



A Study On Household Practices In E-Waste Management In Tambaram In Tamil Nadu

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ABSTRACT

The exponential growth of electronic waste (e-waste) presents a critical environmental and public health concern globally, necessitating effective management strategies. This study investigates household practices in e-waste management in Tambaram, Tamil Nadu, India, employing a mixed-method approach involving primary data collection through questionnaires and secondary data analysis. The research aims to evaluate awareness levels and current practices among Tambaram residents regarding responsible disposal methods and to propose sustainable strategies tailored to community needs. Findings reveal a correlation between household income and electronic purchasing behavior, with a significant segment possessing considerable purchasing power. Despite the prevalence of unused electronic items in households, proactive measures such as promoting recycling programs and raising awareness are imperative. Most households tend to retain unused electronics at home or dispose of them with regular waste, emphasizing the need for educational initiatives and convenient disposal options. Concerns about the environmental impact of e-waste disposal are prevalent, yet awareness of recycling programs remains inadequate. However, a majority express willingness to modify disposal habits to mitigate environmental impacts, suggesting a potential shift towards sustainable practices. The study underscores the urgent need for enhanced education, infrastructure development, and community engagement to address the challenges associated with e-waste accumulation effectively. By offering insights and recommendations, this research contributes to the development of targeted interventions for responsible e-waste disposal and recycling in urban and semi-urban areas.

KEY WORDS: E-waste management, Household practices, Awareness, Recycling, Sustainability

INTRODUCTION

In recent years, the proliferation of electronic devices has led to a significant increase in electronic waste (e-waste) generation worldwide. As technology continues to advance, the lifespan of electronic products shortens, contributing to the rapid accumulation of obsolete or discarded electronic devices. E-waste poses significant environmental and health hazards due to its toxic components and improper disposal methods.

Effective management of e-waste is thus crucial to mitigate its adverse impacts on the environment and human health.

One critical aspect of e-waste management is understanding household practices regarding the disposal and handling of electronic devices. Household consumption patterns play a substantial role in e-waste generation, as individuals regularly upgrade their electronic gadgets, resulting in a steady stream of obsolete devices. Therefore, studying household practices in e-waste management is essential for developing targeted interventions and policies aimed at reducing e-waste generation, promoting recycling, and fostering sustainable consumption behaviours.

This study aims to explore various aspects of household practices in e-waste management, including disposal behaviors, awareness levels, motivations, barriers, and attitudes toward recycling and proper disposal of electronic devices. By examining these factors, researchers can gain insights into the current state of e-waste management at the household level and identify strategies to improve practices and promote sustainable behaviors among consumers.

Furthermore, understanding household practices in e-waste management can inform policymakers, waste management authorities, and environmental organizations about the effectiveness of existing e-waste management initiatives and identify areas for improvement. By engaging with households and addressing their concerns and challenges related to e-waste disposal, stakeholders can develop more targeted and impactful interventions to enhance recycling rates, reduce environmental pollution, and promote a circular economy approach to e-waste management.

The exponential growth of e-waste can be attributed to various factors, including technological innovation, planned obsolescence, and increasing consumer affordability. Consequently, the improper disposal of e-waste exacerbates environmental pollution and health hazards, necessitating effective management strategies.

In the age of rapid technological advancement, the management of electronic waste (e-waste) has become a critical environmental and public health concern. This research article explores household practices in e-waste management in Tambaram, India, aiming to identify areas for improvement and propose sustainable strategies. Utilizing a mixed-method approach involving primary data collection through questionnaires and secondary data analysis, the study assesses the level of awareness and current practices among Tambaram residents. The findings underscore the pressing need for increased awareness, structured e-waste management systems, and community engagement to address the challenges associated with e-waste accumulation. By offering insights and recommendations, this study contributes to the development of targeted interventions for responsible e-waste disposal and recycling in urban and semi-urban areas. The absence of a structured e-waste management system in Tambaram exacerbates the challenges associated with e-waste accumulation.

OBJECTIVES OF THE STUDY

1. The study aims to evaluate household practices related to e-waste management in Tambaram and to examine the levels of awareness among residents regarding responsible disposal methods.
2. Additionally, the research seeks to develop sustainable strategies tailored to the community's needs to promote responsible e-waste disposal practices and mitigate environmental hazards associated with improper handling of electronic waste.

METHODOLOGY

The research adopts a mixed-method approach, combining primary data collection through questionnaires with secondary data analysis. Tambaram, a suburban locality situated in Chennai, Tamil Nadu, India, is chosen as the research location due to its notable demographic diversity and distinct patterns of electronic consumption. By utilizing simple statistical tools to analyse the gathered data, the study aims to uncover valuable insights into consumer behaviours and preferences within this specific geographic context.

Tambaram's unique socio-economic landscape offers an ideal setting to explore how individuals interact with electronic products and services, providing a nuanced understanding of consumer trends and market dynamics. Through this comprehensive approach, the research endeavours to contribute meaningful findings to the field, potentially informing marketing strategies, product development initiatives, and policy decisions tailored to the needs of this vibrant community.

ANALYSIS

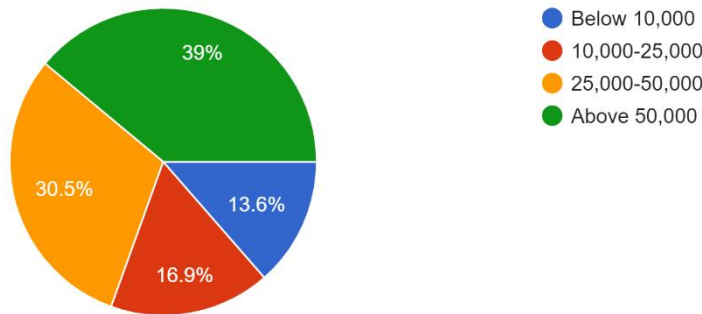
The study's analysis is based on information gathered from a questionnaire that was given to 60 individuals. The sample includes individuals of various age groups from the locality. The data gathered from the questionnaire served as the foundation for the inferences and observations made.

1. Income of the household

In the study on household e-waste management, income emerges as a pivotal factor influencing consumer behavior. With over 40 respondents reporting incomes exceeding 25000, it becomes evident that a substantial portion of households falls into the higher income bracket, indicating potential purchasing power for electronic items. Moreover, the finding that approximately 39% of households have monthly incomes surpassing 50000 underscores a significant segment with considerable disposable income, likely driving demand for electronic goods.

Monthly Household income

59 responses



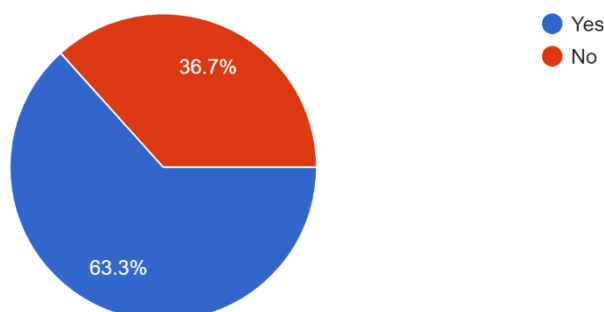
Conversely, the revelation that only 8 respondents have incomes below 10000 highlights a smaller demographic with limited purchasing capacity, potentially facing barriers to electronic consumption. These insights not only emphasize the correlation between income and electronic purchasing behavior but also underscore the importance of understanding socioeconomic factors in devising effective e-waste management strategies tailored to diverse household demographics.

2. Households that have electronic items that are not in use

Effective household e-waste management is crucial given the prevalence of unused electronic items in more than half of households, with approximately 63% reported to possess such items. Despite this, only 22 households claim not to have any unused electronics. Addressing this issue necessitates proactive measures such as promoting electronic recycling programs, facilitating convenient disposal options, and raising awareness about the environmental impact of improperly discarded electronics.

Do you have any electronic devices at home that you no longer use or need?

60 responses



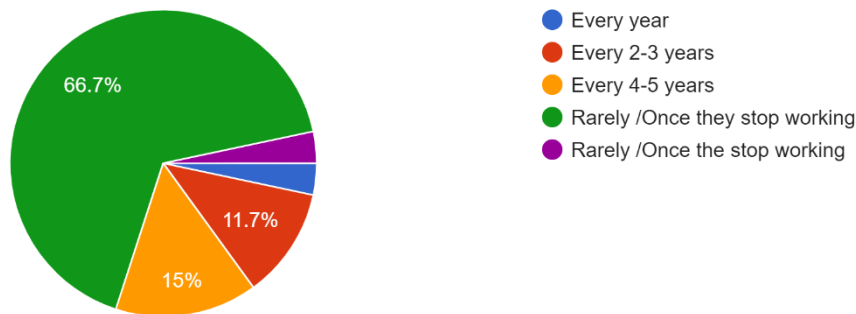
Implementing educational initiatives to inform households about the importance of responsibly managing electronic waste can encourage proper disposal practices and mitigate the environmental and health risks associated with e-waste accumulation. Collaborative efforts between governments, businesses, and

communities are essential to establish comprehensive e-waste management systems that promote sustainability and minimize electronic waste's adverse effects on the environment and human health.

3. Number of times households replace the electronic devices

Most individuals tend to replace electronic items infrequently, typically only when the device ceases to function properly, as indicated by 40 out of the surveyed respondents. About 16 respondents reported replacing electronic items within a span of 2 to 5 years, suggesting a slightly more proactive approach to upgrading technology.

How often do you replace your electronic devices (eg: smartphones,laptops,TVs etc)
60 responses



However, a minority of respondents adopt a more frequent replacement pattern, with only a small percentage opting to replace electronic items annually. This trend underscores a widespread tendency among consumers to maximize the lifespan of their electronic devices, potentially driven by factors such as cost considerations, environmental awareness, and the perceived durability of modern technology.

4. Disposal of electronic devices that are not in use

Most households tend to keep their unused electronic items at home, with 20 out of the surveyed individuals opting for this approach. However, a significant portion, 13 respondents, admitted to disposing of their electronic devices by throwing them away with regular household waste. On the other hand, 16 respondents indicated a preference for recycling their electronic items through designated e-waste recycling programs.

How do you typically dispose of electronic devices that you no longer use?
60 responses

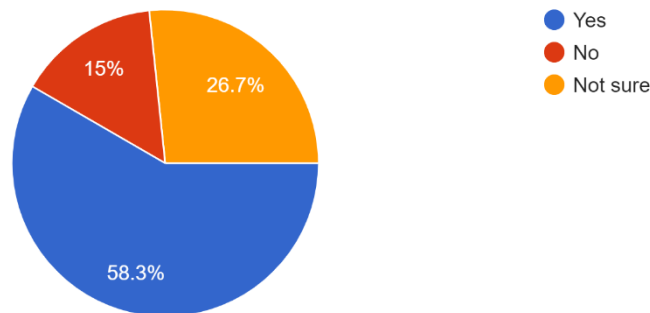


A smaller percentage mentioned donating their electronics to charity or passing them on to others. A minority of respondents mentioned exchanging them, keeping them until they become outdated, or selling them as scrap. The frequency of electronic disposal varied, with most respondents disposing of them only once every few years, while only a few admitted to doing so frequently.

5. Environmental impact of disposing electronic waste

According to the study, a significant majority of respondents, comprising more than half, express concern about the environmental repercussions of improperly disposing of electronic waste. This highlights a growing awareness among individuals regarding the detrimental effects of electronic waste on the environment. However, the study also reveals a concerning trend, with 9 respondents indicating a lack of consideration for these impacts, suggesting a portion of the population remains indifferent or uninformed about the environmental consequences of their actions

Have you ever considered the environmental impact of disposing of electronic waste improperly?
60 responses



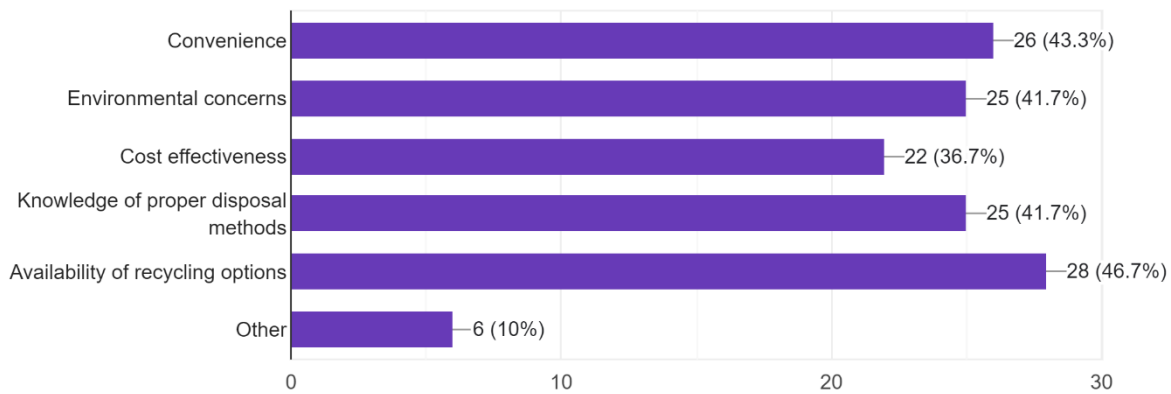
Additionally, approximately 27% of respondents appear uncertain about whether they are considering the impact or not, indicating a potential need for further education and awareness campaigns to elucidate the importance of responsible electronic waste disposal practices. This underscores the necessity for continued efforts to promote environmental consciousness and foster responsible behaviours to mitigate the harmful effects of electronic waste on our planet.

6. Factors influencing disposal of electronic waste

The disposal of electronic waste is influenced by several key factors, with the availability of recycling options and convenience standing out as primary considerations for respondents. Approximately 42% of respondents also cite environmental concerns and knowledge of proper disposal methods as influential factors, indicating a growing awareness of the ecological impact of electronic waste and the importance of responsible disposal practices.

What factors influence your decision on how to dispose of electronic waste?

60 responses



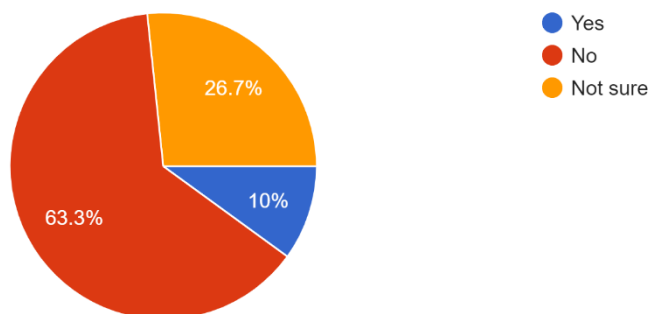
Moreover, cost-effectiveness emerges as another significant factor shaping disposal decisions, highlighting the economic considerations that individuals weigh when deciding how to dispose of their electronic devices. Together, these factors underscore the complex interplay of environmental consciousness, convenience, and economic pragmatism that guide individuals' choices regarding electronic waste disposal.

7. Electronic waste recycling programs

The lack of adequate information surrounding the proper disposal of electronic waste (e-waste) remains a significant concern, as revealed by the survey. Approximately 27% of respondents expressed uncertainty regarding the availability of sufficient information to guide them in proper e-waste disposal methods. Alarming, half of the participants indicated a complete lack of familiarity with electronic waste recycling programs or facilities in their vicinity, suggesting a glaring gap in awareness and accessibility.

Do you believe there is enough information available to the public about proper electronic waste disposal methods

60 responses



Moreover, 18 respondents reported a neutral level of familiarity, indicating some awareness but insufficient knowledge about local recycling initiatives. Conversely, a mere 20% of individuals claimed to be very familiar with electronic waste recycling programs in their locality, highlighting the stark disparity in

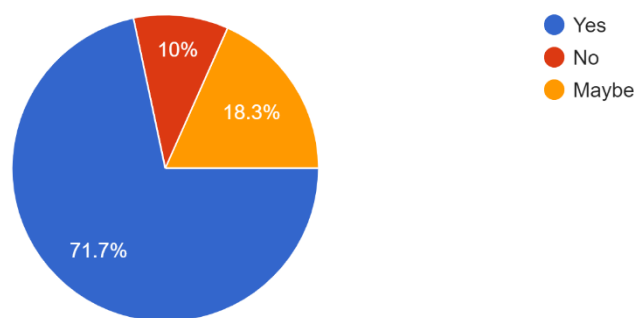
awareness levels. This underscores the pressing need for enhanced education and accessibility to foster responsible e-waste management practices within communities.

8. Willingness to make changes in electronic waste disposal habits

The survey found that over 70% of respondents expressed a willingness to modify their electronic waste disposal habits if it contributes to mitigating environmental impacts. Specifically, 11 respondents indicated a readiness to alter their disposal methods for electronic waste items with the aim of lessening their environmental footprint.

Would you be willing to make changes to your electronic waste disposal habits if it meant reducing of environmental impact ?

60 responses



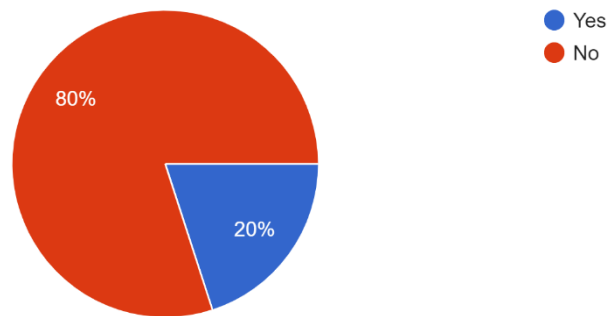
This significant majority underscores a growing awareness and concern among individuals regarding the environmental consequences of improper electronic waste disposal. It suggests a potential shift towards more responsible and sustainable practices in managing electronic waste, driven by an understanding of the broader environmental implications and a desire to enact positive change. These findings highlight the potential for meaningful action at the individual level to contribute to larger-scale efforts aimed at reducing environmental harm.

9. Participation in electronic waste recycling initiatives or events

In the study it was found that a substantial majority, constituting 80%, had not engaged in any waste recycling initiatives or events. Conversely, only a small fraction, comprising merely 20% of the respondents, had participated in such activities. Specifically, out of the total respondents, only 12 individuals had taken part in electronic waste recycling initiatives or events, indicating a considerably low involvement in this aspect of recycling.

Have you ever participated in any electronic waste recycling initiatives or events?

60 responses



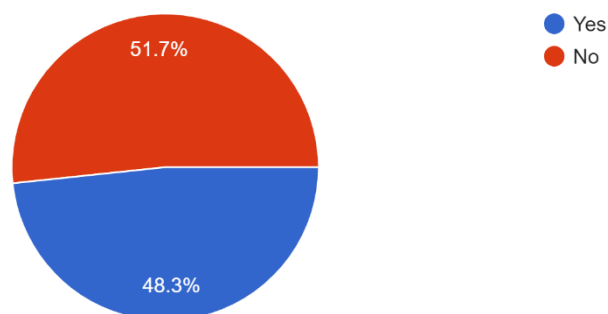
However, a more encouraging statistic emerged concerning general waste recycling initiatives or events, with 48 respondents having participated. These findings underscore a significant gap between the awareness of recycling practices and actual participation, suggesting a potential area for increased education and outreach efforts to promote sustainable waste management practices among the surveyed population.

10. Education about electronic waste management

A concerning trend emerges from the study regarding electronic waste management, indicating that a majority of respondents have not been adequately informed or educated on the subject by local authorities, schools, or organizations. Shockingly, more than half of the respondents fall into this category, highlighting a significant gap in awareness and understanding of the issue.

Have you ever received information or education about electronic waste management from local authorities, schools or organizations

60 responses



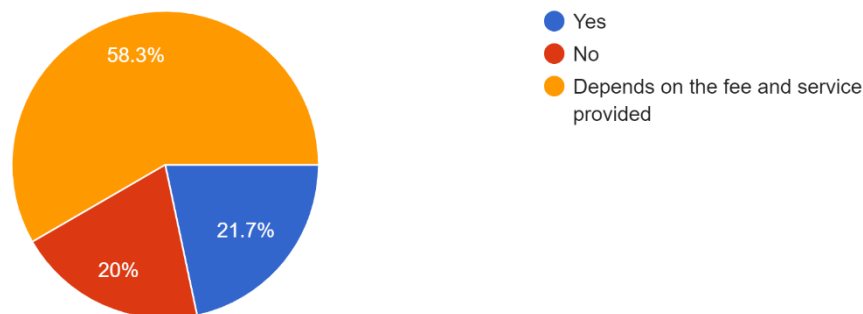
However, amidst this deficiency, there is a glimmer of hope as a notable portion of respondents, comprising 29 individuals, have received information or education about electronic waste management from such sources. While this proportion may not be overwhelmingly large, it suggests that efforts to disseminate knowledge on responsible e-waste disposal are being made, albeit perhaps not on a broad enough scale. The findings underscore the urgent need for increased educational initiatives and awareness campaigns to address this pressing environmental concern effectively.

11. Willingness to pay fee for electronic waste recycling services or events

In the survey, approximately 58% of respondents indicated that their decision to pay for electronic waste recycling services hinges on the fee charged and the quality of services provided. This suggests that a significant portion of the population is sensitive to both cost and the value proposition offered by recycling programs.

Would you be willing to pay a small fee for electronic waste recycling services or events?

60 responses



Meanwhile, 12 respondents expressed complete unwillingness to pay any fee for such services or events, indicating a potential barrier to adoption for a segment of the population. Conversely, 13 respondents showed a willingness to pay a nominal fee regardless of the amount charged or the specific services provided, suggesting a degree of intrinsic motivation or environmental consciousness among this group. These findings highlight the complex interplay between cost, perceived value, and individual attitudes toward electronic waste recycling, underscoring the need for diverse strategies to promote sustainable e-waste management practices.

CONCLUSION

In conclusion, this study sheds light on the critical issue of household practices in e-waste management in Tambaram offering valuable insights into awareness levels, disposal behaviours, motivations, and barriers among residents. The findings underscore the pressing need for enhanced educational campaigns, structured e-waste management systems, and community engagement to address the challenges associated with e-waste accumulation effectively. Key observations reveal the correlation between income levels and electronic consumption behavior, emphasizing the importance of considering socioeconomic factors in devising targeted interventions. Additionally, the prevalence of unused electronic items in households highlights the necessity for proactive measures such as promoting recycling programs and raising awareness about responsible disposal methods. The study also unveils varied disposal practices among residents, ranging from keeping unused electronics at home to disposing of them improperly with regular household waste. This highlights the importance of promoting recycling and providing convenient disposal

options to mitigate environmental and health risks. Furthermore, the findings underscore the growing awareness among individuals regarding the environmental impact of e-waste, coupled with a willingness to modify disposal habits to mitigate these impacts. However, there remains a significant gap in knowledge and awareness, emphasizing the urgent need for increased educational initiatives and awareness campaigns. Overall, this study contributes to the development of targeted interventions for responsible e-waste disposal and recycling in urban and semi-urban areas, ultimately fostering sustainable practices and mitigating environmental hazards associated with improper handling of electronic waste in Tambaram and similar communities.

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