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RESEARCH COUNCIL OF ZIMBABWE



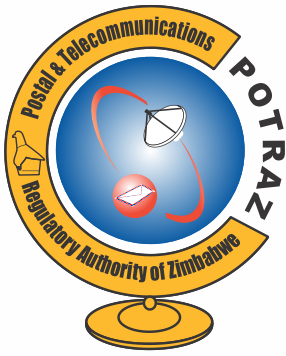
Leadership, Innovation and Development

AWARENESS OF HEALTH EFFECTS FROM E-WASTE EXPOSURE, ADOPTION, AND IMPLEMENTATION OF E-WASTE MANAGEMENT METHODS IN HARARE

POTRAZ-RCZ
RESEARCH PROJECT
2024

Contents

1.0 Acronyms.	1
2.0 Basic Project Information	2
2.1 Abstract	2
2.2 Research Problem	2
2.3 Project Objectives	2
3.0 Methodology	4
3.1 Research Design	4
3.2 Data Collection Tools	5
3.3 Project Activities	5
3.4 Financial Report and Milestones	5
3.5 Project Outputs	8
3.6 Policy & Practice	8
4.0 Findings	9
4.1 Socio-Economic Distribution	9
4.2 Gender Distribution	9
4.3 Age Distribution	9
4.4 Educational Qualifications	10
4.5 Years in E-waste Entrepreneurship	11
4.6 Summary of the Socio-Economic Distribution	11
4.7 Awareness of Health Effects due to E-waste Exposure	13
4.8 Protection from Health Risks of E-waste	13
4.9 Sources of E-waste in Zimbabwe	14
4.10 E-waste Management Methods in Business	15
4.11 Knowledge about Proper Disposal and Recycling:	16
4.12 Handling of Hazardous Materials in E-waste:	16
4.13 Knowledge on E-waste Laws/Policies in Zimbabwe:	17
4.14 Perception of E-waste Management Law Enforcement	18
4.15 Interest in Training/Workshops on Sustainable E-waste Management	19
4.16 Perception of Economic Benefits from Proper E-waste Management	19
4.17 Summary of Awareness and Practices related to E-waste among Respondents	20
5.0 Overall Assessment And Conclusions	21
5.1 Discussion	21
5.2 Research Questions Analysis:	23
5.3 Recommendations	24



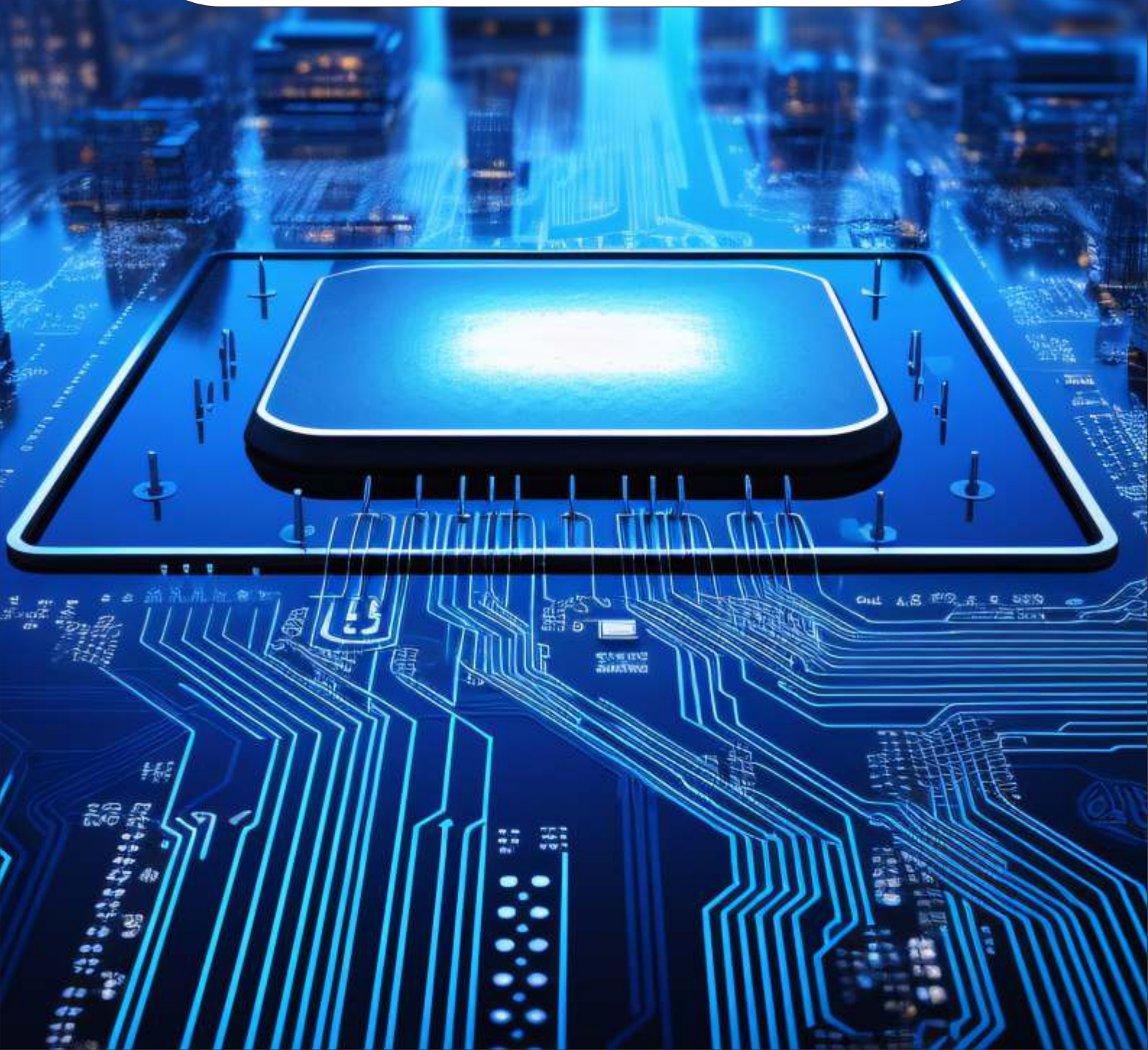
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POTRAZ-RCZ RESEARCH PROJECT 2024





Acronyms.

EMA	Environmental Management Agency
NGOs	Non-Governmental Organisations
WEEE	Waste from Electrical and Electronic Equipment

2.1 Abstract

This research investigated the awareness, practices, and challenges of e-waste management among entrepreneurs in Zimbabwe. A survey of 219 respondents revealed a significant lack of awareness regarding e-waste types, health effects, and relevant laws. Current practices, including improper disposal methods, underscored the urgent need for comprehensive e-waste management strategies. However, there was a positive inclination among entrepreneurs towards sustainable practices. The study recommended targeted awareness campaigns, capacity building, policy advocacy, and resource access to bridge existing gaps. Implementing these recommendations could pave the way for a more sustainable and responsible e-waste management system in Zimbabwe, benefiting public health and the environment.

Keywords

E-waste, electronic waste, waste management, awareness, sustainable practices, Zimbabwe.

2.2 Research Problem

In Zimbabwe, the proliferation of electronic waste (e-waste) is exacerbating due to the surge in electronic device usage and inadequate disposal methods. This has given rise to a critical issue characterised by a lack of awareness of the health effects of e-waste exposure and ineffective e-waste management practices.

2.3 Project Objectives

The study's primary objective is to comprehensively assess the awareness of health effects resulting from exposure to e-waste and the efficacy of current e-waste management methods. The specific objectives include: To evaluate the awareness of e-waste entrepreneurs regarding different types of e-waste products and their associated health effects. To assess the existing e-waste management methods for proper disposal and recycling. To identify relevant laws and policies on e-waste management, evaluating awareness levels among e-waste entrepreneurs. To formulate sustainable adoption and implementation strategies for effective e-waste management.

Objective 1: Awareness of E-waste Products and Effects

The findings indicate a commendable level of awareness among the participants regarding various sources of e-waste, including "Obsolete office equipment," "Household appliances," "Telecommunication devices," and "End of life electronic products." However, despite this awareness, there are gaps in knowledge, particularly concerning the intricate nature of e-waste components. The recognition of health issues linked to e-waste exposure, such as cancer, skin diseases, respiratory problems, neurological problems, and reproductive health concerns, demonstrates a significant understanding of the potential risks associated with e-waste.

Objective 1: Awareness of E-waste Products and Effects

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Objective 2: Current E-waste Management Methods

The study reveals that e-waste entrepreneurs primarily resort to rudimentary disposal methods, with a common practice being the disposal of e-waste in municipal waste bins. Other methods mentioned include selling to recycling companies, informal recycling, and donating to e-waste clubs. The prevalence of suboptimal disposal practices, such as burning, highlights a critical issue contributing to environmental pollution and health risks. This emphasises the need for interventions to promote safer and more sustainable e-waste management practices.

Objective 3: Awareness of Laws and Policies

The analysis indicates a low level of awareness among participants regarding existing laws and policies on e-waste management. Few respondents directly mentioned regulations such as "The EMA ACT," reflecting a gap in understanding the legal framework governing e-waste. This underscores the necessity for enhanced awareness campaigns and educational initiatives to familiarise e-waste entrepreneurs with their legal responsibilities and obligations.

Objective 4: Formulation of Sustainable Adoption and Implementation Strategies

Despite the challenges identified in the study, e-waste entrepreneurs are willing to adopt sustainable e waste management practices. The participants expressed a need for training, awareness campaigns, equipment donations, and emphasized the importance of clear regulations and policies. This points towards a positive inclination towards embracing more environmentally friendly practices, provided the necessary support and infrastructure are in place.

3.1 Research Design

This research was conducted in Harare, the capital city of Zimbabwe, focusing on e-waste entrepreneurs operating in Epworth dumpsite, repair shops, and Magaba area. The selected areas for study were influenced by the presence of waste and/or waste management activities. To comprehensively assess awareness and management practices, a cross-sectional study design was employed. This design allowed for the examination of e-waste entrepreneurs engaged in various activities like buying, selling, dismantling, storing, and transferring. The primary data collection involved a structured questionnaire designed to explore socio-economic status, fundamental e-waste awareness, influencing factors, and the determinants of e-waste management within the targeted groups. The study considered two dependent variables: awareness and e-waste management. Awareness levels were influenced by job type, work experience, educational status, lack of access to information, and the novelty of the issue. E-waste management was affected by specific job types, concerns, the presence of containers, gender, lack of law enforcement, and e-waste-related awareness. On selecting variables, the following basis was considered:

Education Level: Education is often associated with increased awareness and knowledge. Individuals with higher education levels may have greater access to information and may be more inclined to seek knowledge about health effects related to e-waste exposure.

Years of Experience in Waste Management: Experience in waste management could influence the depth of understanding and awareness of health effects. Those with more experience may have encountered a broader range of situations and information.

Knowledge of Laws: Awareness of laws could indicate a higher level of understanding and compliance with regulations related to e-waste management. It is presumed that individuals with more knowledge of laws may be more conscious of the health implications.

Sample Size

A total of 300 respondents (informal entrepreneurs) were selected using stratified random sampling from three urban areas in Zimbabwe. This method ensured representation from various segments of the population.



3.2 Data Collection Tools

Questionnaire

A 14-item questionnaire was used with the measurements extracted from related articles and journals. The questionnaire was the primary tool for collecting data from the selected respondents. It covered key areas such as demographics, awareness of e-waste hazards, and e-waste management practices.

Interviews

Key informants, including representatives from e-waste recycling companies and environmental NGOs, were interviewed. These interviews aimed to gather insights into e-waste management policies, existing recycling facilities, and public education programs addressing e-waste hazards.

Data Analysis

The collected data, obtained from both the survey and interviews, underwent analysis using descriptive statistics and thematic analysis. Descriptive statistics were applied to analyse demographic data, e-waste hazard awareness, and e-waste management practices. Thematic analysis was employed to identify key themes and patterns emerging from the interview data, providing a nuanced understanding of the ewaste management landscape. The utilisation of a cross-sectional study design facilitated a comprehensive exploration of e-waste awareness and management practices among the diverse roles within the e-waste entrepreneurial community in Harare.

3.3 Project Activities

Financial Report and Milestones

Milestone 1 – March 2023

Financial Overview:

- 1 Total Funds Expended: ZWL 1,216,894.40 (total expenditure incurred)
- 2 Period Forecast: ZWL 1,188,000.00 (forecasted expenditure)
- 3 Variance: ZWL 28,894.40 (difference between total funds expended and period forecast)

Explanation:

The variance of 2.43% (ZWL 28,894.40) indicates higher expenses than forecasted. Factors contributing to this variance include unexpected costs related to e-waste research graphic designs, the Bell recording device, radio visit (Capitalk), media coverage for the Epworth site visit, and higher-thanestimated fuel expenses.

METHODOLOGY

Milestone 2 – June 2023

Financial Overview:

- Total Funds Expended: ZWL 9,924,607.80 (total expenditure incurred during the reporting period)
- Period Forecast: ZWL 9,924,607.80 (forecasted expenditure for the reporting period)
- Variance: ZWL 0 (difference between total funds expended and period forecast)

Expenditure Breakdown:

The funds were expended on critical project activities:

Distribution of Questionnaires to e-waste entrepreneurs :

- Logistical support and printing costs were incurred.
- These efforts aimed at obtaining comprehensive data from key stakeholders.

Conducting Interviews with E-waste entrepreneurs:

- Travel expenses and participation allowances were necessary for engaging participants.

Collection of Questionnaires:

- Data verification, validation, and quality checks contributed to expenses.

Preparation of Progress Report:

- Efforts from the research team, time, and expertise were invested in this activity.

Conclusion: While expenditures aligned with the initial forecast, activities such as the progress report contributed to the overall expenditure during the reporting period.

Milestone 3 – September 2023

Financial Information:

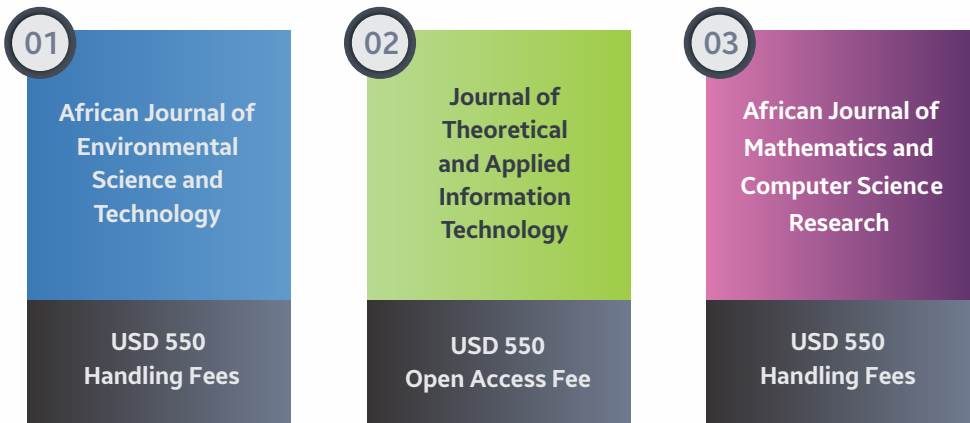
- Total Funds Allocated for Milestone 3: USD 1,500.00 (ZWL 6,912,159 received on 07 September 2023)

Utilization of Funds:

The funds for Milestone 3, allocated at USD 1,500.00, were received on 07 September 2023. These funds have been reserved for academic publications.



Journals and Associated Costs:



Future Actions: The team is committed to continuous research and dissemination of results in the area of e-waste.

Lessons on Project Implementation and Management:

The project encountered several challenges during its implementation, each providing valuable insights into effective project management. Key learnings include:

Adaptability and Timely Adjustments:

- Challenge: The project was delayed due to issues with the managing organization's bank account.
- Learning: The ability to adapt and make timely adjustments to the research plan was crucial. This ensured that the project could still meet its objectives within the revised timeline despite the delay.

Communication and Coordination:

- Challenge: Challenges with radio visits and participant engagement required constant communication and coordination.
- Learning: Maintaining open and continuous communication with stakeholders was vital. This played a pivotal role in overcoming challenges related to scheduling, costs, and participant hesitancy.

Flexibility in Data Collection:

- Challenge: Limited availability of participants and scheduling conflicts for interviews.
- Learning: Flexibility in data collection methods, such as offering various interview time slots and exploring alternative channels, proved essential in ensuring the participation of busy entrepreneurs.

Rigorous Data Validation Processes:

- Challenge: Data quality and reliability concerns due to incomplete or inconsistent responses.
- Learning: Implementing rigorous data validation processes, including cross-referencing and clarification of discrepancies, significantly enhanced the quality of collected data.

Inclusivity in Feedback Sessions:

- **Challenge:** Balancing different viewpoints in the integration of feedback from diverse stakeholders.
- **Learning:** Organizing feedback sessions allowed for an inclusive approach, ensuring that the final report represents a comprehensive and robust view of stakeholders' perspectives.

3.4 Project Outputs

The following Journals are targeted, please find information below:

African Journal of Environmental Science and Technology USD 550 handling fees
Journal of Theoretical and Applied Information Technology USD 550 open access fee
African Journal of Mathematics and Computer Science Research USD 550 handling fee
The team expects to publish by the end of the first quarter of 2024.

3.5 Policy & Practice

Policy Implications:

The study's emphasis on the need for better awareness of existing e-waste management laws and policies has significant policy implications. Policymakers can leverage this information to strengthen enforcement mechanisms, ensuring that regulations are adhered to more effectively. Additionally, insights from the study can guide policymakers in considering additional regulations where necessary, closing any existing loopholes and fostering a more robust regulatory framework.



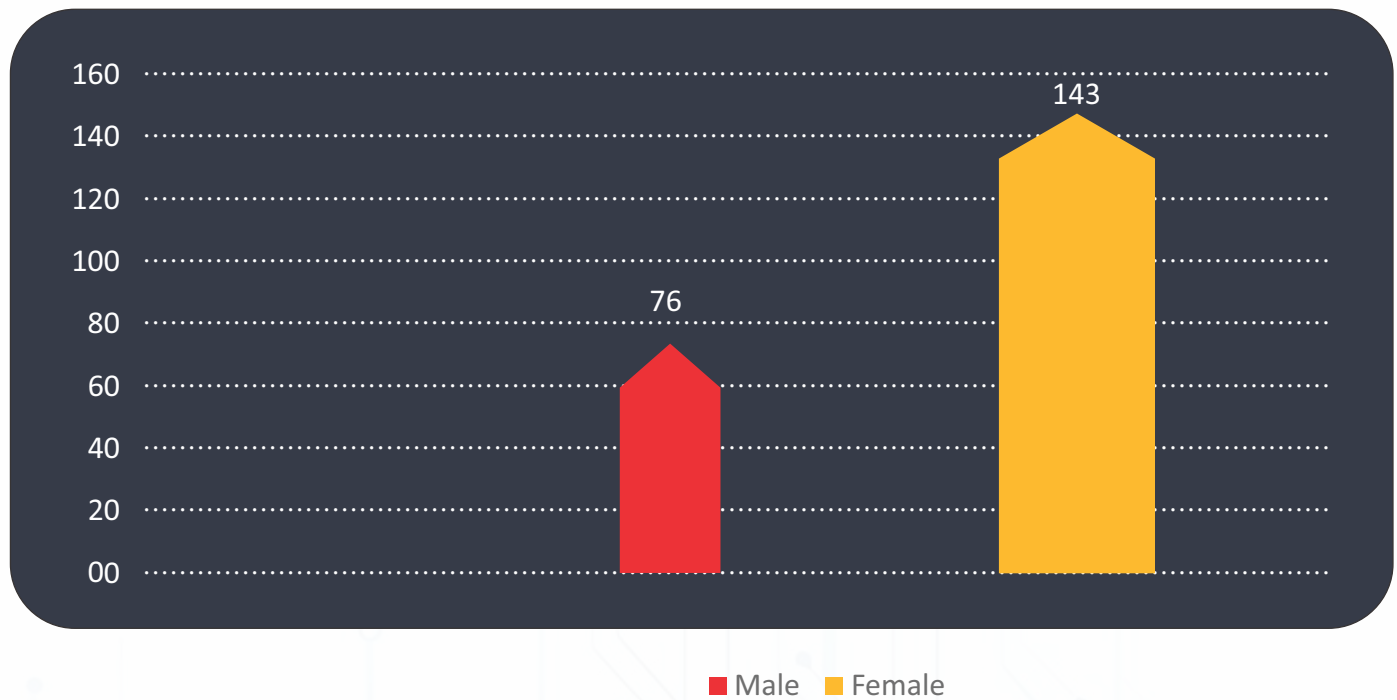
FINDINGS

4.1 Socio-Economic Distribution

Gender Distribution

The gender distribution revealed that of the 219 respondents, 76 (34.7%) were male, and 143 (65.3%) were female.

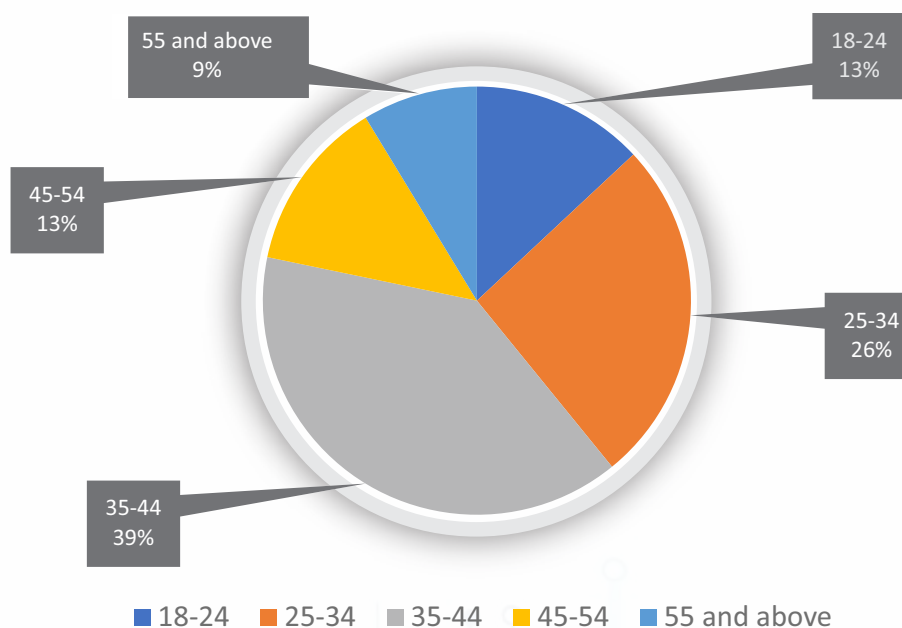
Fig 1. Gender distribution of the respondents



4.2 Age Distribution

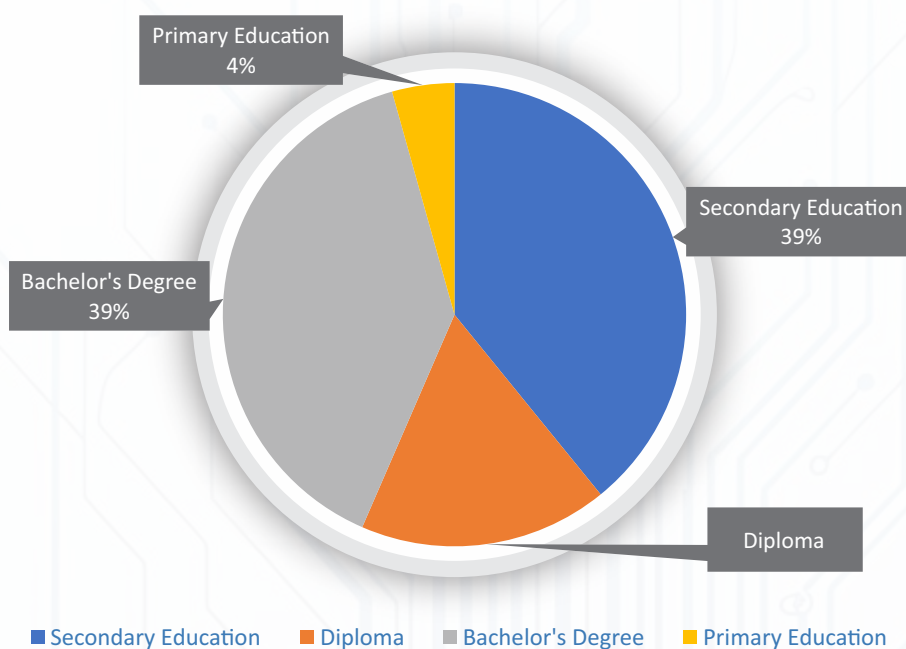
Of the 219 respondents, 29 (13.2%) were aged between 18 and 24. The age group with the largest representation was 35-44 years, accounting for 86 respondents (39.3%). Those aged between 25-34 and 45-54 had 57 and 29 respondents respectively, each constituting 26.0% and 13.2% of the total. The least represented age group was those aged 55 and above with 19 respondents (8.7%).



Fig 2. Age distribution of the respondents

4.3 Educational Qualifications

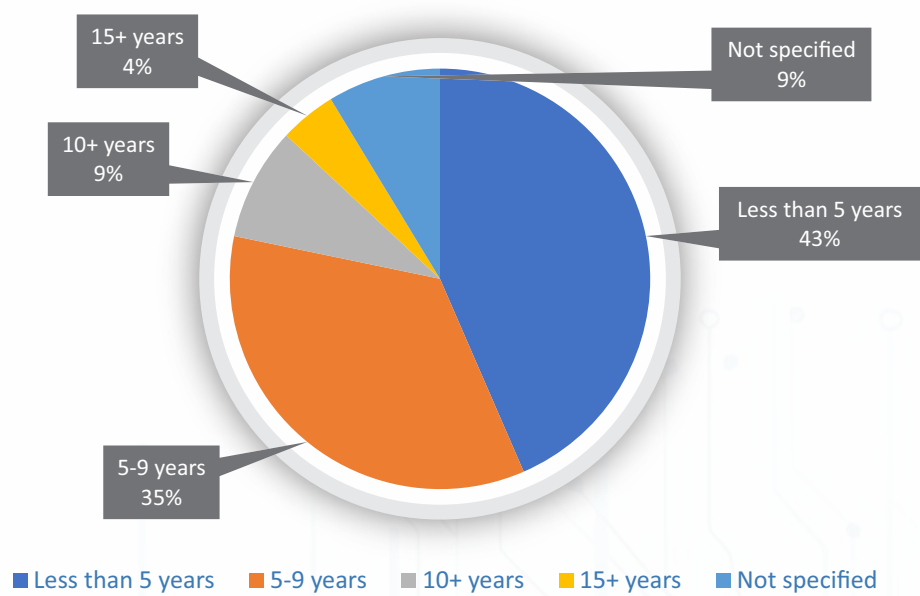
In terms of educational background, Secondary Education and bachelor's degree were equally represented with 86 respondents each (39.3%). Diplomas were held by 38 respondents (17.4%), while only 10 respondents (4.6%) reported having Primary Education.

Fig 3. Educational qualifications of the respondents

4.4 Years in E-waste Entrepreneurship

The majority of the e-waste entrepreneurs, 95 (43.4%), had been in the business for less than 5 years. Those with experience ranging between 5-9 years numbered 76 (34.7%). Entrepreneurs with more than 10 years in the field were less common, with 19 (8.7%) having 10+ years of experience and 10 (4.6%) surpassing 15 years. 19 respondents (8.7%) did not specify their duration of involvement.

Fig 4. Years in E-waste Entrepreneurship



4.5 Summary of the Socio-Economic Distribution

In examining the socio-economic distribution of the 219 respondents engaged in e-waste entrepreneurship, gender distribution demonstrated a notable representation of females, constituting 65.3% of the respondents. The age distribution revealed a concentration of participants in the 35-44 years age group, comprising 39.3% of the total, while the least represented were those aged 55 and above at 8.7%. Educational qualifications were diverse, with an equal representation of respondents holding Secondary Education and Bachelor's Degrees at 39.3% each. Additionally, 43.4% of entrepreneurs had been in the e-waste business for less than 5 years, and 34.7% had 5-9 years of experience. A significant portion, 8.7%, had over 10 years of experience, and 4.6% surpassed 15 years. These findings offer a comprehensive snapshot of the socio-economic characteristics of e-waste entrepreneurs, providing essential context for understanding their perspectives and practices in e-waste management.

FINDINGS

Summary Is Represented In Table 1 Below.

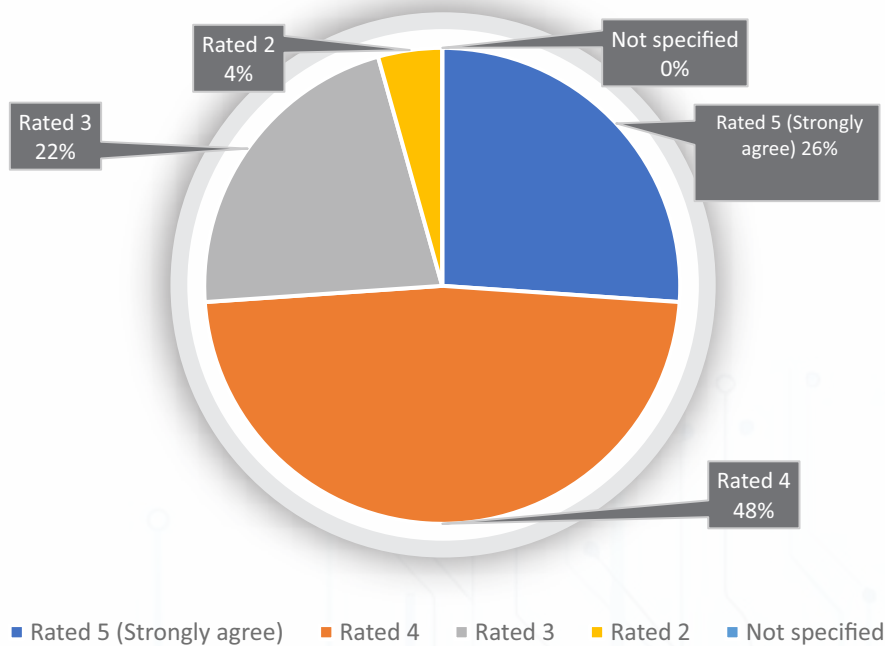
Table 1. Socio-economic conditions of the respondents

Socio-economic Condition	Categories	Proportion
Gender	Male	34.7%
	Female	65.3%
Age	18-24	13.2%
	25-34	26.0%
	35-44	39.3%
	45-54	13.2%
	55 and above	8.7%
Educational Qualifications	Primary Education	4.6%
	Secondary Education	39.3%
	Diplomas	17.4
	Bachelor's Degree	39.3%
	< 5	43.4%
Years in E-waste Entrepreneurship	5-9	34.7%
	10-15	8.7%
	>15	4.6%
	Not specified	8.7%

4.6 Awareness of Health Effects due to E-waste Exposure

A significant portion, 105 (48.0%), rated their awareness level at 4, while 57 (26.0%) rated it at the highest level, 5 (Strongly agree). 48 respondents (21.9%) had a moderate awareness level, rating it 3. A smaller group of 10 respondents (4.6%) gave a low rating of 2.

Fig 5. Awareness of Health Effects due to E-waste Exposure



4.7 Protection from Health Risks of E-waste

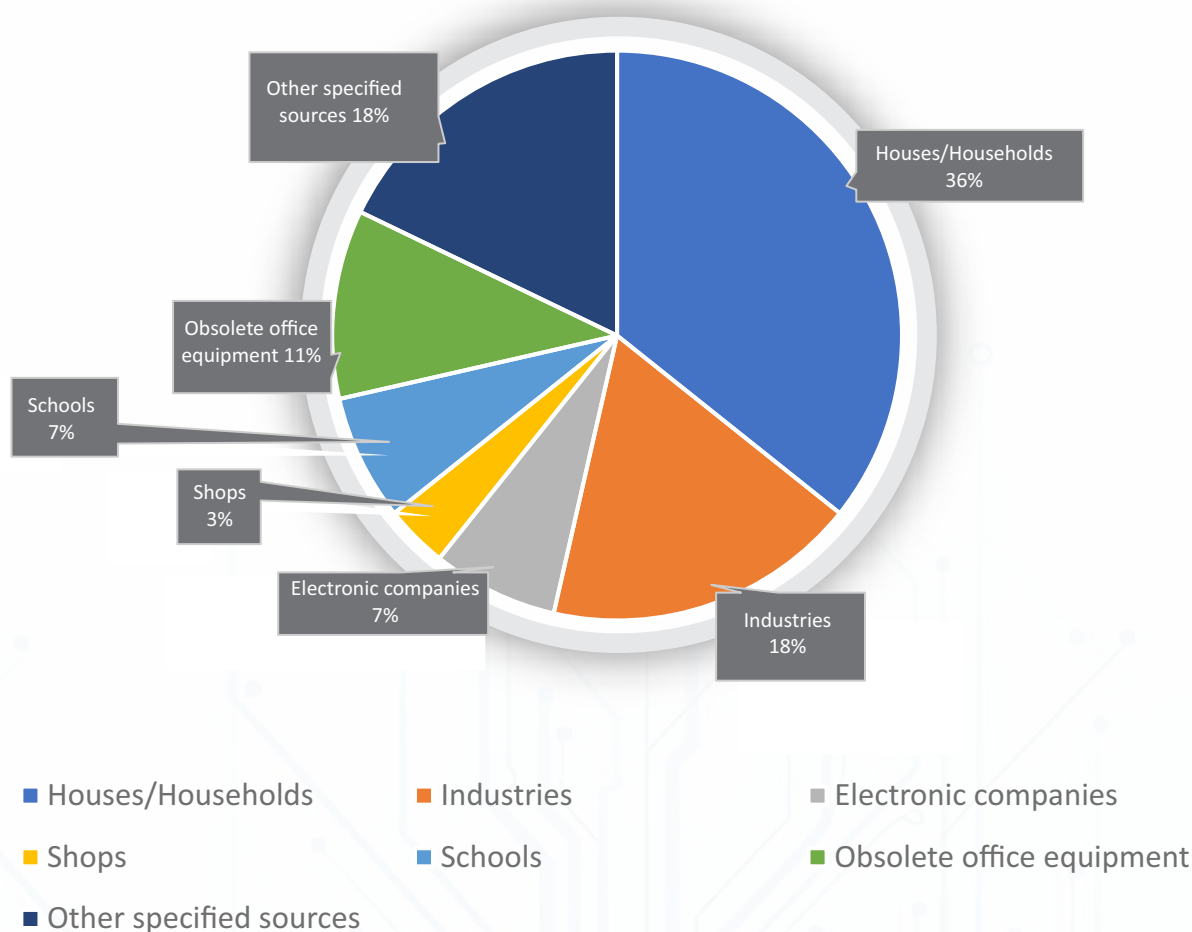
The majority, 124 respondents (56.6%), reported using PPE (Personal Protective Equipment) for protection. 57 respondents (26.0%) indicated they use gloves or related items, and 38 (17.4%) specified other methods of protection.



4.8 Sources of E-waste in Zimbabwe

The main source of e-waste, as identified by 95 respondents (43.4%), were Houses/Households. Industries and other specified sources each were mentioned by 48 respondents (21.9%). Electronic companies were highlighted by 19 respondents (8.7%), the same number as schools. Obsolete office equipment and shops were noted by 29 (13.2%) and 10 respondents (4.6%) respectively.

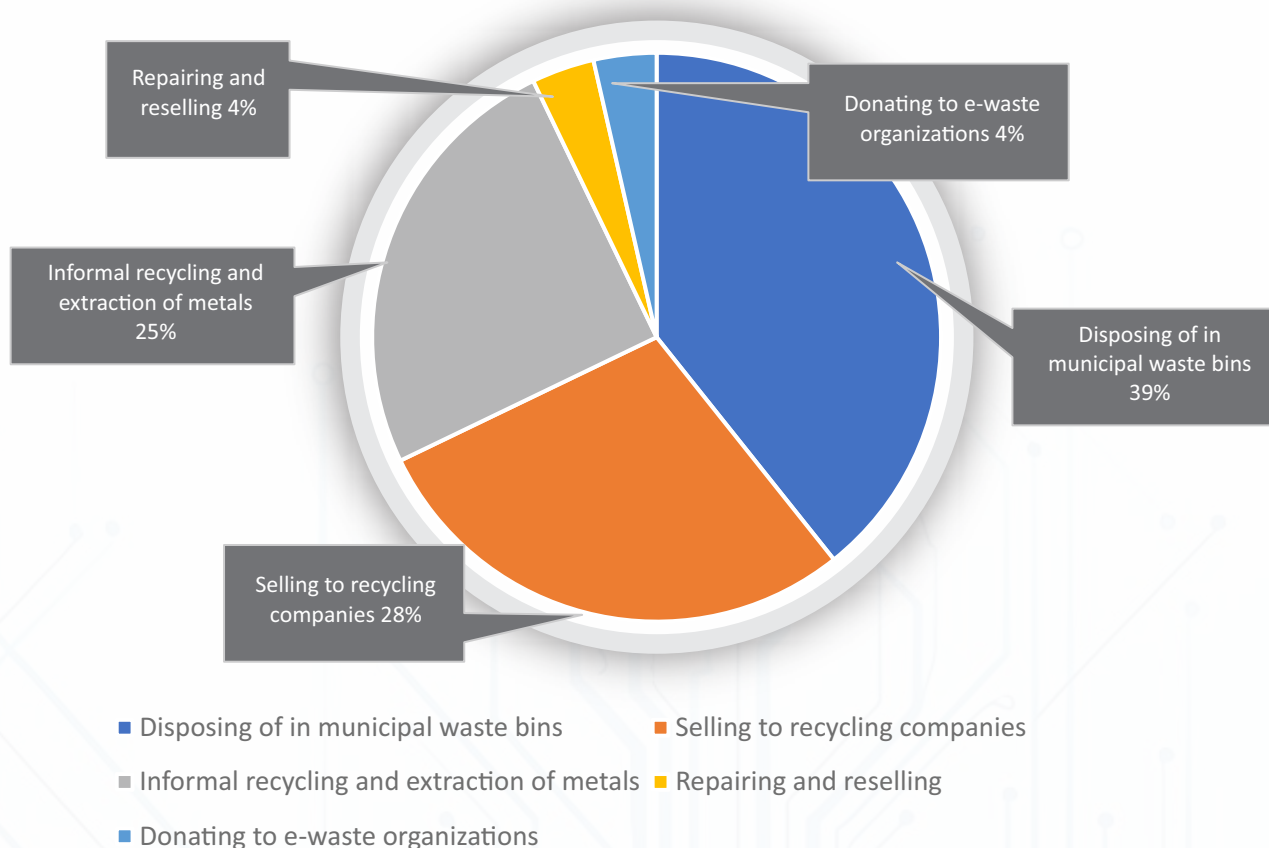
Fig 6. Sources of E-waste in Zimbabwe



4.9 E-waste Management Methods in Business

The most common method of e-waste management, as reported by 105 respondents (48.0%), was disposing of in municipal waste bins. 76 respondents (34.7%) sold their e-waste to recycling companies, while 67 (30.6%) engaged in informal recycling and extraction of metals. Repairing and reselling, as well as donating to e-waste organizations, were the least common methods, each chosen by 10 respondents (4.6%).

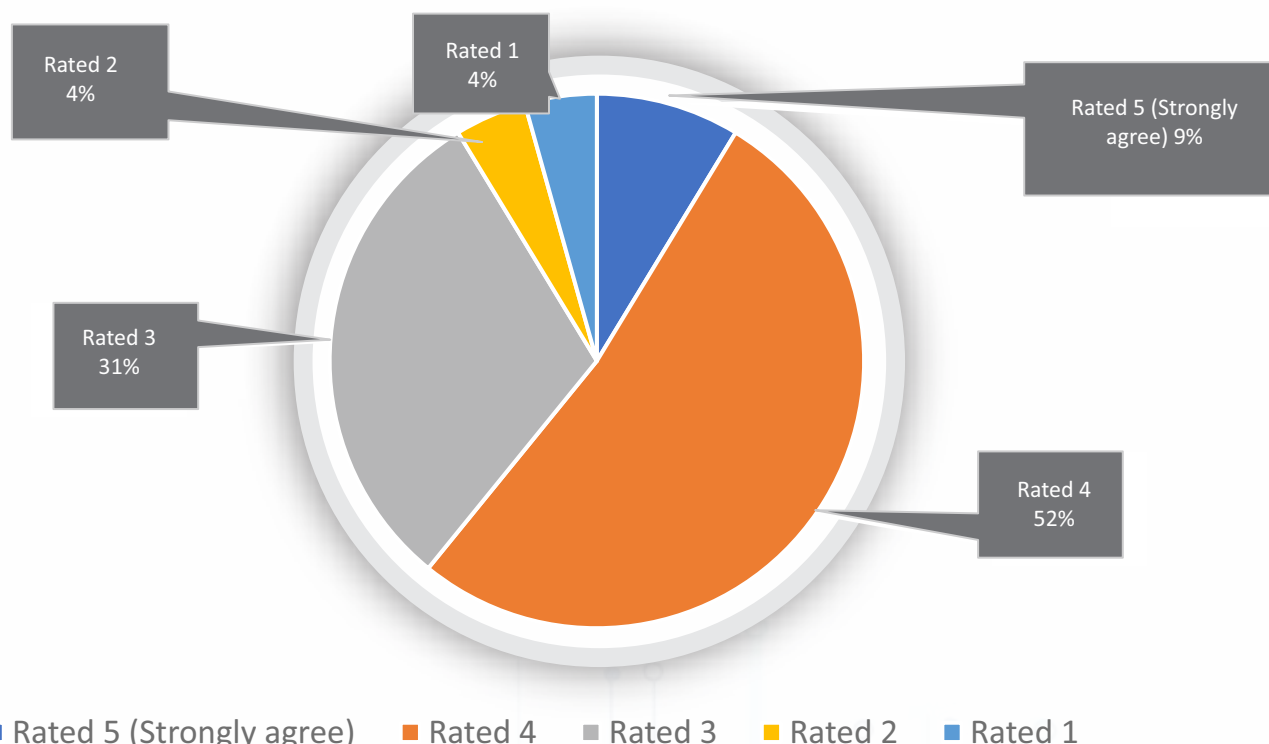
Fig 7. E-waste Management Methods in Business



4.10 Knowledge about Proper Disposal and Recycling:

The majority, 114 respondents (52.1%), rated their knowledge level at 4. 67 respondents (30.6%) rated it 3, and 19 (8.7%) strongly agreed with a rating of 5. The knowledge level was low for 10 respondents (4.6%), who rated it as either 1 or 2.

Fig 8. Knowledge about Proper Disposal and Recycling



4.11 Handling of Hazardous Materials in E-waste:

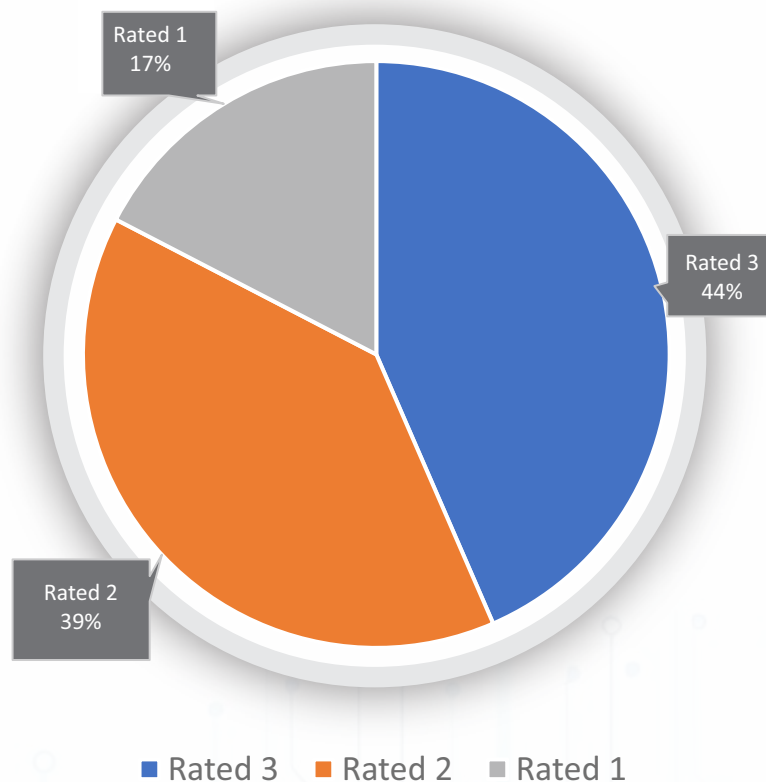
Most respondents, 124 (56.6%), mentioned using PPE. 48 respondents (21.9%) used other specified methods, while the same number did not specify any particular method.

4.12 Knowledge on E-waste Laws/Policies in Zimbabwe:

A moderate knowledge level, rated 3, was reported by 95 respondents (43.4%). A slightly lesser number, 86 respondents (39.3%), rated their knowledge at 2, and 38 (17.4%) gave the lowest rating of 1.



Fig.9 Knowledge on E-waste Laws/Policies in Zimbabwe

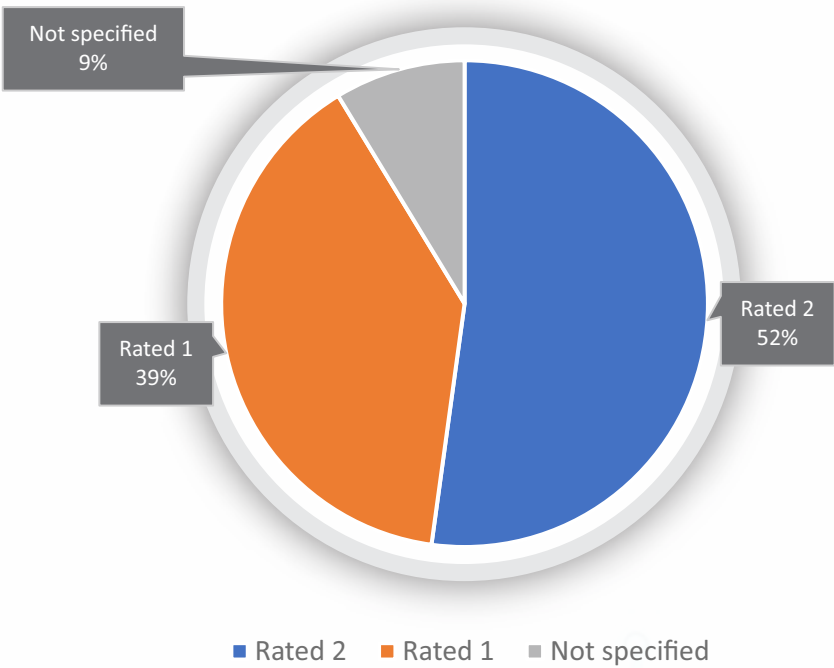


4.13 Perception of E-waste Management Law Enforcement:

The majority, 114 respondents (52.1%), rated the enforcement of e-waste management laws in Zimbabwe at 2. 86 respondents (39.3%) gave the lowest rating of 1, and 19 (8.7%) did not specify.



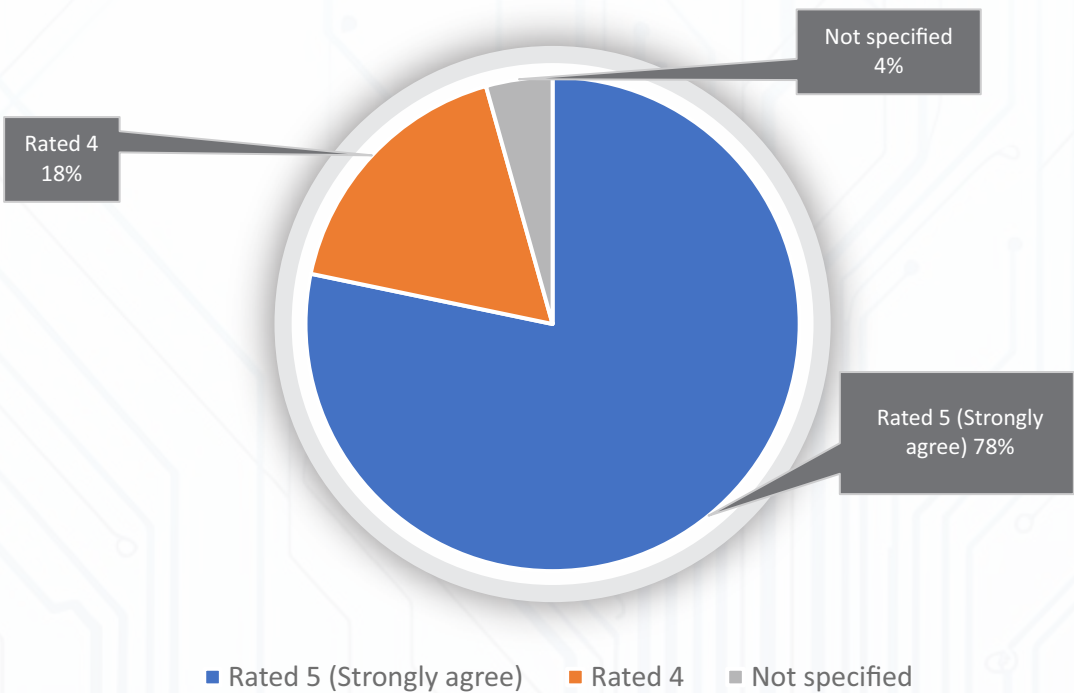
Fig.10 Perception of E-waste Management Law Enforcement



4.14 Interest in Training/Workshops on Sustainable E-waste Management

A significant majority, 171 respondents (78.1%), expressed a strong interest in such training, rating it 5. 38 respondents (17.4%) rated their interest level at 4, while 10 (4.6%) did not specify.

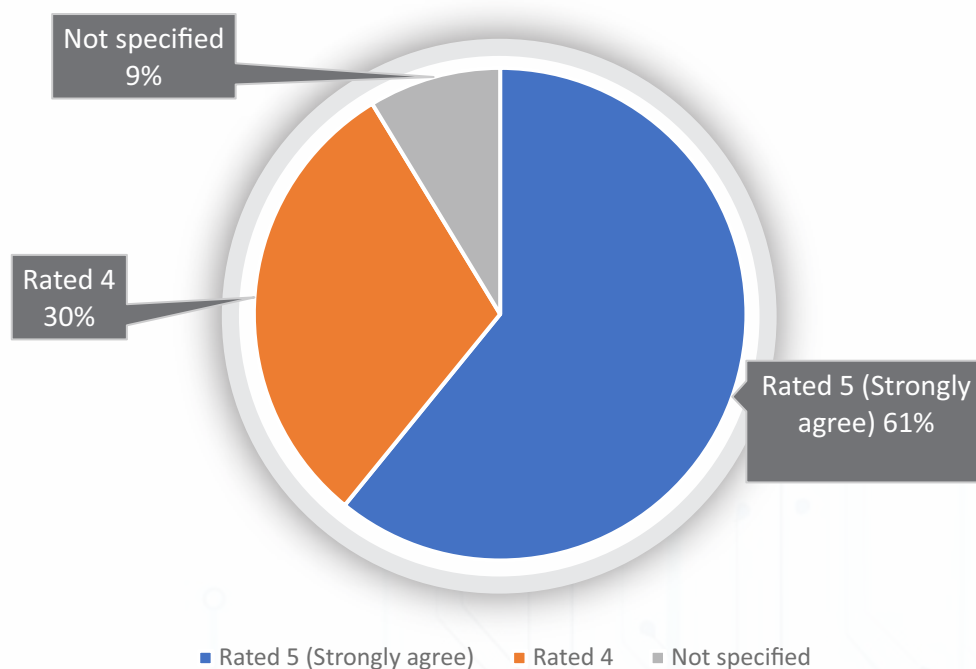
Fig.11 Interest in Training/Workshops on Sustainable E-waste Management



4.15 Perception of Economic Benefits from Proper E-waste Management

The belief in economic benefits from proper e-waste management was strong among respondents, with 133 (60.7%) rating it 5. Another 67 respondents (30.6%) rated it 4, and 19 (8.7%) did not specify.

Fig.12 Perception of Economic Benefits from Proper E-waste Management



4.16 Summary of Awareness and Practices related to E-waste among Respondents

In terms of awareness and practices related to e-waste among respondents in Zimbabwe, the study reveals notable findings. Regarding awareness of health effects due to e-waste exposure, a significant portion of respondents rated their awareness level positively, with 26.0% at the highest level of agreement. Protection from health risks was reported, with 56.6% using Personal Protective Equipment. Houses/households were identified as the primary source of ewaste by 43.4% of respondents. The prevalent method of e-waste management was disposal in municipal waste bins (48.0%). Knowledge about proper disposal and recycling was generally high, with 52.1% of respondents rating it at the fourth level. Interest in training on sustainable e-waste management was strong, as indicated by 78.1% rating it at the highest level. The perception of economic benefits from proper e-waste management was also positive, with 60.7% rating it at the highest level. Overall, the study provides insights into the current state of e-waste awareness, management practices, and attitudes among entrepreneurs in Zimbabwe.

FINDINGS

The summary is represented in Table 2 below.

Table 2. Awareness and practices related to e-waste among respondents

Characteristics	Categories	Proportion			
Awareness of Health Effects due to E-waste Exposure	5	26.0%	Interest in Training or Workshops on Sustainable E-waste Management	5	78.1%
	4	48.0%		4	14.4%
	3	21.9%		Not specified	4.6%
	2	4.6%	Perception of Economic Benefits from Proper E-waste Management	5	60.7%
	1	0%		4	30.6%
Protection from Health Risks of E-waste	Use PPE	56.6%		Not specified	8.7%
	Use gloves or related	26.0%			
	Use other methods				
Sources of E-waste in Zimbabwe	Houses/Households	43.4%			
	Industries	21.9%			
	Electronic companies	8.7%			
	Schools	8.7%			
	Obsolete office equipment	13.2%			
E-waste Management Methods in Business	Shops	4%			
	Disposing off in municipal waste bins	48.0%			
	Selling to recycling companies	34.7%			
	Informal recycling and extraction of metals	30.6%			
	Repairing and reselling	4.6%			
Knowledge about Proper Disposal and Recycling	Donating to e-waste organizations	4.6%			
	5	8.7%			
	4	52.1%			
	3	30.6%			
	2	4.6%			
Knowledge on E-waste Laws/Policies in Zimbabwe	1	4.6%			
	3	43.4%			
Perception of E-waste Management Law Enforcement	1	17.4%			
	2	52.1%			
	1	39.3%			
	Not specified	8.7%			

5.1 Discussion

The analysis of the 219 responses based on the stated objectives and research questions provides valuable insights into the awareness, practices, and perspectives of e-waste entrepreneurs in Zimbabwe. The study aimed to evaluate the participants' awareness of different types of e-waste products, their effects, current E-waste management methods, knowledge of existing laws and policies, and the formulation of sustainable adoption and implementation strategies for e-waste management.

Objective 1: Awareness of E-waste Products and Effects

The findings indicate a commendable level of awareness among the participants regarding various sources of e-waste, including "Obsolete office equipment," "Household appliances," "Telecommunication devices," and "End of life electronic products." However, despite this awareness, there are gaps in knowledge, particularly concerning the intricate nature of e-waste components. The recognition of health issues linked to e-waste exposure, such as cancer, skin diseases, respiratory problems, neurological problems, and reproductive health concerns, demonstrates a significant understanding of the potential risks associated with e-waste.

Objective 2: Current E-waste Management Methods

The study reveals that e-waste entrepreneurs primarily resort to rudimentary disposal methods, with a common practice being the disposal of e-waste in municipal waste bins. Other methods mentioned include selling to recycling companies, informal recycling, and donating to e-waste clubs. The prevalence of suboptimal disposal practices, such as burning, highlights a critical issue contributing to environmental pollution and health risks. This emphasizes the need for interventions to promote safer and more sustainable e-waste management practices.

Objective 3: Awareness of Laws and Policies

The analysis indicates a low level of awareness among participants regarding existing laws and policies on e-waste management. Few respondents directly mentioned regulations such as "The EMA ACT," reflecting a gap in understanding the legal framework governing e-waste. This underscores the necessity for enhanced awareness campaigns and educational initiatives to familiarize e-waste entrepreneurs with their legal responsibilities and obligations.

Objective 4: Formulation of Sustainable Adoption and Implementation Strategies

Despite the challenges identified in the study, there is a notable willingness among e-waste entrepreneurs to adopt sustainable e-waste management practices. The participants expressed a need for training, awareness campaigns, equipment donations, and emphasized the importance of clear regulations and policies. This points towards a positive inclination towards embracing more environmentally friendly practices, provided that the necessary support and infrastructure are in place.



5.2 Research Questions Analysis:

The analysis of specific research questions further contributes to the understanding of the dynamics within the e-waste entrepreneurial landscape:

Awareness of Different E-waste Products: The majority of respondents demonstrated awareness of various e-waste products.

Sources of E-waste: Multiple sources of e-waste were identified, with households, industries, electronic companies, and offices being prominent contributors.

Knowledge of E-waste Effects: Participants exhibited awareness of various health effects associated with e-waste exposure.

Current E-waste Management Methods: Disposal in municipal waste bins, selling to recycling companies, and informal recycling were identified as primary methods.

Awareness of Proper Disposal Methods: Not all entrepreneurs seemed aware of proper disposal methods, indicating a need for improved awareness and education. Awareness of Recycling

Methods: While some participants were aware of methods like selling to recycling companies, there is a variable awareness of proper recycling techniques.

Awareness of Laws and Policies: Knowledge of specific laws and policies was limited, emphasizing the importance of disseminating information on legal frameworks.

Responsibility for Sustainable E-waste Management: The sense of responsibility towards sustainable e-waste management was mixed, suggesting the need for targeted initiatives to instill a stronger commitment to environmentally sound practices.

The study highlights both strengths and areas for improvement in the awareness and practices of e-waste entrepreneurs in Zimbabwe. The identified gaps in awareness, coupled with the expressed willingness to adopt sustainable practices, provide a foundation for targeted interventions and policy enhancements to promote responsible e-waste management in the region.

5.3 RECOMMENDATIONS

This research has shed light on the urgent need for improved e-waste management practices in Zimbabwe. The study identified a lack of awareness and insufficient disposal methods, posing significant threats to public health and the environment. Despite these challenges, the positive finding is the willingness of e-waste entrepreneurs to embrace sustainable practices. The potential for change lies in bridging the existing knowledge gaps and providing support for environmentally friendly initiatives. This final report encapsulates the comprehensive exploration of the research objectives, the applied methodology, detailed analysis, and initial recommendations. It serves as a foundational resource for stakeholders involved in e-waste management in Zimbabwe, with the potential to guide policies and actions for a safer and more sustainable e-waste management landscape. The responses from e-waste entrepreneurs underscore the necessity for enhanced training and awareness campaigns in Zimbabwe. While there is some awareness of the harmful effects of e-waste and the types of e-waste products, there is a clear deficit in comprehensive knowledge regarding proper disposal, recycling methods, and relevant laws/policies. Strategies for enhancing e-waste management in Zimbabwe should be tailored to address these gaps, ensuring that e-waste entrepreneurs are wellinformed and equipped to handle e-waste sustainably.

Recommendations:

Public Awareness Campaigns: Initiate targeted public awareness campaigns to educate e-waste entrepreneurs about the various types and effects of e-waste products. This can be achieved through media, workshops, and community outreach programs.

Capacity Building Programs: Implement training and capacity-building programs to empower ewaste entrepreneurs with knowledge of proper e-waste disposal methods and recycling techniques. This could involve partnerships with educational institutions and industry experts.

Policy Advocacy: Collaborate with government agencies to enhance awareness of existing e-waste management laws and policies. Efforts should be made to ensure that e-waste entrepreneurs understand their responsibilities and obligations.

Support for Sustainable Practices: Facilitate access to resources, including recycling centers and environmentally friendly technologies, to encourage the adoption of sustainable e-waste management practices. Financial incentives and subsidies may also be considered.

OVERALL ASSESSMENT AND CONCLUSIONS

Research-Based Interventions: Encourage further research into e-waste management and its impacts, fostering evidence-based interventions. This could involve supporting academic and industry research initiatives to develop innovative solutions.

These recommendations, when implemented collectively, can contribute to a more informed, responsible, and sustainable approach to e-waste management in Zimbabwe. The willingness of e-waste entrepreneurs to embrace positive change presents an opportunity to create a lasting impact on the environmental and public health landscape.

