International Journal of Scientific Research in Engineering and Management (IJSREM)
Volume: 09 Issue: 04 | April - 2025 SJIF Rating: 8.586 ISSN: 2582-3930

Youth's Perspectives and Behavior on E- Waste Disposal and Recycling

AMAN SAW, ANMOL KUMAR, KAIF ALI, KUNDAN SINGH THAKUR, NEELIMA PANT

. Neha Tickoo Kohli, Assistant Professor

MASTER OF BUSINESS ADMINISTRATION (MBA)

Mittal School of Business LOVELY PROFESSIONAL UNIVERSITY

Phagwara, Punjab

December – March 2025

ABSTRACT

This research paper addresses the critical issue of electronic waste (e-waste) management in India, with a specific focus on the perceptions and behaviors of the youth towards its disposal and recycling. Globally, the escalating consumption of electrical and electronic equipment (EEE) has resulted in a significant increase in e-waste, posing substantial environmental and economic challenges. In 2023, worldwide e-waste generation reached 63 million metric tonnes (MMT), a figure projected to rise to 100-105 MMT by 2034, indicating a compound annual growth rate (CAGR) of 5%. This growing waste stream encompasses a wide array of discarded devices, ranging from large household appliances and temperature exchange items to smaller consumer electronics and information technology equipment. Effective management of this complex waste is essential to mitigate environmental pollution from hazardous substances and to recover valuable secondary raw materials, thereby fostering a circular economy.

India plays a crucial role in this global context, ranking as the third-largest generator of e- waste, after China and the USA. The rapid expansion and use of electronics in India is particularly evident among Wenger demographics. With increasing urbanization and disposable incomes, the consumption habits of Indian youth have significantly impacted both the volume and management practices associated with e-waste. This demographic represents a dynamic and vital component in the success of e-waste recycling initiatives, yet their engagement requires a more profound understanding, especially within the Indian context.

Research indicates that while Weng Indians may be environmentally conscious, they often lack practical knowledge regarding proper e-waste disposal. This highlights a disconnect where technology adoption is widespread among youth, but their involvement in responsible waste management practices lags behind. Studies focusing on the 18–22 age group in New Delhi have underscored the significance of this demographic in the mobile phone consumer market and their potential role in e-waste management. This research aims to broaden this scope by examining a wider youth demographic, encompassing individuals between 14 and 30 years of age. This expanded age range is crucial for capturing a more comprehensive spectrum of educational backgrounds, professional experiences, and consumption patterns that can significantly influence perspectives and behaviors related to e-waste disposal andrecycling. Recent data from Redseer show that India generated 3.8 million metric tonnes of e- waste in FY24, with consumer-led e-waste estimated to grow at a CAGR of 8-10% over the next decade, reaching 4.2 MMT by FY30 and 6.5 MMT by FY35. This consumer segment constitutes approximately 70% of the total e-waste generated in India in FY24. Despite the implementation of the E-Waste (Management) Rules (2022) and subsequent amendments, a significant gap persists between policy formulation and actual consumer behavior at the ground level.

To address these challenges, this research paper aims to achieve the following objectives: First, to evaluate the perceived barriers to proper disposal of electronic waste among Indian youth. This objective seeks to identify and assess the key impediments that prevent Indian youth from adopting responsible e-waste disposal practices, directly addressing the "suboptimal disposal behaviors" resulting from "limited awareness" and "unclear responsibility". Understanding these barriers is crucial for developing targeted interventions and policy recommendations to promote formal and environmentally sound e-waste management. Second, this paper intends to analyze attitudes toward upcycling and reuse of electronic devices among Indian youth. The aim is to explore the perspectives and inclinations of Weng Indians towards extending the lifespan of electronic devices through upcycling and reuse, shifting away from the "take-make-dispose" mentality. Understanding these attitudes is critical for promoting more sustainable consumption and disposal behaviors, aligning with a circular economy approach.

The findings of this research are expected to contribute to a more nuanced understanding of the socio-behavioral dynamics at play in e-waste management among Indian youth. By evaluating perceived barriers and analyzing attitudes towards upcycling and reuse, this paper aims to provide insights that can inform the development of more effective and targeted e- waste management strategies, ultimately mitigating environmental and health risks associated with improper disposal and fostering a transition towards a more sustainable and circular economy in the management of electronic waste in India.

CHAPTER I
INTRODUCTION

In today's fast-paced digital world, electronic devices have become an essential part of our daily lives. From smartphones and laptops to televisions and household appliances, technology is continuously evolving, making older models obsolete within a short period. This rapid advancement has led to an increasing amount of electronic waste, commonly known as e-waste. While technology has made life more convenient, it has also introduced a serious environmental concern that demands urgent attention. Among the many stakeholders involved in addressing this issue, the youth play a critical role, as they are the largest consumers of electronic gadgets and can significantly influence e-waste management practices.

E-waste comprises discarded electrical and electronic devices that are no longer in use. It includes items such as mobile phones, computers, chargers, batteries, and other electronic components. Unlike regular waste, e-waste contains hazardous materials like lead, mercury, and cadmium, which pose serious environmental and health risks if not disposed of properly. The improper disposal of e-waste leads to soil, water, and air pollution, causing long-term damage to ecosystems. In contrast, recycling and proper disposal methods can help recover valuable materials like gold, silver, and copper, reducing the need for mining new raw materials and promoting sustainability.

Despite the growing concern over e-waste, studies indicate that many Weng people lack awareness about its proper disposal and recycling methods. With increasing dependence on digital devices, the youth frequently upgrade to newer models, often discarding older ones irresponsibly. Many are unaware of designated e-waste collection centers or the hazardous effects of dumping electronic products in landfills. This lack of awareness, coupled with a consumerist mindset, contributes to the escalating e-waste crisis. However, youth can also be the driving force behind positive change. Their adaptability to new trends and digital engagement provide an opportunity to create awareness and promote responsible e-waste management.

Understanding youth perspectives on e-waste disposal and recycling is essential for developing effective strategies to address this growing issue. Their attitudes, behaviors, and level of awareness play a crucial role in shaping future sustainability efforts. Factors such as education, social influence, government policies, and accessibility to recycling

facilities influence their approach toward e-waste management. In many cases, the absence of clear guidelines or incentives discourages them from adopting responsible disposal practices. By identifying these challenges and barriers, policymakers and environmental organizations can design targeted campaigns and initiatives to encourage youth participation in e-waste recycling programs.

Moreover, technological advancements have given rise to various solutions for e-waste recycling, including take-back programs by electronic companies, e-waste collection drives, and innovative upcycling initiatives. However, the effectiveness of these programs largely depends on youth participation. If Weng consumers are educated about the environmental impact of e-waste and motivated to contribute towards sustainable disposal practices, they can make a significant difference in reducing electronic pollution. Schools, colleges, and social media platforms can play a pivotal role in spreading awareness and making responsible e-waste disposal a mainstream practice among Weng individuals.

In conclusion, the increasing generation of e-waste is a pressing environmental challenge that demands immediate action. As the primary users of electronic devices, Weng people hold the power to influence and lead sustainable disposal practices. Their perspectives and behaviors toward e-waste recycling can shape the future of environmental sustainability. By fostering awareness, implementing stricter policies, and making recycling facilities more accessible, we can encourage youth to become active participants in responsible e-waste management.
This research aims to delve deeper into youth perspectives on e-waste disposal and recycling, identifying gaps in awareness and exploring potential solutions to ensure a more sustainable future.

Globally, the soaring consumption of electrical and electronic equipment (EEE) has led to a corresponding surge in electronic waste (e-waste), posing a major environmental and economic challenge. In 2023, 63 million metric tonnes (MMT) of e-waste were generated worldwide, a figure projected to reach 100-105 MMT by 2034, representing a compound annual growth rate (CAGR) of 5%. This expanding waste stream comprises a diverse range of discarded devices, from large household appliances and temperature exchange items (refrigerators, air conditioners, radiators, coolers, etc.) to smaller consumer electronics and information technology equipment. Effective management of this complex waste stream is crucial not only for mitigating environmental pollution arising from hazardous substances but also for recovering valuable secondary raw materials, thereby contributing to a circular economy.

This issue is particularly present in emerging economies, where Weng adults represent a substantial demographic of electronic equipment consumers, making their perspectives and behaviors crucial for effective e-waste management strategies.

INDIA'S ROLE IN E-WASTE GENERATION

Within this global context, India is a significant contributor, ranking third in e-waste generation, trailing only China and the USA. The rapid increase and usage of electronics in India is a trend that is particularly pronounced among Wenger demographics. With urbanization accelerating and disposable incomes on the rise, the consumption habits of Indian youth have notably influenced both the volume and management practices associated with e-waste. They constitute a dynamic and vital element in the success of e-waste recycling schemes, although their engagement remains an area requiring deeper understanding, especially within the Indian context.

For India, the interplay between consumption patterns and waste management is especially noticeable. Research (Mukherjee et al., 2022) shows that while Weng Indians care about the environment, they often lack practical knowledge on e-waste disposal. Such findings highlight an inherent disconnect while technology adoption is swift and deep-rooted in the lifestyle of youth, their engagement with proper waste management practices lags.

Recent research in New Delhi, focusing on the 18–22 age group, has indicated the significance of this demographic in the mobile phone consumer market and their potential role in e-waste management.

While these studies provide a foundational understanding, the present research seeks to broaden the scope by focusing on a wider youth demographic, encompassing individuals between the ages of 14 and 30. This expanded age range is critical as it captures a more comprehensive spectrum of educational backgrounds, professional experiences and consumption patterns, which may greatly influence perspectives and behaviors related to e- waste disposal and recycling. This also makes it necessary to examine projections and regulatory challenges in greater detail.

EFFORTS OF THE GOVERNMENT AND CHALLENGES IN IMPLEMENTATION

Governmental agencies, including the Ministry of Environment, Forest and Climate Change (MoEFCC, 2022), have been proactive in updating regulatory measures to ensure the safe disposal and recycling of e-waste. Nonetheless, implementation challenges persist, primarily due to the heterogeneity in consumer awareness and infrastructural inadequacies. In metropolitan areas, where the digitalization is most prominent, there is evidence of occasional success in structured e-waste collection and recycling programs. Yet, a large portion of the

youth population remains unaware of accessible recycling options, often defaulting to informal channels that compromise environmental safety. These trends point to a critical need for targeted research that not only quantifies the scale of the issue but also clearly explains the underlying consumer psychology driving these behaviors.

Weng consumers often prioritize digital convenience over proper disposal due to limited environmental education, reinforcing a cycle of technological progress and environmental harm. The insights generated from this report are anticipated to contribute to a more nuanced understanding of the socio-behavioral dynamics at play.

CHAPTER II

LITERATURE REVIEW

Managing Electronic Waste: A Qualitative Inquiry into the Behaviour of Weng Indian Consumers | September 22, 2022

Author(s): Shalini Gautam, Shanu Jain

https://journals.sagepub.com/doi/10.1177/09721509221121714

This qualitative study investigates the factors that affect e-waste recycling behaviour among Weng consumers in India. The authors argue that understanding the pro-environmental behaviour of the Weng generation is crucial given the increasing e-waste due to their high consumption of electronic devices.

Through thematic analysis of interviews with Weng students, the study found that knowledge acquired through social and print media and educational institutions, concern for the environment, and responsibility assumed by different stakeholders play a role in recycling behaviour. An interesting finding was the impact of hidden values (economic, emotional, and future value) that individuals place on e-waste, influencing their disposal behaviour.

By focusing specifically on the behaviour of Weng Indian consumers towards e-waste, it provides valuable qualitative insights into the various factors influencing their recycling practices. The different forms of recycling behaviour identified and the proposed conceptual model contributes well to our understanding of youth's engagement with e-waste disposal and recycling.

Sustainable Behavior with Respect to Managing E-Wastes: Factors Influencing E-Waste Management among Weng Consumers | January 1. 2023

Author(s): Swati Garg, Asad Ahmad, Dag Øivind Madsen, Shahab Saquib Sohail

https://pubmed.ncbi.nlm.nih.gov/36613123/

This aims to explore the factors influencing e-waste management among Weng consumers. The authors extend the Theory of Planned Behavior (TPB) by including additional factors such as Government Policy, Environmental Concern, Financial Benefits, and Awareness.

The study, based on data collected from 524 Weng respondents and analyzed using PLS- SEM, found a significant role for government policy, financial benefits, environmental concerns, attitude, subjective norms, and perceived behavioural control in determining Weng consumers' behavioural intentions toward e-waste management. Surprisingly, awareness did not show a significant impact on behavioural intention. The findings suggest that while Weng consumers might be aware of e-waste issues, this awareness does not necessarily translate into pro-environmental behaviour.

The findings regarding the significant influence of government policy, financial benefits, environmental concern, and the core TPB constructs on behavioural intentions are crucial for understanding what motivates Weng people to engage in e-waste management.

Factors Influencing the Behaviour of youth Towards Electronic Waste in Delhi | 2024

Author(s): Shubham Kumar, Pankaj Goel, Dr. Bhavneet Kaur, Dr. Amisha Gupta

https://www.museonaturalistico.it/index.php/journal/article/view/317

This aims to explore the factors influencing the behaviour of youth in electronic-waste management in Delhi, India. The authors argue that with increasing electronic waste becoming an environmental threat, proper management, recycling, and disposal are essential. Given that youth are significant consumers of electronic devices, understanding their perceptions and the factors influencing their decisions is crucial for effective policy and awareness initiatives.

The research, based on a structured questionnaire distributed among 154 youths in Delhi, found that while the identified factors are relevant, they do not significantly influence the behaviour of youth in electronic-waste management in this specific study.

While the study's results might seem to contradict some general assumptions, the finding that the examined factors did not significantly influence youth behaviour underscores the complexity of the issue and suggests a need for further investigation into more effective motivational approaches. The identified factors (financial resources, public awareness, regulatory framework, and infrastructure) provide a framework for considering the external influences on youth's e-waste management practices.

E-waste management awareness and intentions among youth consumers: the mediating role of motivation | June 5, 2018

Author(s): Sanjay Dhingra, Nitika Sharma

https://www.inderscienceonline.com/doi/abs/10.1504/IJICBM.2018.092100

The paper empirically investigates the relationship between e-waste management awareness (EWA) and e-waste management intentions (EWI) among Weng ICT consumers in Delhi and the National Capital Region (NCR). The central argument proposed is that e-waste general awareness positively influences e-waste management intentions, and this relationship is mediated by the motivation (EWM) of users for better health and environment.

The study's analysis of data collected from Weng users revealed that e-waste general awareness has a significant positive effect on e-waste management intentions, supporting the initial hypothesis.

This article is relevant to our research topic as it focuses specifically on the awareness and intentions of Weng consumers in an urban region of India (Delhi and NCR) regarding e-waste management. It provides valuable insights into the psychological drivers of e-waste behavior, particularly the mediating role of motivation.

Understanding consumers' perspectives of electronic waste in an emerging economy: a case study of New Delhi, India | February 12, 2022

Author(s): Anwesha Borthakur, Pardeep Singh

https://link.springer.com/article/10.1007/s40974-022-00242-9

This study published in Energ. Ecol. Environ. provides a valuable insight into the perspectives and behavior of Weng adults (aged 18-22) in New Delhi, India, concerning electronic waste (E-waste), with a specific focus on mobile phones. The central argument of the article is that understanding the purchase and disposal behaviors of this significant consumer group in an emerging economy like India is essential for formulating effective e- waste management policies and promoting sustainable practices.

The study found that functional need is the main reason for purchasing new phones, not primarily conspicuous consumption or a throwaway mentality. While many change phones within 1-3 years, this isn't mainly driven by status. Battery problems were the most frequent cause of malfunction. A majority store old phones at home. Over half are willing to repair, but lack of information and cost are hindrances.

Knowledge And Practice of E-Waste Management Among College Students in West Bengal, India | February 29, 2020

Author: Dr. Arpita Chatterjee

https://psychosocial.com/PSY/index.php/ijpr/article/view/1363

The study argues that while advancements in technology lead to increased e-waste generation, the environmental and health consequences necessitate understanding and encouraging sustainable e-waste management practices among students, who can act as agents of societal change.

The research uncovered students showing average to good knowledge of e-waste types and environmental impacts, their knowledge of health hazards and management strategies was poor. Participation in awareness programs and active recycling was low.

This article is highly relevant to our research as it specifically examines the knowledge levels and engagement in e-waste management practices among Weng Indian adults (college students) in the state of West Bengal. The findings highlight a crucial aspect – that awareness about the general existence and environmental impact of e-waste might not translate into sufficient knowledge about its health implications and effective management solutions.

Awareness and perception regarding the e-waste management among a population in northern Kerala | July 2024

Authors(s): Jamaludheen Cheruvalappil, Atul Suresh, Krishnaraj Rajeev, Nidha Rafee Zubaida Manzil

https://www.msjonline.org/index.php/ijrms/article/view/13700

This aimed to assess the knowledge, attitude, and practice regarding e-waste management and the factors affecting it among a population in northern Kerala, India.

The cross-sectional study conducted in three block panchayats of Malappuram district in Kerala found that while a majority of participants (89.5%) had a very good perception towards e-waste management, their level of awareness was relatively low, with 44% having poor awareness, 27.1% average awareness, and only 28.9% good awareness. A significant proportion (53.8%) reported selling their e-waste to scrap dealers, and a considerable number stored e-waste at home (16.9%). Factors like age, education, and occupation were associated with a good attitude towards e-waste management.

While not exclusively focused on youth, the findings about the gap between positive perception and actual awareness of proper management practices are relevant.

Evolving a conceptual framework for sustainable e-waste management: a consumer typology based on environmental behavior | April 4, 2024

Author(s): Nanjangud Vishwanath Vighnesh, Balachandra Patil, Deepak Chandrashekar

https://www.emerald.com/insight/content/doi/10.1108/jibr-03-2023-0073/full/html

This paper aims to develop a comprehensive conceptual framework for studying the demand- side circularity transition for sustainable e-waste management. The authors argue that current research has not adequately connected e-waste with the principles of circularity and sustainability from a consumer perspective.

This paper develops a consumer typology and a conceptual framework that can inform behaviour change interventions for different consumer segments, including potentially youth.

The idea of a consumer typology based on environmental behaviour suggests that youth may not be a homogenous group in their approaches to e-waste. The developed framework could provide a theoretical basis for segmenting and analyzing the different ways Weng people perceive and act upon e-waste, contributing to a more nuanced understanding of their behaviour within the larger context of sustainable consumption and circular economy principles.

Exploring e-waste recycling behaviour intention among the households: Evidence from India | March, 2023

Author(s): Ravi Varma Vijayan, Malar Mathi Krishnan, Satyanarayana Parayitam, Shalini Prieya Anantharaman Duraisami, Narendra Rathnaraj Saravanaselva

https://www.sciencedirect.com/science/article/pii/S2772397623000072

This paper argues for the importance of understanding the factors influencing household e- waste recycling intentions and behaviour, particularly in a developing country context like India. The authors developed and tested a conceptual model based on the Theory of Planned Behavior (TPB), extending it by incorporating the influence of habits and convenience on recycling behaviour.

The study, conducted among 228 households in a metropolitan city in southern India, found that attitude, subjective norms, and perceived behavioural control are positively connected to recycling intention. Surprisingly, there was an inverse relationship between perceived behavioural control and the intent to recycle.

This article is highly relevant to our research topic as it directly investigates the recycling behaviour and intentions of households concerning electronic waste, providing empirical evidence from India, a key developing nation with a significant e-waste challenge. The findings regarding the influence of attitudes, subjective norms, habits and

convenience on recycling behaviour inform our understanding of the drivers behind youth's engagement (or lack thereof) in e-waste management.

CHAPTER III

PROBLEM STATEMENT

Despite awareness of e-waste hazards, youth participation in responsible disposal remains low due to behavioural barriers, lack of incentives, data security concerns, and inadequate accessibility to recycling facilities.

RESEARCH GAP

The issue of e-waste management has gained global attention due to its significant environmental and health hazards. Various studies have examined the environmental impacts of improper e-waste disposal, policy frameworks, and corporate responsibilities. However, a critical gap exists in understanding the youth perspective on e-waste recycling and the behavioural factors that influence their disposal habits. While Weng individuals are among the largest consumers of electronic devices, they often demonstrate low participation in formal recycling programs despite being aware of the environmental consequences of **improper disposal**. This disconnects between awareness and action remains underexplored in existing research.

Several specific gaps can be identified:

- **Behavioural and Psychological Barriers to E-Waste Recycling** - Existing research primarily focuses on raising awareness about e-waste hazards, but there is limited insight into why many Weng individuals, despite knowing the risks, fail to engage in responsible disposal. Factors such as inconvenience, lack of urgency, and behavioural inertia contribute to this issue but have not been sufficiently analysed. Additionally, the presence of a consumerist culture and fast technology upgrades encourages frequent purchases of new electronic devices, leading to increased e-waste generation without corresponding recycling efforts.
- **Limited Understanding of Incentives and Accessibility Issues** - A major barrier to youth participation in e-waste recycling is the lack of tangible incentives. Studies have yet to explore the effectiveness of financial rewards, discounts, trade-in programs, or other motivators in influencing youth behaviour. Additionally, accessibility to formal e-waste collection centres is often poor, particularly in developing regions. Weng consumers may not have convenient drop-off locations or clear guidance on where and how to dispose of their old devices. The impact of ease of access on recycling behaviour remains under-researched.
- **Digital Engagement and the Role of Peer Influence** - Given that youth are highly active in digital spaces, social media, mobile applications, and gamification techniques could be powerful tools to promote e-waste recycling. However, there is little research on how these digital interventions impact actual disposal behaviour. Similarly, peer influence plays a crucial role in shaping youth decisions, yet its potential to encourage responsible e-waste practices has not been sufficiently investigated.
- **Concerns Over Data Security and Device Retention** - Another significant but underexplored factor is the fear of data theft and privacy concerns. Many individuals hesitate to recycle old devices due to worries about personal data being retrieved even after deletion. This leads to a tendency to hoard old electronics rather than recycle them. Current studies have not adequately addressed how this fear affects recycling behaviour or what solutions (such as certified data-wiping services) could help mitigate these concerns.
- **Lack of Structured Educational Interventions** - While some research highlights the role of educational institutions in promoting sustainability, there is limited analysis of how formal education can integrate e-waste

management into curricula. Schools and universities can play a significant role in influencing youth perspectives, but the effectiveness of structured e-waste education programs in driving behavioural change has not been sufficiently examined.

- **Limited Awareness** - A fundamental aspect of the problem is the constrained level of awareness among Indian youth. While Weng adults are prominent consumers of electronic equipment, their understanding of the lifecycle implications of these devices often remains nascent. Research conducted in West Bengal, India, revealed that college students, a subset of the youth demographic, possessed average to good knowledge on the types of e-waste and their effect on the environment, but they lacked knowledge on the effect of e-waste on health. This indicates a problematic gap in comprehending the risks posed by improper handling of e-waste. Furthermore, the study highlighted poor to very poor knowledge on the management strategies needed for e-waste, which showed a lack of understanding regarding appropriate disposal and recycling avenues. This limited awareness acts as a primary barrier to responsible E- waste management practices among the youth.
- **Unclear Responsibility** -The responsibility for managing E-waste is often perceived as ambiguous by Weng consumers. While regulations and policies aim to establish frameworks involving producers, consumers, and recyclers, the onus on the individual consumer, particularly the youth, regarding appropriate disposal channels may not be clearly understood or internalized. Over 46% of respondents in a New Delhi study stored obsolete phones, indicating indecisiveness or lack of clarity on disposal. This ambiguity is further compounded by "inadequate information on repair/recycling centers etc.", making it challenging for willing individuals to act responsibly. The absence of a strong sense of individual responsibility, coupled with a lack of accessible and trusted infrastructure, contributes significantly to improper disposal practices.
- **Suboptimal Disposal Behaviors** - The culmination of limited awareness, superficial understanding and unclear responsibility manifests in suboptimal e-waste disposal behaviors among Indian youth. Storing obsolete electronics at home delays resource recovery and creates long-term environmental risks. Furthermore, the casual discarding of small gadgets or the burning of accumulated waste in open areas are detrimental practices with far-reaching consequences. Viewing e-waste as valuable leads to hoarding or informal, unsustainable disposal. The ease of purchasing new electronic devices, with some consumers admitting they "do not bother about repairing as I can easily purchase a new one" (12.2%), further exacerbates the issue by perpetuating a linear "take-make-dispose" model.

Bridging these research gaps is essential to developing **effective, youth-targeted strategies** that go beyond awareness and actively encourage participation in responsible e-waste disposal. Understanding the **barriers, motivators, and digital engagement opportunities** can help create a more sustainable and practical approach to e-waste management among Weng individuals.

OBJECTIVES

The following objectives have been identified –

Objective 1 – **To Evaluate Perceived Barriers to Proper Disposal of Electronic Waste Among Indian youth.**

This objective seeks to identify and assess the key impediments that hinder Indian youth from adopting responsible e-waste disposal practices. As highlighted in the problem statement, suboptimal disposal behaviors contribute to the environmental and health challenges posed by escalating e-waste generation. This objective directly addresses the "suboptimal disposal behaviors" stemming from the confluence of "limited awareness" and "unclear responsibility". Understanding these barriers is crucial for formulating targeted interventions and policy recommendations aimed at fostering a higher rate of formal and environmentally sound e-waste management.

Objective 2 – **To Analyze Attitudes Toward Upcycling and Reuse of Electronic Devices Among Indian youth.**

The aim is to explore the perspectives and inclinations of Indian youth towards extending the lifespan of electronic devices through upcycling and reuse. As highlighted in the problem statement, the short product life cycles and a "take-make-dispose" mentality contribute significantly to the burgeoning e-waste problem. Shifting towards a more circular approach necessitates a greater emphasis on reuse and upcycling, which are higher up the waste management hierarchy than recycling. Understanding the attitudes of Weng consumers towards these practices is critical for promoting more sustainable consumption and disposal behaviors.

CHAPTER IV

RESEARCH METHODOLOGY

This chapter sets forth the methodological framework used for our research. The research adopted a mixed-methods approach, primarily relying on quantitative data collected through surveys, complemented by a comprehensive review of existing literature to provide context and deeper insights. This integrated approach allows for a robust understanding of the research problem, addressing the objectives of evaluating perceived barriers and analyzing attitudes towards upcycling and reuse.

Research Approach

The study follows a practical research philosophy, where quantitative approach was adopted to capture the prevalence and patterns of e-waste disposal behaviours and perceptions across the youth demographic. This was supplemented by a review of existing qualitative and quantitative research to enhance the analysis and interpretation of findings. The research design is primarily descriptive, aiming to systematically describe the characteristics of the target population's attitudes and behaviours related to e-waste. Furthermore, it incorporates elements of analytical research to explore potential relationships between awareness, perceived barriers, attitudes towards upcycling/reuse, and disposal behaviours.

Research Design

A cross-sectional survey design was utilized for primary data collection, enabling the capture of data from a sample of the youth population at a single point in time. This design is appropriate for assessing current perceptions and behaviours. The secondary research involved a systematic review of scholarly articles, research reports and other relevant publications to establish the theoretical underpinnings of the study, identify existing knowledge gaps, and contextualize the primary research findings within the broader academic discourse on e-waste management and youth behaviour.

Research Hypothesis

Here are the six independent variables with short names for use as column headers in Excel:

E-Waste Awareness → Awareness

E-Waste Infrastructure & Education → Infrastructure

Barriers to Recycling → Barriers

Incentives & Risks → Incentives Risks **Company & Tech Influence** → Company Tech **Govt & Social Influence** → Govt_Social Dependent Variable:
youth Behavior Towards E-Waste Disposal and Recycling → Behavior

This study aims to examine the factors influencing youth behavior towards e-waste disposal and recycling. Based on the identified independent variables, the following hypotheses have been formulated:

H1: Higher awareness of e-waste (Awareness) positively influences youth behavior towards e-waste disposal and recycling.
H2: Greater exposure to e-waste infrastructure and education (Infrastructure) increases the likelihood of proper e-waste disposal behavior.

H3: Barriers to recycling (Barriers), such as lack of collection points and inconvenience, negatively impact e-waste disposal behavior.

H4: Incentives and risks (Incentives Risks), such as rewards and fear of data theft, significantly affect youth engagement in e-waste recycling.

H5: Company and technology influence (Company Tech), including awareness of disposal platforms and corporate responsibility, positively affects e-waste recycling behavior.

H6: Government regulations and social influence (Govt_Social), such as stricter policies and campaigns, play a significant role in shaping youth e-waste disposal behavior.

These hypotheses will be tested through data analysis to understand the key determinants of e-waste disposal behavior among young individuals.

Data Collection Methods

Primary Data Collection: Surveys

A structured questionnaire was the primary instrument for collecting quantitative data from the youth demographic (14-30 years). The questionnaire comprised a mix of closed-ended questions employing a five-point Likert scale (Strongly Disagree, Disagree, Neutral, Agree,Strongly Agree) to gauge attitudes and perceptions. The questions were designed to elicit responses related to:

- **Awareness of e-waste and related issues -** Assessing the level of understanding regarding the definition of e-waste, recycling methods, and relevant regulations.
- **Perceived barriers to proper disposal -** Identifying factors hindering responsible e- waste disposal, such as lack of collection points, inconvenience, fear of data theft and perceived lack of responsibility.
- **Attitudes towards upcycling and reuse -** Exploring inclinations towards extending the lifespan of electronic devices through donation, selling, repair or other forms of reuse.
- **Influence of external factors -** Gauging the impact of government policies, corporate responsibility, awareness campaigns, and potential incentives on disposal behaviours.

The survey was done through both online and offline channels to maximize reach and make sure that there was

diverse sample representation. Online surveys were distributed via social media platforms. Offline surveys were conducted through in-person sharing at public spaces frequented by our target demographic. The selection of these areas aimed to capture a varied socio-economic and educational background within the youth population.

Secondary Data Collection: Literature Review

A comprehensive literature review was undertaken to provide a robust theoretical framework for the research. This involved systematically searching and analyzing peer-reviewed articles, industry reports, and government publications relevant to e-waste management, youth consumer behaviour, environmental psychology, and circular economy principles. Databases such as Scopus, Web of Science, and Google Scholar were utilized with relevant keywords (e.g., e-waste, youth, India, disposal behaviour, recycling, upcycling, consumer perceptions). The reviewed literature served multiple purposes:

- **Contextualization:** Providing a global and Indian context to the e-waste problem and the role of youth in it.
- **Theoretical Grounding:** Identifying relevant theories and models (e.g., Theory of Planned Behavior) to understand the drivers of e-waste management behaviour.
- **Identification of Research Gaps:** Pinpointing areas where existing research is limited, thereby justifying the focus and objectives of the current study.
- **Methodological Insights:** Informing the design of the survey instrument and the selection of appropriate data analysis techniques.
- **Comparative Analysis:** Enabling the comparison of findings from the primary data collection with existing research, contributing to a more nuanced interpretation of the results.

Sampling Techniques and Sample Size

The specific sampling method employed and the determined sample size will be detailed in the full research report. Considerations for sample selection included ensuring representation across different age groups within the 14-30 range, diverse educational backgrounds, and varied geographical locations to enhance the generalizability of the findings. The sample size was determined based on factors such as the desired level of precision, the heterogeneity of the population, and resource constraints. The process of data collection was concluded upon reaching a total of 200 completed responses.

- 58 responses from individuals aged 15 to 18
- 47 responses from individuals aged 19 to 22
- 41 responses from individuals aged 23 to 26
- 54 responses from individuals aged 27 to 30

Data Analysis Techniques

The quantitative data collected through the surveys will be analyzed using statistical software SPSS. The analysis will involve:

- **Descriptive Statistics:** Calculating frequencies, percentages, means, and standard deviations to summarize the demographic characteristics of the respondents and their responses to individual survey questions. This will provide an overview of the awareness levels, perceived barriers, and attitudes towards upcycling and reuse among the surveyed youth.
- **Inferential Statistics:** Employing techniques such as correlation analysis to examine the relationships

between different variables (e.g., correlation between awareness and responsible disposal behaviour) and regression analysis to identify predictors of e- waste disposal intentions and behaviours. Independent sample t-tests and Analysis of Variance (ANOVA) will be used to compare the mean responses of different subgroups (e.g., based on age, education level) on key variables.

- **Factor Analysis:** Potentially employed to identify underlying dimensions or constructs within the set of perceived barriers and attitudes towards e-waste management.

The qualitative data extracted from the literature review will be analyzed using thematic analysis to identify recurring themes, patterns, and insights related to youth perspectives and behaviours on e-waste.

Ethical Considerations

Ethical considerations were paramount throughout the research process. Anonymity of the respondents was maintained throughout the data collection and analysis process. Data security measures were implemented to protect the privacy and confidentiality of the collected information.

Analysis

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	6.234	6	1.039	1.850	.091[b]
	Residual	108.377	193	.562		
	Total	114.611	199			

a. Dependent Variable: Behavior

b. Predictors: (Constant), Govt_Social, Awareness, Infrastructure, Barriers, Company_Tech, Incentives_Risks

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	2.865	.532		5.387	<.001
	Awareness	-.092	.064	-.101	-1.439	.152
	Infrastructure	.060	.065	.065	.932	.352
	Barriers	.153	.062	.174	2.466	.015
	Incentives_Risks	-.049	.066	-.053	-.737	.462
	Company_Tech	-.082	.071	-.083	-1.150	.252
	Govt_Social	.007	.066	.007	.103	.918

a. Dependent Variable: Behavior

Regression

```
[DataSet1]
```

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	Govt_Social, Awareness, Infrastructure, Barriers, Company_Tech, Incentives_Risks[b]	.	Enter

a. Dependent Variable: Behavior

b. All requested variables entered.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.233[a]	.054	.025	.74935810846

a. Predictors: (Constant), Govt_Social, Awareness, Infrastructure, Barriers, Company_Tech, Incentives_Risks

The file contains a single sheet named "Sheet1." I'll now inspect the first few rows to understand the structure of the data.

The dataset includes:

- **Demographics**: Name, Gender, Age
- **Survey Responses (Q1–Q21)**: Responses are on a 5-point Likert scale (1 = Strongly Disagree, 5 = Strongly Agree)Aggregated Scores:
  - Awareness, Infrastructure, Barriers, Incentives, Risks, Company, Tech, Govt, Social, Behavior (likely factorized themes from survey responses)

Interpretation of Results:

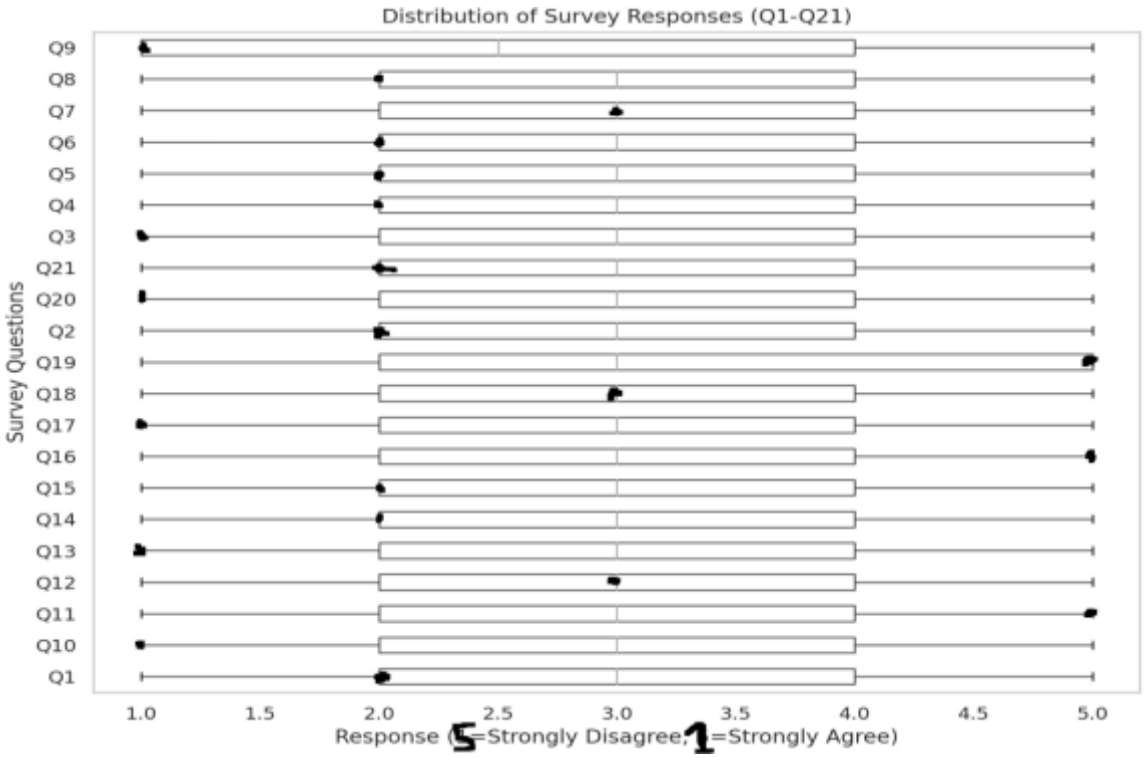
This section would involve detailed analysis and explanation of the data collected through our survey. Given the demographic information we discussed (78 females and 120 males across four age groups: 15-18, 19-22, 23-26, and 27-30), our interpretation would likely involve segmenting the responses based on these demographics and identifying key patterns and trends.

For example, we analyzed the responses to questions like:

- "I know what e-waste is?" - This would help gauge the general awareness level across different age and gender groups.
- "I am aware of e-waste recycling methods?" - This would indicate the level of knowledge regarding practical solutions.
- "I have seen e-waste collection bins?" and "Lack of collection points stops me from recycling?" - These responses would shed light on the perceived accessibility of recycling infrastructure.
- "Schools/colleges educate about e-waste?" and "I have come across campaigns or advertisements promoting proper e-waste disposal?" - These would indicate the perceived effectiveness of current awareness and education efforts.
- "Recycling e-waste is important?" - This would reflect the general attitude towards the issue.
- "I try to dispose of e-waste properly?" and "Suboptimal disposal behaviors" discussed in the introduction would be linked to responses on this question.
- "I prefer donating/selling old electronics?" - This would relate to attitudes towards reuse and upcycling, aligning with Objective 2 of our research.
- "I would recycle more if there were rewards?" and "Financial Benefits" mentioned in the literature review could be explored through this.
- "Fear of data theft stops me from disposing of devices?" - This could be a significant barrier influencing disposal behavior.
- "Government policies affect my disposal habits?" and "Government Policy" highlighted in the literature review would be relevant here.
- "I believe companies should take responsibility for collecting and recycling their old electronic products?" and the concept of "unclear responsibility" from our problem statement are directly connected.

In this section, We would not just present the raw data or summary statistics but would delve into what these responses mean in the context of our research objectives. For instance, if We find that Wenger respondents (15-18) show lower awareness of e-waste recycling methods compared to older respondents (27-30), We would interpret this finding, possibly linking it to their educational stage or exposure to information. Similarly, differences in responses between male and female participants regarding their willingness to participate in e-waste collection drives would be interpreted and analyzed for potential underlying reasons

We would also relate our findings back to the problem statement, specifically addressing the "limited awareness," "unclear responsibility," and "suboptimal disposal behaviors" identified among Indian youth. The interpretation should highlight the extent to which our data supports or contradicts existing assumptions or previous research mentioned in our literature review (Chapter 2). For example, the study by Dhingra and Sharma (2018) found a positive relationship between e-waste awareness and management intentions, and our interpretation would discuss whether our findings align with this for different segments of the youth population We surveyed.



CHAPTER V

DISCUSSION

Here, we discuss the broader implications of our results in relation to the existing body of knowledge on e-waste management, particularly focusing on Weng consumers in India, as highlighted in our literature review.

We would critically evaluate our findings in light of the studies by Gautam and Jain (2022) on factors affecting recycling behavior, Garg et al. (2023) on factors influencing e-waste management intentions using the Theory of Planned Behavior, and Kumar et al. (2024) on the factors influencing youth behavior in Delhi. For instance, if our findings show that awareness does not significantly translate into proper disposal behavior (echoing the finding by Garg et al.), we discuss the potential reasons for this disconnect among the youth demographic We studied. We might explore the mediating role of motivation, as suggested by Dhingra and Sharma, or the influence of "hidden values"

placed on e-waste, as proposed by Gautam and Jain.

Furthermore, we discuss the implications of our findings for policy and practice. For example, if our results indicate that a lack of accessible collection points is a significant barrier (as suggested by responses to the relevant survey question), We discuss the need for improving e-waste collection infrastructure. If We find that youth are more inclined to recycle with rewards (based on survey responses and the mention of "Financial Benefits" in the literature), We discuss the potential effectiveness of incentive-based programs.

The discussion also addresses the two primary objectives of our research:

1. **Perceived Barriers to Proper Disposal:** We would discuss the key impediments identified through our survey responses, such as lack of awareness, unclear responsibility, inconvenience, fear of data theft, or lack of collection points, and how these barriers vary across different age and gender segments of the youth.

2. **Attitudes Toward Upcycling and Reuse:** We would discuss the inclinations of Indian youth towards extending the lifespan of electronic devices, analyzing their preferences for donating, selling, or repairing old electronics, and the factors influencing these attitudes.

In this section, we also acknowledge any limitations of our study, such as the sample size or geographical scope, and suggest areas for future research. For instance, we suggest exploring the motivations behind storing old phones at home, as indicated by Borthakur and Singh's study and the 46% of respondents in a New Delhi study mentioned in our introduction.

CHAPTER VI

CONCLUSION

The study on youth behaviour towards e-waste disposal and recycling provides critical insights into the key factors influencing sustainable e-waste management practices. The findings indicate that while awareness, infrastructure, government policies, company initiatives, incentives, and social influence play a role in shaping behaviour, their combined impact remains limited, as evidenced by the low predictive power of the regression model. This suggests that e-waste recycling behaviour among youth is influenced by a broader set of psychological, economic, and behavioural factors that were not fully captured in this study. A significant takeaway from the research is that mere awareness and infrastructure availability do not necessarily translate into action. Many young individuals remain indifferent due to perceived inconvenience, lack of motivation, or insufficient incentives.

Government and corporate initiatives need to go beyond providing information and focus on behavioural triggers such as ease of recycling, social norms, financial rewards, and technological innovations that make sustainable disposal a more attractive and habitual choice.

Moreover, the barriers to e-waste recycling, including lack of access to proper disposal channels, data security concerns, and insufficient policy enforcement, continue to discourage responsible behaviour. Addressing these issues requires a multi-faceted approach involving stricter regulations, expanded collection networks, and greater involvement of corporations in take-back programs.

The study highlights the need for targeted educational campaigns, enhanced accessibility to e- waste recycling facilities, and structured incentive models to bridge the gap between awareness and action. Additionally, future research should explore psychosocial and economic motivators, integrating perspectives on habit formation, peer influence, and digital engagement to develop a more effective and scalable model for e-waste management.

In conclusion, while this research provides valuable insights into youth behaviour toward e- waste disposal, it also underscores the complexity of the issue. A collaborative effort from governments, businesses, and society is essential to create an ecosystem where responsible e- waste disposal is not just an option but a norm.

REFERENCES

Redseer - Consumer led E-Waste (February 2025)

Consumer-Led E-Waste Market Assessment | Redseer Key Insights

E- Waste (Management) Rules, 2022 CPCB | Central Pollution Control Board

E-Waste Third Amendment Rules, 2024 E-Waste Second Amendment Rules, 2023 E-Waste First Amendment Rules, 2023 CPCB | Central Pollution Control Board

The global E-waste Monitor 2024 – Electronic Waste Rising Five Times Faster than Documented E-waste Recycling: UN

The Global E-waste Monitor 2024 - E-Waste Monitor

-END-