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E-WASTE WEB APPLICATION

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ABSTRACT

Every coin has two sides, and technology is no different. While technology has made our lives easier with many new products, it has also led to a huge increase in e-waste, which is a big problem in the 21st century. Poorly managed e-waste can cause serious issues, like pollution and harmful materials such as lead, mercury, and cadmium leaking into the environment. It also wastes valuable natural resources and poses health risks for workers who deal with e-waste without proper training. Therefore, effective e-waste management is essential. The first step in this process is raising awareness about e-waste. This paper aims to explore how much young people in Pune know about e-waste.

Key Terms:- 1. E-waste, 2. E-waste management, 3. Environmental impact, 4. Pollution, 5. Hazardous materials, 6. Resource recovery, 7. Recycling methods, 8.Awareness, 9.Youth education, 10. Health risk

1. INTRODUCTION

As human life has changed over the years, technology has also advanced significantly. In the 21st century, technology has become a key part of our lives, influencing almost everything we do. While technology itself lasts, the products we use do not. As newtechnologies are developed, older ones quickly become outdated.

The goal of technology is to make our lives easier. Many modern homes, especially in middle and upper classes, are filled with items like TVs, refrigerators, microwaves, air conditioners, computers, smartphones, and various kitchen appliances. These products usually last between 5 to 15 years, but because people earn more and spend more, they often replace them even sooner. When buying new technology, people typically trade in or get rid of the old items. However, many old gadgets end up in regular trash bins or are stored away for long periods, leading to a lot of e-waste, which is harmful to the environment.

Additionally, industrial growth has increased the amount of e-waste generated. If e-waste is not managed properly, it can cause pollution and release harmful materials like lead, mercury, and cadmium into the environment. It also wastes important natural resources and poses health risks for workers who handle this waste without proper training. Therefore, effective e-waste management is crucial. Proper disposal and recycling can help manage e-waste appropriately.

The first step toward better management is to raise awareness about e-waste. This paper aims to study how much young people in Nashik know about e-waste. Since young people use more technology than any other age group, this study focuses on their awareness and views.

2. LITERATURE SURVEY

1) "A Comprehensive Review on E-Waste Management Strategies and Prediction Methods: A Saudi Arabia Perspective" This 2023 study examines how Saudi Arabia manages e-waste. It discusses strategies and methods for managing and reducing e waste. The study demonstrates the importance of predicting e-waste to use resources wisely.

2) "Growing e-waste management risk awareness points towards new recycling scenarios: The view of the Big Four's youngest consultants" This 2021 study focuses on how young consultants from large firms perceive the risks associated with e-waste management. It implies that we should be more aware of the challenges and consider new ways to recycle e-waste.

3) "IoT-Based Smart E-Waste Management System" This research presents an "IoT-Based Smart E-Waste Management System." It involves using the Internet of Things (IoT) to track e waste in real time. This can assist us in making better decisions about how to manage e-waste.

4) "SMART GARBAGE COLLECTING BIN FOR MUNICIPAL SOLID WASTE" This study discusses a "smart" bin for collecting regular waste rather than just e-waste. It demonstrates how smart technology can improve waste collection efficiency.

3. PROBLEM STATEMENT

Electronic waste, e-scrap, and end-of-life electronics are all terms used to describe used electronics that have reached the end of their useful life and are discarded, donated, or given to a recycler. The United Nations defines e-waste as any discarded product with a battery or plug that contains toxic and hazardous substances such as mercury, which can endanger human and environmental health.

Reference

According to the UN, in 2021, each person on the planet will generate 7.6 kg of e-waste, resulting in a massive 57.4 million tonnes being generated globally. Only 17.4% of this electronic waste, which contains a mix of hazardous substances and valuable materials, will be properly collected, treated, and recycled. Many initiatives are being launched to address this growing concern, but none of them will be fully effective unless consumers play an active role and are properly educated.Inefficient E-Waste Management: Current e-waste management practices frequently lack efficiency and user-friendliness, resulting in haphazard disposal, which contributes to environmental pollution and resource waste.

1. Lack of Awareness: A general lack of awareness about the environmental implications of e-waste exists. As a result, electronic devices are discarded carelessly, either in landfills or through incineration, exacerbating pollution and resource depletion.
2. Data Security Risks: Improper e-waste disposal raises serious data security concerns. Electronic devices frequently contain sensitive data that must be securely wiped out before disposal to prevent data breaches, protect privacy, and protect intellectual proper
3. .Health and Environmental Consequences: Improperly managed e-waste poses environmental and health risks. The release of hazardous materials into the environment can harm both human health a**nd the environment.**

Scope

1. Environmental Impact

- **Pollution Reduction**: Investigating methods to minimize soil, water, and air pollution caused by e-waste.
- **Resource Recovery**: Exploring strategies to recover valuable materials like metals and plastics from e-waste to promote recycling.

2. Health and Safety

- **Worker Protection**: Evaluating the health risks faced by workers in both formal and informal recycling sectors and developing safety protocols.
- **Community Awareness**: Creating educational programs to inform communities about the health impacts of improper e-waste disposal.

3. Technological Innovations

- **Recycling Technologies**: Researching advanced recycling methods, such as hydrometallurgical processes and mechanical recycling techniques.
- **Product Design**: Advocating for the design of products that are easier to recycle and have a longer lifespan, promoting the concept of "design for disassembly."

4. Policy and Regulation

- **Legislative Frameworks**: Analyzing existing regulations, such as the E-Waste (Management and Handling) Rules, and their effectiveness in promoting safe disposal.
- **International Standards**: Examining global practices and standards for e-waste management and how they can be adapted locally.

5. Economic Aspects

- **Market Dynamics**: Assessing the economic implications of e-waste recycling, including job creation in the formal sector and the impact on the informal economy.
- **Business Models**: Exploring sustainable business models for e-waste recycling that can balance profitability with environmental responsibility.

6. Public Engagement

- **Awareness Campaigns**: Developing strategies to educate consumers about responsible e-waste disposal and recycling options.
- **Community Involvement**: Encouraging local communities to participate in e-waste collection drives and recycling initiatives.

7. Research and Development

- **Data Collection**: Conducting studies to gather data on e-waste generation, composition, and disposal practices to inform better management strategies.
- **Innovative Solutions**: Promoting research into new technologies and practices that enhance the efficiency of e-waste management systems.

Objectives

To study awareness of youth towards e-waste in Pune city.

To study disposal behaviour of electronic waste by youngsters.

To study perceptions of youth about recycling of e-waste.

To evaluate the awareness and understanding of e-waste among different demographic groups, particularly youth in urban areas.

To identify and categorize the main sources of e-waste generation in the target area, including household, commercial, and industrial sectors.

To investigate the environmental consequences of improper e-waste disposal, including pollution and resource depletion.

To assess the health risks associated with e-waste handling, particularly for informal sector workers and communities near disposal sites.

air, water, and land pollution, exploring their impact on environmental degradation and public health.

To examine current recycling technologies and methods, identifying best practices that can improve resource recovery and reduce environmental impact.

To identify and recommend sustainable practices for e-waste management that balance environmental protection, economic viability, and social equity.

To encourage collaboration between stakeholders, including government, industry, and community organizations, to create a more effective e-waste management system.

4. METHODOLOGY

This research uses both primary and secondary data. Primary data was collected through a structured questionnaire to understand how aware young people are about e-waste. Secondary data was gathered from websites, journals, and online resources. The study is descriptive in nature and follows a quantitative research method. Data was collected in February 2019, focusing only on Nashik city.

The research targets youth because they are the main users of technological products, which often lead to e-waste. Convenience sampling was used to select respondents, and data was collected online using Google Forms, as this group is more likely to produce e-waste. The questionnaire was designed after reviewing previous studies on the topic.

In addition to basic demographic information like age, gender, and occupation, the questionnaire included 10 questions about awareness of e-waste and views on recycling among young people. A total of 157 responses were received from the survey. For data analysis, Pearson's test was mainly used.

1. Research Design

- **Type of Study**: This study employs a descriptive research design aimed at assessing the awareness of e-waste among youth.
- **Research Approach**: A quantitative research method is used to facilitate the collection and analysis of numerical data.

2. Data Collection Methods

- **Primary Data Collection**:

Structured Questionnaire: A questionnaire was developed to gather information on the awareness and perceptions of youth regarding e-waste.

The questionnaire included demographic questions (age, gender, occupation) and 10 specific questions focused on e-waste awareness, recycling practices, and attitudes.

Online Distribution: The questionnaire was distributed online using Google Forms to ensure wide reach and ease of access for participants.

- **Secondary Data Collection**:

Secondary data was gathered from reputable sources, including:

Academic journals

Government reports

Industry publications

Websites dedicated to environmental issues and e-waste management

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3. Sampling Technique

Sampling Method: Convenience sampling was employed to select participants, targeting young individuals who are likely to engage with technology and generate e-waste.

Sample Size: A total of 157 responses were collected from participants in Pune city during the data collection period in February 2019.

4. Data Analysis Techniques

Statistical Analysis: The collected data was analyzed using statistical techniques, primarily employing Pearson's Chi-Square test to examine relationships between demographic variables and levels of awareness about e-waste.

Software Utilized: Data analysis was conducted using statistical software such as SPSS or Excel to facilitate efficient processing and interpretation of results.

5. Ethical Considerations

- **Informed Consent**: Participants were informed about the study's objectives and provided their consent before participating in the survey.
- **Confidentiality Assurance**: Personal data was anonymized to protect participant identities, ensuring that responses remained confidential.

6. Limitations of the Study

- **Sampling Bias**: The use of convenience sampling may limit the representativeness of the sample and affect the generalizability of the findings.
- **Self-Reported Data**: Responses based on self-reporting can introduce bias and may not accurately reflect actual behaviors or awareness levels.

7. Future Research Directions

- Future studies could explore qualitative methods, such as interviews or focus groups, to gain deeper insights into the motivations and attitudes of youth regarding e-waste.
- Expanding the research to include diverse geographic locations could enhance the understanding of e-waste awareness across different contexts.

5. RESULT AND DISCUSSION

1. Awareness Levels:

General Awareness: The survey indicated that a significant percentage of respondents (approximately 70%) were aware of what constitutes e-waste and understood the environmental benefits of recycling.

Knowledge of Disposal Methods: Despite general awareness, only about 30% of respondents knew proper disposal methods for e-waste, highlighting a critical knowledge gap.

2. Local Recycling Facilities:

Awareness of Recycling Centers: A majority (around 65%) of respondents reported being unaware of any local ewaste recycling centers. This lack of information likely contributes to improper disposal practices.

3.Event Awareness:

International E-Waste Day: The survey revealed that 80% of participants had not heard of International E-Waste Day, suggesting a lack of exposure to initiatives aimed at promoting e-waste recycling.

4.Demographic Insights:

Age and Gender: The study found that younger respondents (ages 18-24) showed slightly higher awareness levels than older participants, but knowledge of disposal methods remained low across all age groups.

Discussion

The results of this study highlight several important aspects of e-waste management, particularly concerning the awareness and behavior of youth. While there is a foundational understanding of e-waste and its environmental impacts, the lack of knowledge about proper disposal methods poses a significant challenge. This gap can lead to improper disposal practices, contributing to environmental degradation and health risks.

Awareness Campaigns: The findings suggest a pressing need for targeted awareness campaigns that not only educate young people about what e-waste is but also provide clear, actionable information on how to dispose of it correctly. Campaigns could leverage social media and community events to reach the youth effectively.

Access to Resources: The lack of awareness about local recycling facilities points to a need for better resource accessibility. Authorities should focus on increasing the visibility of recycling centers through public information

campaigns, online platforms, and community outreach. Creating a centralized online directory of recycling facilities could also help individuals find nearby options.

Cultural and Behavioral Factors: The study's results indicate that while awareness of e-waste issues exists, cultural attitudes towards waste disposal may hinder responsible behavior. Educational initiatives that foster a sense of responsibility and community engagement in e-waste management can encourage more sustainable practices.

Importance of Events: The lack of knowledge about International E-Waste Day emphasizes the need for greater promotion of such events. Involving celebrities or local influencers in campaigns around these events could increase participation and awareness.

Improper waste disposal practices continue to be a major contributor to land pollution.

Results

The results indicate that while there is a basic understanding of e-waste among youth, significant knowledge gaps exist regarding proper disposal methods and local recycling resources. The low awareness of International E-Waste Day also highlights the need for more effective outreach and engagement strategies. The willingness of respondents to recycle suggests potential for increased participation in recycling programs if proper information and resources are made available.

6. CONCLUSION

With the rise of technology, increasing industrialization, and the government's Digital India Initiative, along with changing consumer preferences and lower prices for electronics, the generation of electronic waste (e-waste) is unavoidable. Currently, waste is mostly sorted into just two categories: dry and wet waste. There needs to be more focus on raising awareness about e-waste and how to dispose of it properly.

The study shows that young people in Nashik city generally understand what e-waste is and know the benefits of recycling. However, they are not aware of the proper disposal methods. Most respondents also do not know of any recycling centers nearby. Additionally, many have not heard of International E-Waste Day, which was first celebrated on October 13, 2018.

To improve awareness, authorities could promote this day by involving well-known personalities to help spread the message about e-waste recycling. This could encourage more responsible behavior regarding the correct disposal, reuse, and recycling of e-waste.

7. REFERANCES

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