAMEWORK

The Ecological theory is perhaps the most appropriate for exploring the factors that are contributing to the improper disposal of e-waste. This is a health promotion theory that is based on the premise that 'changing individuals and their behaviour may be temporary without

corresponding changes to the environment. The rationale behind the adoption of this theory is that it targets multiple influences of health behaviour which includes the legal, physical, economic, and social environments.

Exploring factors that contribute to improper disposal of e-waste entails not only focusing on individual factors but exploring other factors as behaviour does not occur in a vacuum. Therefore the need to focus on supportive environments which include the legal, economic, and social environments.

2.8 CONCEPTUAL FRAMEWORK

The conceptual framework showed that they are several factors, both personal to an individual and within the external environment that affect the practice of e-waste management. Figure 1 shows factors that influence the practice of e-waste management such as social factors (i.e. education, awareness, cooperation, and motivation). Other factors associated with e-waste management include economic factors (i.e. income, infrastructure), and personal factors (age & attitudes). E-waste that is not managed effectively can ultimately lead to emergency public health problems.

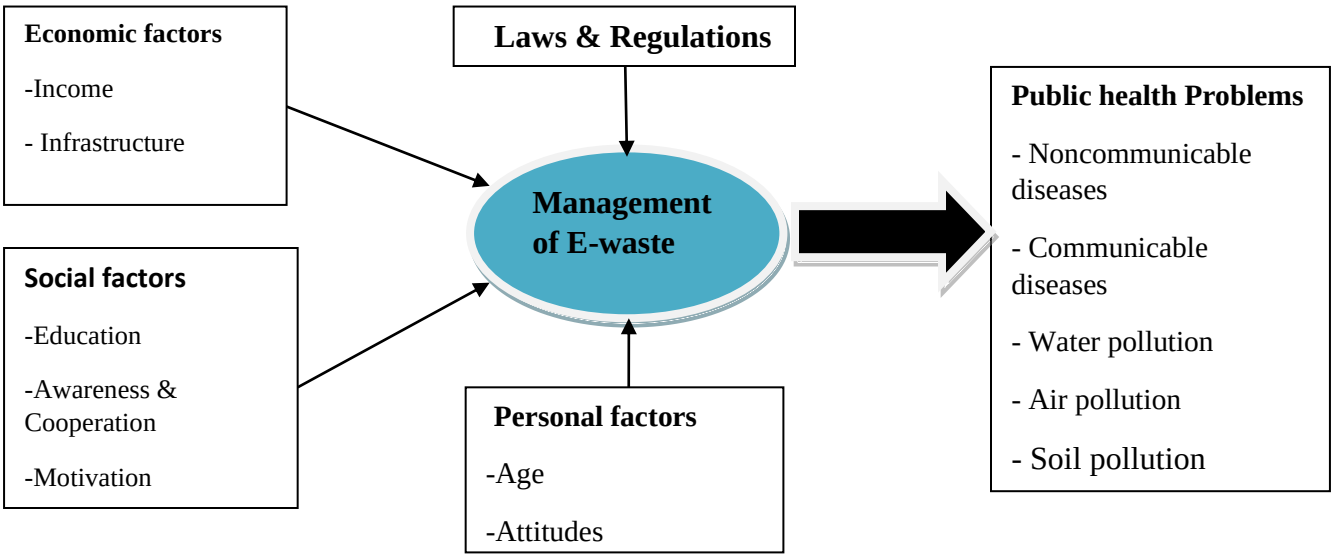


Figure 1: Factors associated with management of e-waste (Researcher, 2021)

CHAPTER THREE

3.0 METHODOLOGY

3.1 Introduction

This chapter provides a description of the methodology that was used in the research study in order to effectively explore the factors leading to improper electrical waste disposal, through the constructivism philosophy paradigm that asserts how people construct their understanding and knowledge in relation to day-to-day experiences (Honebein, 1996). This chapter discussed the methods that were used to conduct the research study and analyze the data. The methods include the following elements; research design, research location, study population, sampling procedure, sample size, data collection techniques variables, and data management analysis.' This chapter also shows the ethical consideration during this phase.

3.2 Study approach

This study utilized a qualitative approach in exploring the factors leading to improper disposal of e-waste in Matero. This approach is significant because it creates a platform for respondents participating in research to freely express themselves, and gives all the vital information necessary for the study. Furthermore, this approach will gather in-depth insights into all the relevant information that is ideal for the research.

3.3 Study design

This study made use of a cross-sectional study design type. The cross-sectional study design was chosen because the type of study involves exploring factors that contribute to improper disposal of e-waste in Matero, Lusaka province. A cross-sectional study design was essential to this study as it helps to understand the reasons behind certain behaviours, it can also be relatively easy, quick, and inexpensive when it comes to collecting data, and most importantly it is beneficial because it involves and allows researchers to do a lot of different variables at one time, such as the variables in the study which includes peoples age, level of education, gender and also their income levels.

3.4 Study area

A study area is a physical environment and condition in which data collection takes place in a study (Polit and Hungler, 2001

The study was conducted in Matero, Lusaka province of Zambia. Matero being an urban area is populated with a population estimation of about 55,629 of which 50.57 percent are females and 49.43 percent are males (CSO, 2016).

Target population

A study population is a total group of individuals or things meeting the criteria of interest to the researcher (Uys, 2010)

The study was conducted in Matero among people who deal with e-waste materials.

Inclusion criteria:

- People dealing with e-waste products such as computer monitors, printers, scanners, keyboards, phones, TVs, etc
- Men and women aged at least 18 years, and
- People willing to participate in the study will be included.

Exclusion criteria:

- People with the inability to talk
- People outside the Matero catchment area

3.5 Sample size determination

The sample size is the number of study participants in the sample (Uys, 2011)

The sample size was determined using data saturation, this means that researchers will only stop doing the data collection once there is no new information to be added that their existing finding of the study (Saunders, 2018).

Sample size calculation for cross sectional studies;

$$n = \frac{Z^2 P(1-P)}{d^2}$$

Where n is the sample size, Z is the statistic corresponding to level of confidence, P is expected prevalence (that can be obtained from same studies or a pilot study conducted by the researchers), and d is precision (corresponding to effect size).

$$n = \frac{1.96^2 \times 0.15(1 - 0.15)}{0.05^2} = 196$$

The researcher stopped collecting data at participant 31 as there was no new information (data saturation). Therefore the sample size of the research was 31.

Sampling procedures

The purposive sampling method was used. This method was used because it was targeting a particular subset of people. A purposive sampling requires a researcher to reject all the individuals that do not fit into the inclusion criteria of the study (Tongco, 2007).

The following are the variables that are going to be considered in this study:

Social-economic variables

- Income

Demographic variables

- Knowledge
- Gender
- Age
- Education level

Personal variables

- **Attitudes**

3.6 Data collection methods

Data Collection Tool

Data was collected from the study participants using an interview schedule. The interview schedule enabled the participants to express themselves in detail.

Interview guide

In order to get a full view in the respect to the topic, interviews were conducted so that participants can freely express their views as regards the management of e-waste. In-depth interviews were used in order to get a lot of insight information on the research topic. The advantage of using this data collection tool is that the researcher is able to get a lot of insight information (Nedovic, 2007) . In addition, respondents had an opportunity to seek clarification where they are not clear and the researcher had a chance to clarify. Furthermore, in-depth interviews also enhance confidentiality and privacy.

Pre-test

The pre-test of the questionnaire was done among 10 people who deal with e-waste materials at Kalingalinga market in the Lusaka district. The purpose of pre-testing was to ensure that the questionnaire is credible, dependable, and trustworthy. It helped in determining the time to be taken to complete the interview schedule. This also helped the researcher plan the process properly and ensure that time was not wasted unnecessarily.

3.7 Data analysis

A thematic analysis was used to analyze the data, owing to the fact that it makes sure that the data collected is summarized and interpreted in a way that will provide credible information to the researcher (Tuckett, 2005). A thematic analysis helps researchers make sense of the answers that the participants give as they are variations in education level among participants (Howitt & Cramer, 2008). Furthermore, the data were grouped into key thematic areas such as demographics, social, economic, and personal variables.

Scientific rigor

The scientific rigor was used in this study to ensure that the research is credible, dependable, and transferrable for further research. The scientific rigor is essential to this study as, through it, they was a strict application of the scientific method to ensure there is a robust, and unbiased study design, methodology, analysis, interpretation, and full reporting of results (Marshall & Rossman, 1989)

3.8 Ethical considerations

The researcher had obligation to strictly adhere to ethical standards in considering the rights of the research participants who in this case would be the subjects. The participants were talked to personally. All participants were provided with consent forms that they will be required to sign detailing the purpose of the study as well as ensuring that all responses are only for the purposes of this research. The study adhered to confidentiality and any type of communication-related to the research which was done honestly and transparently. Voluntary participation of the responder was considered and no identifying data was used. This study was ethically cleared by the University of Lusaka research ethics committee (Ref no: IORG0010092-2022/063). Permission to conduct a study among people dealing with e-waste in Matero was obtained from the local authorities.

CHAPTER FOUR

4.0 FINDINGS

4.1 Introduction

This Chapter aimed at providing a detailed analytical description of the key findings of the study. This was achieved through an interview guide by focusing on the key themes that emerged from the analysis of the existing data. This analysis provided a basis for the description of the perceptions that people have regarding e-waste. This descriptive analysis helped answer the main objective and latter subsequent specific objectives of the study.

The demographic profiles of the participants are followed by the findings on; social, economic factors, and the personal factors that influence the management of e-waste.

4.2 Demographic Profile of the Participants

The study was composed of 31 participants. The demographic data of the participants: 21 representing (68%) of the participants were Male and 10 representing (23%) were Female; 14 represents (45%) of the participants were aged between 18-25 years, and 10 represents (32%) were between 26-35 years and 7 which represents (23%) were between 35 years and above; 20 which represents (49%) had an income level between k800- k1500, 11 representing (27%) were between k1500- k3000, and 10 which represents (24%) were between k3000 and above; 2 which represents (6%) of the participants had primary education, 20 which represents (65%) had secondary education and 9 which represents (29%) had tertiary education; 13 which represents (42%) of the respondents were in formal employment and 18 which represents (58%) of the respondents were in informal employment.

Demographic Variables	Frequency	Percent (%)
Sex		
Male	21	68
Female	10	32
Age		
18-25 years	14	45
26-35 years	10	32
35 years and above	7	23
Income level		
K800- K1500	20	49
K1500- K3000	11	27
K3000 and above	10	24
Education level		
Primary education	2	6
Secondary education	20	65
Tertiary education	9	29
Employment		
Formal	13	42
Informal	18	58

Table 1: Demographic profile of Participants

4.3 Organization of findings

The themes outlined in this report result from the key findings from the participant's responses. The factors that influence improper waste disposal were indicated in the responses from the individual through the interview guide.

The factors that are associated with the management of e-waste were further discussed under the headings of the themes identified by the researcher in the interview guide. Verbatim quotations were used to illustrate how expressive participants were in relation to their responses.

It should however be noted that the themes that emerged from the data collected were not discussed in the rank of importance, as all the factors are equally important in exploring factors that lead to improper disposal of e-waste in Matero. The following are the themes that emerged from the data collected:

- Social factors associated with the management of e-waste
- Economic factors associated with the management of e-waste
- Personal factors influencing the improper disposal of e-waste

Each of these themes is discussed as follows:

4.3.1 Social factors associated with management of e-waste

The following were the key findings in relation to knowledge and were summarized as follows;

4.3.1.1 Knowledge

From the findings, it was shown that majority of the participants did not know what e-waste was, how it can be managed, and the effects that may arise when improperly managed. Some of the respondents in the research study stated that they did not understand or have knowledge of how e-waste can be disposed of or managed. Furthermore, the respondents stated that they view e-waste as other waste, therefore the disposal of e-waste is done just like any other waste in the environment. Predominantly, other respondents stated that there hasn't been adequate awareness of the issue so that the public can be aware of how to effectively manage the waste because they did not understand the proper methods of disposing of the waste. The following quote from a male participant (MM01) said:

"We have little knowledge on e-waste, so there is a need for the government to inform us on how to manage this waste and its importance"

This was also supported by what one female (FF01) when she said:

"We do not know what e-waste is because we have never heard about such type of waste".

4.3.1.2 Education

The key findings from the study suggest that most of the respondents (71%) who attended both primary and secondary had little or no knowledge of e-waste as they were not able to define what e-waste is and the effects that may arise from the improper disposal of e-waste both on an individual level and the community at large. Conversely, some of the respondents (29%) were aware of what e-waste was and what effects may arise if it is not managed properly. Participants revealed that electronic hardware or components of electronic devices that no longer working or are not in use are always disposed of together with other wastes because they do not know how best they can handle the waste, while others keep them in their homes and backyards. The participants emphasized the need to educate them on e-waste and the proper disposal of waste.

A male participant (MM07) said:

"Discarded or disposed of electronic gadgets that are unwanted or no longer in use"

One female (FF09) also described this when she said:

"Most of us have been to school, but we are not aware of what e-waste is and how it can be disposed of Most of us did not go far in school as we just ended at secondary level but what we know is waste is disposed of together"

4.3.1.2 Motivation

From the findings, it was observed that most participants were not motivated to effectively manage e-waste. This was evident as participants stated that they do not have knowledge of e-waste. Furthermore, the researcher also noted that some participants indiscriminately disposed of their waste along the roadside while others stored the materials in their backyard and homes. Additionally, the participants emphasized the need to have bins for storing e-waste. In this sense, they stated that the local authorities should educate them and motivate them to manage waste

effectively. It is worth noting that extrinsic motivation is paramount to addressing the community problems as residents will see the need of addressing the issue.

4.3.2 Economic factors associated with the management of e-waste

4.3.2.1 Infrastructure

The results of the study suggest that majority of the respondents have a viable income level between (k800-k1500) which therefore entails that they are able to manage the waste at an individual level. In addition, most of the respondents stated that even though they effectively manage their waste in their households and shops, because they do not have adequate infrastructure to manage e-waste as they usually dispose of their waste indiscriminately or even mix their e-waste with other forms of waste. Owing to that, participants requested that they could be labelled bins specifically for electronic waste so that people can be putting all their e-waste and ultimately showing them how to properly dispose of e-waste. The majority of the participants highlighted that they had no idea how e-waste can be managed, as all their waste is disposed of in the same places. It is worth noting that infrastructure is essential as it determines the process, methods, and amounts of waste that can be processed. It usually includes collection, transportation, etc

4.3.2.2 Income

The findings from the study indicate that income is closely associated with e-waste management. It was shown that e-waste results from those who deal with it to earn a living as well as those with high income that purchase electronic gadgets contribute to the volume of e-waste. Some participants stated that they are responsible as they usually do not know how to dispose of the waste. Furthermore, participants stated that dealing with e-waste is their source of income especially those that deal with phones and computers. They further stated that income is the reason why there is more e-waste in this area and people don't mind the management of e-waste because they know less about its effects as they are only trying to earn a living by dealing with it.

4.2.3 Personal factors influencing the disposal of e-waste

4.2.3.1 Attitudes

The results of the study suggest that the majority of the respondents (households) keep their waste in bins, or sacks, dump their waste in hand-dug pits and ultimately burn/ bury waste after

the pit is filled as there isn't adequate infrastructure to manage the waste. Additionally, attitudes tend to influence the behaviour and practice of waste management. The results from the study suggest that majority of the respondents had positive attitudes towards e-waste management with a few showing negative attitudes. To assess the attitudes, respondents were asked if e-waste management is everyone's responsibility and the majority insisted that indeed it's everyone's responsibility to ensure that e-waste management is sustainable. Furthermore, participants were asked if they reuse their waste, and most of the participants stated that they do not reuse their waste as they just dispose of it when they reach their end of life. Conversely, some of the participants mentioned that they do in fact reuse their waste. The following is a quote from a participant (MM23):

"Yes, everyone has to come on board to ensure that e-waste management is sustainable"

"We don't reuse the waste whenever they stop working we throw them away or keep them in our backyards" conversely a few deviants stated that, "they reuse their e-waste by fixing it or taking it to the factories"

CHAPTER FIVE

5.0 DISCUSSION OF FINDINGS

This chapter discusses the findings from the exploration of factors leading to improper disposal of e-waste in Matero.

5.1.1 Social factors associated with the management of e-waste

The first objective of this research was to assess the social factors associated with the improper disposal of e-waste, the key findings from the study revealed that most of the respondents were not aware of e-waste as they were unable to describe what e-waste is and the effects that may arise from the improper disposal of e-waste both on an individual and the community at large. The key variables under social factors that were assessed include knowledge, education, and motivation. The study revealed that most respondents were not aware of the effective management of e-waste irrespective of their educational background. It's worth noting that the educational level of respondents could be the reason that some respondents know about e-waste as most of the respondent's educational level was at a secondary level while the lack of knowledge could be attributed to their level of education as well as lack of awareness on the issue of e-waste management. The research findings are in consonance with the study done by Kaijage et al., which revealed that education is associated with the management of waste. Similarly, Askari et al. (2014) study revealed that most people were not educated therefore they lacked knowledge on how treat e-waste. Furthermore, it was observed that the participants who had little knowledge of e-waste lacked motivation in the management of e-waste Therefore emphasized stated that the local authorities should educate them and motivate them to manage waste effectively. Shevchenko et al. (2019) in their study concluded that motivation will increase the performance of e-waste recycling. Whereas, Okoye & Odoh (2014) also revealed that making people understand what e-waste is and what problems it brings about was a way of motivating them to take part in e-waste management.

This information gap coupled with the lack of laws/policies often contributes to disparities in practices of waste management as some may not view the importance of managing other forms of waste, therefore increasing the volume of the e-waste because they are not aware of the implications of disposing of the waste Furthermore, Askari et al. (2014) also noted that the absence of policies concerning how to manage e-waste was one of the reasons that led to the

mismanagement of e-waste. It was shown that the producers of the electronic appliances which were being supplied to their consumers did not have any laws and regulations to give their consumers upon purchasing the product so that they could be aware of e-waste. Therefore laws are important as people will be able to adhere to the management guidelines and ultimately protect the environment and human health.

5.1.2 Economic factors associated with management of e-waste

Another objective of this research was to assess the economic factors associated with the management of e-waste. It has been noted that there are many factors that emanate from the economic perspective in relation to the management of e-waste such as the availability of infrastructure and the income levels to handle and manage the waste are usually the main factors precipitating the indiscriminate disposal of e-waste in Matero. Most of the participants stated that even though they effectively manage their waste in their households and shops, they isn't adequate infrastructure to manage e-waste as they usually dispose off their waste indiscriminately or even mix their e-waste with other forms of waste.

Otto et al (2018) in their study stated that changing people's behaviour on how they viewed waste can only lead to an outcome if there is a change in environmental determinants. This can be observed in Matero as some of the participants have the capacity to manage the waste but do not have a supportive environment that permits them to manage e-waste sustainably. Correspondingly Nduneseokwu et al (2017) study found that infrastructure was a moderating variable in the relationship between attitudes, perceived control, and environmental knowledge and intention to participate in formal e-waste collection.

The study also revealed that income is associated with the management of e-waste. It was shown that e-waste results from those who deal with it to earn a living as well as those with high income that purchase electronic gadgets contribute to the volume of e-waste. Correspondingly Osibanjo & Nnorom (2007) revealed that people with higher income tend to use a lot of electronic appliances hence they contribute to a lot of e-waste products in the community. However, stated that people with higher levels of income were finding it easier to transport their e-waste materials for recycling

5.1.3 Personal factors influencing the improper disposal of e-waste

Attitudes tend to influence the behaviour and practice of waste management. The results from the study suggest that majority of the respondents had positive attitudes towards e-waste management with a few showing negative attitudes.

Haron et al., (2018) conducted a similar investigation into the knowledge, behaviour, and attitudes with regards to waste management. They acknowledged that people with positive attitudes were likely to take part in recycling waste than those who had a negative attitude.

Further studies by Desa et al. (2012) noted that, "despite the participants showing adequate levels of attitude and behavior towards e-waste management, there is still a need to develop good practices towards the sustainable management of e-waste. In order for this to be realized, a carefully planned out awareness strategy should be initiated to change students traditional behavior and habits".

Therefore, Positive attitudes toward e-waste management should be there for it creates a sense of agency in addressing problems that can affect the community and all its members.

5.2 Limitations

- The study utilized a qualitative approach and made use of a cross-sectional study design, therefore the findings might be subjective and not objective.
- The sample size was too small to make tentative generalizations; hence the findings could be inaccurate.
- The study involved a few business owners dealing with e-waste. Therefore a comprehensive survey is required where more participants are involved.

CHAPTER SIX

CONCLUSION AND RECOMMENDATIONS

6.0 Introduction

The objectives of the study were three-fold. The first objective was to assess the social factors (i.e., education level, knowledge, and motivation) associated with improper disposal of e-waste, and the second objective was to understand the economic factors (i.e., income and infrastructure) associated with improper disposal of e-waste and thirdly to assess personal factors influencing improper disposal of e-waste in Matero.

6.1 Conclusion

The findings from the study revealed social, economic, and personal factors do indeed play a pivotal role in influencing the proper management of e-waste.

Social factors such as education, knowledge, and motivation were observed as essential factors in managing waste as most of the participants did not know what e-waste is and the effects that may arise if not properly managed. Additionally, most participants did not know how to dispose of e-waste as they usually take it as garbage.

Furthermore, economic factors such as infrastructure were also noted by most participants as the precipitating factor as they have an impact on the management of e-waste as the indiscriminate disposal of the waste revolves around the absence of adequate infrastructure and those who have a high economic status usually purchase electronic products more, therefore, disposing of more waste.

Lastly, personal factors such as attitudes were observed in the study as vital in the management of e-waste as people with positive attitudes tend to practice sustainable waste disposal as compared to those with negative attitudes and behaviour. It is therefore worth noting that improving e-waste management in developing countries like Zambia requires efforts to raise public awareness, increase funding, build expertise, and invest in infrastructure.

6.2 Recommendations

- Well labeled bins should be placed around indicating correctly where each type of waste must be disposed of for the purpose of separation.

- Create awareness on the use of the 3Rs, (Reduce, reuse, and recycle). This initiative will help minimize the amount of waste we create, as well as use items more than once and ultimately put a product to a new use instead of throwing it away.
- Future Researchers should conduct the same study using a large study sample that is representative so that the results can be generalized accurately.
- Future Researchers should endeavour to conduct a cohort or retro-progressive study on the factors that influence the improper disposal of e-waste.
- MOH in conjunction with non-governmental organizations should sensitize the community on the importance of managing e-waste in Matero.
- Declaration of a day of cleaning every month, where all community members participate in the cleaning of the surrounding. This will bring about combined action in managing e-waste.

REFERENCES

Asiimwe, E.N. and Åke, G., (2012)**. E-waste management in East African community. Handbook of Research on E-Government in Emerging Economies:** Adoption, *E-Participation, and Legal Frameworks*, pp.307-327.

Askari, A., Ghadimzadeh, A., Gomes, C. and Ishak, M.B., (2014)**. E-waste management: towards and appropriate policy.** ***European Journal of Business and Managemen****t*, *6*(1), pp.37-46.

Bishnoi, V. N., & Shah, T. (2014). **E-Waste**: ***A New Environmental Challenge, International Journal of Advanced Research in Computer Science and Software Engineering***, 4(2), 442-447.

CSO, 2011. **Regional Population Projections**, Lusaka: Central Statistics Office.

Cochran, W.G. (1977), sampling techniques (3rd ed) New York: John Wiley & sons

Delcea, C., Crăciun, L., Ioanăș, C., Ferruzzi, G. and Cotfas, L.A., (2020). ***Determinants of Individuals' E-Waste Recycling Decision: A Case Study from Romania***. Sustainability, 12(7), p.2753.

Desa A, Kadir NBYA & Yusooff F (2011) **A study on the knowledge, attitudes, awareness status and behaviour concerning solid waste managemen**t. Procedia-Social and Behavioural Sciences 18: 643-648.

Desa A, Kadir NBYA & Yusooff F (2012) **Waste education and awareness strategy: towards solid waste management (SWM) program at UKM**. Procedia-Social and Behavioural Sciences 59: 47-50

Doan, L.T.T., Amer, Y., Lee, S.H. and Phuc, P.N.K., 2019**. Strategies for E-Waste Management: A Literature Review**. *International Journal of Energy and Environmental Engineering*, *13*(3), pp.157-162.

Elbeshbishy E & Okoye F (2019) **Improper Disposal of Household Hazardous Waste: Landfill/Municipal Wastewater Treatment Plant**. In Municipal Solid Waste Management. IntechOpen

Gurauskienė, I., (2008). **Behaviour of Consumers as One of the Most Important Factors in E-Waste Problem**. *Environmental Research, Engineering & Management*, *46*(4).

Haron, N.F., Sidique, S.F. and Radam, M.A., (2018). ***Factors influencing household electronic waste (e-waste) recycling participation***. Turk. Online J. Des. Art Commun. TOJDAC, 2018, pp.1552-1557.

Howitt, D., & Cramer, D. (2008). *Introduction to Research Methods in Psychology* (2nd ed.). Harlow, UK: Prentice Hall.

Kahhat, R., Kim, J., Xu, M., Allenby, B., Williams, E., & Zhang, P. (2008). **Exploring e-waste management systems in the United States**. Resources, Conservation and Recycling, 52(7), 955-964.

Kaijage, Z. and Mtebe, J.S., (2017), May**. Understanding ICT students' knowledge and awareness on e-waste management in Tanzania**. In *2017 IST-Africa Week Conference (IST-Africa)* (pp. 1-8). IEEE.

Kimeli, I.J., 2014. ***Factors influencing e-waste management in Kenya: a case of mobile phones disposal in Nairobi County, Kenya*** (Doctoral dissertation, University of Nairobi)

Liyala, C., (2011). **Modernising Solid Waste Management at Municipal Level: Institutional Arrangements in Urban Centres of East Africa**. 1st ed. Waganingen: Waganingen Academic Publishers.

Marinescu, C., Ciociu, N. and Cicea, C., (2016), November. **Socioeconomic factors affecting e-waste collection rate in countries from European Union.** In *I. Popa, C. Dobrin and CN Ciocoiu, The 10th International Management Conference," Challenges of Modern Management". Bucharest, Romania* (pp. 3-4).

Marshall C, Rossman GB, (1989). Designing Qualitative Research. Newbury Park: Sage Publications

Ministry of Local Government and Housing, (2010). **Start Your Waste Collection Service Handout**, Lusaka: International Labour Organisation.

Mulenga, C., (2001). The case of Lusaka, Lusaka: Institute of Economic and Social Research, UNZA.

Nduneseokwu, C.K., Qu, Y. and Appolloni, A., (2017)**. Factors influencing consumers' intentions to participate in a formal e-waste collection system: A case study of Onitsha, Nigeria**. *Sustainability*, *9*(6), p.881.

Nnorom, I.C. and Osibanjo, O., (2008). **Overview of electronic waste (e-waste) management practices and legislations, and their poor applications in the developing countries**. *Resources, conservation and recycling*, *52*(6), pp.843-858.

Otto, S., Kibbe, A., Henn, L., Hentschke, L. and Kaiser, F.G., (2018). **The economy of E-waste collection at the individual level: A practice oriented approach of categorizing determinants of E-waste collection into behavioural costs and motivation**. *Journal of cleaner production*, *204*, pp.33-40.

Oindo, B.O., Jaoko, J.O. and Abuom, P.O., (2016)**. Factors Influencing Willingness to Recycle E-Waste in Kisumu City Central Business District, Kenya**.

Okoye, A. and Odoh, C.,(2014)**. Assessment of the level of awareness of e-waste management and concern for the environment amongst the populace in Onitsha, South-eastern Nigeria**. *Journal of Environmental Protection*, *2014*.

Osibanjo, O. and Nnorom, I.C., 2007. **The challenge of electronic waste (e-waste) management in developing countries**. *Waste management & research*, *25*(6), pp.489-501.

Oteng-Ababio, M., (2010). E-waste: an **emerging challenge to solid waste management in Ghana**. *International Development Planning Review*, *32*(2), p.191.

Okot-Okumu, J. & Nyenje, R., (2011). **Municipal Solid Waste Management under Decentralisation in Uganda**. Habitat International, 35(4), pp. 537-538, 543.

Ramzan, S., Liu, C., Munir, H. and Xu, Y., 2019. **Assessing young consumers' awareness and participation in sustainable e-waste management practices**: a survey study in Northwest China. *Environmental Science and Pollution Research*, *26*(19), pp.20003-20013.

Rode, S., (2012)**. E-waste management in Mumbai metropolitan region: Constraints and opportunities.** *Theoretical and Empirical Researches in Urban Management*, *7*(2), pp.89-103.

Samarakoon, M. B., Dr. (2014). **A Review of Electrical and Electronic Waste Management in Sri Lanka**. International Conference on Chemical, Civil and Environmental Engineering (CCEE'2014) Nov 18-19, 2014 Singapore, 1-6.

Saunders, B., Sim, J., Kingstone, T., Baker, S., Waterfield, J., Bartlam, B., Burroughs, H. and Jinks, C., (2018): **exploring its conceptualization and operationalization**. Quality & quantity, 52(4), pp.1893-1907.

Sivaramanan, S. (2013). **E-Waste Management**, ***Disposal and Its Impacts on the Environment. Universal Journal of Environmental Research and Technology***, 3(5), 531-537.

Shevchenko, T., Laitala, K. and Danko, Y., (2019). **Understanding consumer E-waste recycling behaviour: introducing a new economic incentive to increase the collection rates.** *Sustainability*, *11*(9), p.2656.

Sikdar, M., Dr., & Vaniya, S. (2014). **The New Millennium and E merging Concerns**. International Journal of Scientific and Research Publications, 4(2), 1-12.

Tongco, M.D.C., (2007). **Purposive sampling as a tool for informant selection**. Ethnobotany Research and applications, 5, pp.147-158.

Tuckett, A. G. (2005). Applying thematic analysis theory to practice: A researcher's experience.

Contemporary Nurse, 19(1-2), 75-87.

Wang, B., Ren, C., Dong, X., Zhang, B. and Wang, Z., (2019). **Determinants shaping willingness towards on-line recycling behaviour:** An empirical study of household e-waste recycling in China. ***Resources, Conservation and Recycling***, *143*, pp.218-225.

Welsch H., Kuhling j. (2009), "***Using Happiness Data for Environmental Valuation: Issues and Applications***", ***journal of Economic Surveys***, *23(2), pp. 385-406*

APPENDIX

Budget and Timeframe

Budget

No.	DESCRIPTION	QUANTITY	UNIT PRICE	TOTAL PRICE
1	Transportation	Trips to and from selected sample sites	K500	K500
2	Food	Lunch x10	K20	K200
3	A4 Ream of Paper	03	K80	K240
4	Pens, Pencils, Erasers	03 of each	K2	K18
5	Stapler and Staples	01 and 01 packet	K40	K40
7	Printing and Binging of Final Research Report	04	K120	K480
	Total			K1478

Time Frame

	ACTIVITY	RESPONSIBILITY	2021 Nov	2021 Dec	2022 Jan	2022 Feb	2022 Mar	2022 Apr	2022 May
1	Prepare proposal and submit to the University	Researcher							
2	Preparation of study tools	Researcher							
3	Preparation for field work	Researcher							
4	Data collection	Researcher							
5	Data entry and cleaning	Researcher							
6	Data analysis and interpretation	Researcher							
7	Dissertation compilation	Researcher							
8	Dissertation submission	Researcher							

ii. Information sheet/ Consent Form

Information Sheet

(Translated into vernacular if necessary)

TITLE OF RESEARCH: **An exploration of factors leading to improper electrical waste disposal in Matero**

REFERENCE TO PARTICIPANT INFORMATION SHEET:

1. Make sure that you read the Information Sheet carefully, or that it has been explained to you to your satisfaction.

2. Your permission is required if tape or audio recording is being used.

3. Your participation in this research is entirely voluntary, i.e. you do not have to participate if you do not wish to.

4. Refusal to take part will involve no penalty or loss of services to which you are otherwise entitled.

5. If you decide to take part, you are still free to withdraw at any time without penalty or loss of services and without giving a reason for your withdrawal.

6. You may choose not to answer particular questions that are asked in the study. If there is anything that you would prefer not to discuss, please feel free to say so.

7. The information collected in this interview will be kept strictly confidential.

8. If you choose to participate in this research study, your signed consent is required below before I proceed with the interview with you. ----------VOLUNTARY CONSENT

I have read (or have had explained to me) the information about this research as contained in the Participant Information Sheet. I have had the opportunity to ask questions about it and any questions I have asked have been answered to my satisfaction.

I now consent voluntarily to be a participant in this project and understand that I have the right to end the interview at any time and to choose not to answer particular questions that are asked in the study.

My signature below says that I am willing to participate in this research:

Participant's name (Printed): …….

…….....……

Participant's signature: …… Consent Date:.....

Researcher Conducting Informed Consent (Printed) ……

Signature of Researcher: …… Date: .....

Signature of parent/guardian: …… Date: ……...

Consent Form

UNIVERSITY OF LUSAKA

SCHOOL OF MEDICINE AND HEALTH SCIENCES

DEPARTMENT OF PUBLIC HEALTH

I have read and understood the information that has been presented to me in vernacular and/or English languages. I have had all my questions answered to my satisfaction. I have been asked to participate in the above study and given free consent by signing this form.

My consent to participate is voluntary and I may withdraw from the survey at any time. I am further aware that the information I disseminate will be treated in confidence and I will not be personally identified.

(a) Signature of participant: _____

(b) Signature of Researcher: _____

(c) Signature of Witness: _____

(d) Place: _____

(e) Date: _____

iv. Data collection tool

i. DATA COLLECTION TOOL

SCHOOL OF MEDICINE AND HEALTH SCIENCES

DEPARTMENT OF PUBLIC HEALTH

Research Questionnaire

Dear Respondent,

I am a student from the University of Lusaka in Zambia carrying out research with the aim of exploring factors leading to improper e-waste disposal in Matero, Lusaka district

You have been randomly selected as one of the respondents to take part in this research. Please feel free to answer the questions that follow as objectively as possible.

Be assured that your responses will be treated with the highest confidentiality. No information that will be given in this study will be passed on to third parties and no information which identifies you as an individual or family will be included in the reports.

Yours

Researcher.

ii. INTERVIEW GUIDE

TOPIC: AN EXPLORATION OF FACTORS LEADING TO IMPROPER ELECTRICAL WASTE DISPOSAL IN MATERO

You are required to either tick on the right answer or give a brief explanation for your answer.

SECTION A: BACKGROUND INFORMATION. (For official use)

1. Age

(a) 18-25years [ ]

(b) 26-35years [ ]

(c) 35 years and above [ ]

2. Sex

a. Male [ ]

b. Female [ ]

c. Other

3. Marital status

[ ] Married [ ] Single [ ] Divorced [ ] other

4. What is your level of education?

a. Primary education [ ]

b. Secondary education [ ]

c. Tertiary education [ ]

d. Others [Specify].....

5. Employment

[ ] Formal [ ] Informal

SECTION B: SOCIAL FACTORS INFLUENCING THE IMPROPER DISPOSAL OF E-WASTE

- ❖ Please provide an explanation

6. What is e-waste?.....

……..

7. What are the effects of improper disposal of e-waste on your health.....

……..

8. What are the public health concerns associated with the improper disposal of e-waste?.....

……..

SECTION C: ECONOMIC FACTORS INFLUENCING THE IMPROPER DISPOSAL OF E-WASTE

9. What is your income level?

- K800-k1500 [ ]
- K1500-3000 [ ]
- 3000 and above [ ]

10. Do you adequate infrastructure for managing your e-waste?.....

…….

11. Do you have waste collection services in your community?

Yes [ ] If yes, do they collect waste on time? Always [ ] Sometimes [ ]

No [ ] If No, where do you dispose you waste in the community?

……
……
……

12. Are the services provided affordable and better?

Yes [ ]

No [ ] if No, what do you think can be done to improve the services?

.....

.....

SECTION D: PERSONAL FACTORS INFLUENCING THE IMPROPER DISPOSAL OF E-WASTE

13. Where do you keep your e-waste?.....

……

14. Are you happy with the way e-waste is being managed?.....

……..

15. Do you think proper e-waste management is everyone's duty?.....

……

16. Do you think it's possible to reuse, recycle or reduce your waste? Justify your answer

……

……

v. Permission Letter and Ethical clearance Letter

i. Permission Letter

TOPIC: AN EXPLORATION OF FACTORS LEADING TO IMPROPER ELECTRICAL WASTE DISPOSAL IN MATERO

Dear sir/ madam,

REF: PERMISSION TO CONDUCT A STUDY- MATERO.

I refer to the subject matter above.

I am a fourth year student at the University of Lusaka pursuing a degree in Public Health. I am conducting an academic study in your city with the above title.

You are being rest assured that the data being solicited will be purely for academic purposes being a requirement for the partial fulfilment of the award of the Bachelor of Science in Public Health Degree at the University of Lusaka and will be treated with utmost confidentiality. Your cooperation will be highly appreciated.

Thanking you in anticipation

Yours faithfully

Owen Pereira

Cell# 0978634543

ii. **Ethical clearance Letter**

SCHOOL OF MEDICINE AND HEALTH SCIENCES LEOPARDS HILL CAMPUS

Plot No. 37413, Off Alick Nkhata Mass Media. P. O Box 36711, Lusaka.

Phone: +260211258505, 258409 Fax +260211233409; Cell +260976075850,961917862,

E-mail:unilus@zamnet.zm,ictar@zamnet.zm

SCHOOL OF MEDICINE AND HEALTH SCIENCES RESEARCH ETHICS COMMITTEE

Ref no: IORG0010092-2022/063

Date: 17th January, 2022

OWEN PEREIRA – BSPH18213147

Re: Research Title – AN EXPLORATION OF FACTORS LEADING TO IMPROPER ELECTRICAL WASTE DISPOSAL IN MATERO, LUSAKA PROVINCE

The above research was submitted to the research ethics committee for review. The study has no major ethical problems and is approved subject to the following:

1. The study cannot be changed without express permission of the UNILUS Research ethics committee
2. Approval from the Lusaka District health Management or equivalent health authorities should be sought.
3. The study tools should be added.
4. An informed consent form should be attached and filled by all study participants (If dealing with primary data)
5. The risks and benefits should be included in the consent form.

Congratulations and the committee wishes you success in your work.

Prof Kasonde Bowa

MSc(Glasgow),M.Med(UNZA),FRCS(Glasgow),FACS,FCS,DPH(LSTMH),MPH(UCL)

Chairman- UNILUS REC

Professor of Urology and Consultant Urologist

Executive Dean

University of Lusaka and University Teaching Hospital School of Medicine and Health Sciences.

SCHOOL OF MEDICINE AND HEALTH SCIENCES LEOPARDS HILL CAMPUS

Plot No. 37413, Off Alick Nkhata Mass Media. P. O Box 36711, Lusaka.

Phone: +260211258505, 258409 Fax +260211233409; Cell +260976075850,961917862,

E-mail:unilus@zamnet.zm,ictar@zamnet.zm

Date: 17th January, 2022

…….....

.....

…….....

.....

UNIVERSITY OF LUSAKA

…….....
.....

PERMISSION FOR **OWEN PEREIRA No. BSPH18213147** TO CONDUCT A RESEARCH STUDY AT YOUR FACILITY/ INSTITUTION/ ORGANIZATION

Reference is made to the above subject matter

The University of Lusaka, School of Medicine and Health Sciences here by requests for permission for **Owen Pereira** a Public Health Student to conduct research at your facility/ institution/ organization, entitled**; AN EXPLORATION OF FACTORS LEADING TO IMPROPER ELECTRICAL WASTE DISPOSAL IN MATERO, LUSAKA PROVINCE**

The research is in partial fulfillment of the requirements for the degree of Bachelor of Science Public Health. This is purely for academic purposes and information gained in such a way will not be used in the public domain without prior authorization from the institutions/ organizations involved.

The research topic has been cleared by the University of Lusaka, School of Medicine and Health Sciences Research Ethics Committee as per the attached copy. Data collection is expected to be done from **1st February, 2022 to 29th April, 2022**

The University of Lusaka avails itself of this opportunity to review to your office the assurances of its highest considerations and looks forward to your timely and favourable response.

Prof Kasonde Bowa

MSc(Glasgow),M.Med(UNZA),FRCS(Glasgow),FACS,FCS,DPH(LSTMH),MPH(UCL)

Chairman- UNILUS REC

Professor of Urology and Consultant Urologist

Executive Dean University of Lusaka and University Teaching Hospital School of Medicine and Health Sciences.