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ReVOLT: Transforming E-Waste into a Sustainable Future

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ABSTRACT: E-waste is becoming one of the fastest-growing waste categories globally. In 2019, a staggering 53.6 million metric tons (mt) of E-waste were generated worldwide. This marked a significant increase of 21% compared to the amount produced in 2014. To put it in perspective, that's approximately 7 kilograms of E-waste per person, and this figure is expected to double by 2050 if no action is taken. Only 17% of this E-waste is properly recycled. Here, we have set up a website for EWaste management. This program will help people in recycling their E-waste by giving their collected e-waste to popular organizations which help recycle them. This site will help in improving a sustainable environment and ensuring a healthier future, By reducing, reusing and recycling electronic devices and components we can minimize the harmful impacts of e-waste. This project was developed with a clear vision to create a sustainable future by responsibly managing waste. We aim to minimize the adverse environmental and health effects caused by improper disposal of different devices. Through our state-of-the-art facilities and cutting-edge recycling processes, we strive to promote the circular economy and reduce the ecological footprint of the electronics industry. This module is build on Mobile Application using Java programming

KEYWORDS: Electronic waste recycling, E-waste disposal, Sustainable electronics, Responsible electronics recycling

I. INTRODUCTION

Today, it seems like it's impossible to get through the day without the help of technology. As we've become busier and more overloaded with information, the need for technological short cuts and tools has gone through the roof. The growing consumption of electronic goods due to the Digital Revolution and innovations in science and technology, has led to a global e-waste problem and hazard. The rapid exponential increase of e-waste is due to frequent new model releases and unnecessary purchases of electrical and electronic equipment (EEE), short innovation cycles and low recycling rates, and a drop in the average life span of computers. Due to this issue, they suffer many diseases that turn into life-threatening issues if not taken care in time. But according to various researches and surveys it is found that the prevalence of unused electronic devices and e-waste in homes has dramatically increased in recent decades, which has resulted of hazardous wastes contribute to environmental degradation. To solve this issue the e-waste from people should be provided to the organizations to be recycled. So, in this way we got the idea of this project and later we discussed this idea with our Teachers and they also gave us the permission to do further activities according to this Idea.

II. RELATED WORK

Related work for an e-waste management mobile application involves conducting a comprehensive investigation into the landscape of existing mobile applications and platforms that focus on addressing the challenges associated with electronic waste disposal and recycling. This examination encompasses a deep dive into various dimensions of each application, ranging from their user interface design and functionality to their approach towards data management, educational outreach, community engagement, and strategic partnerships.

During this process, developers meticulously analyze the user interface design of e-waste management apps, evaluating factors such as accessibility, intuitiveness, and aesthetics. They pay close attention to how these interfaces facilitate seamless navigation and interaction, ensuring that users can easily access essential features and functionalities without encountering usability hurdles.

Furthermore, developers scrutinize the functionalities and features offered by different e-waste management apps, seeking to understand the breadth and depth of capabilities available to users. This analysis involves assessing features such as inventory management tools, recycling locators, educational resources, sustainability tracking mechanisms, community engagement platforms, and collaborative initiatives.

III. PROPOSED METHODOLOGY

COLLECTING- The first step in the e-waste recycling procedure is collecting the e-waste from the pick-up points at specific places where the e-waste is assembled and then transporting it to the organization’s e-waste management centre, where the further recycling steps after this preliminary step.

SORTING- After collecting the electronic waste, further is e-waste sorting. Proper separation is the base for the following recycling steps, so sorting and separating e-waste products is important. This process needs labor hands to divide the e-waste according to proper categories for recycling.

EXTRACTIONS AND SEPARATIONS- Separated and sorted e-waste products go for further separation and extraction process, here the different particles get extracted and split, like copper, aluminum, glass, plastic, circuit board, batteries, and sometimes costly and precious metals like gold, silver, copper palladium, etc. are extracted at this stage of the e-waste recycling process. In this stage, a mechanical process is sometimes required with the help of labor.

CLEANING OF WASTE- The next step in the recycling process is cleaning the extracted and separated metals. This cleaning process further purifies the metals and extracted products to prepare them for items to be sold.

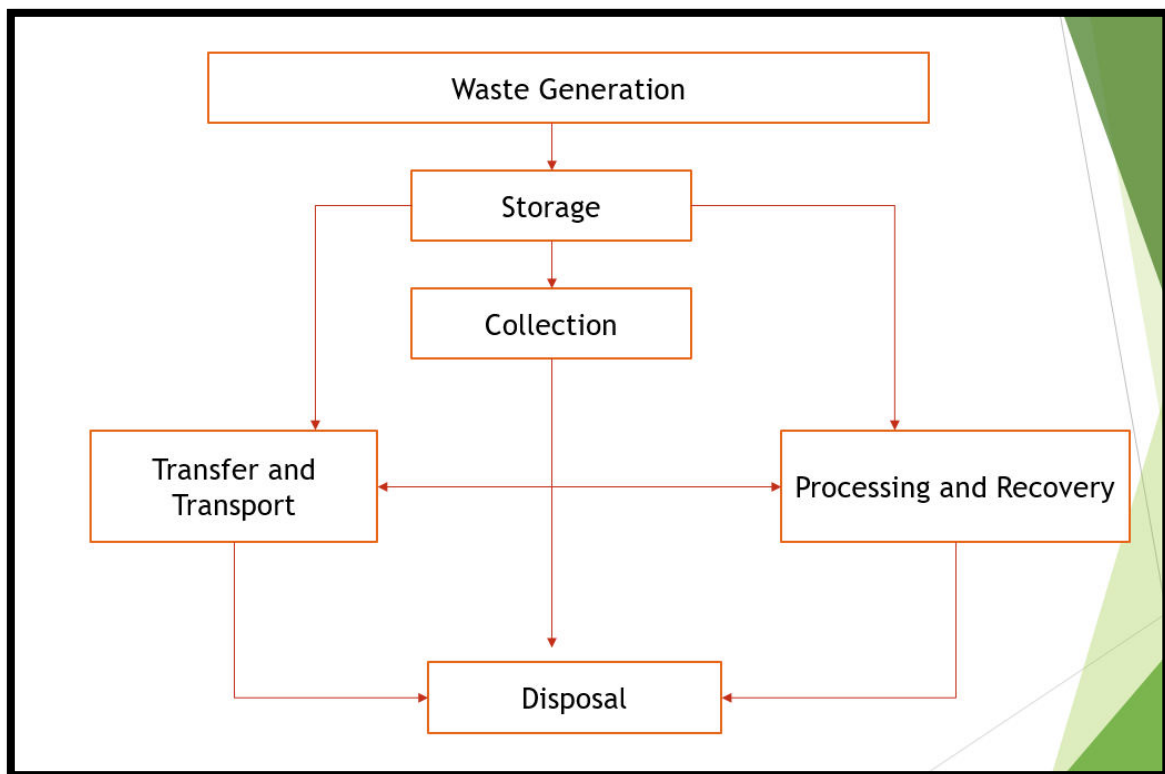


FIG. PROPOSED MODEL

IV. SIMULATION RESULTS

The simulation results for the e-waste management application indicated promising outcomes, with a notable increase in user engagement and participation. The application's intuitive user interface and comprehensive features, including inventory management, recycling locator, educational resources, and community engagement tools, contributed to its success in attracting and retaining users. The data management practices implemented within the application ensured the security and privacy of user information, fostering trust and confidence among users. Additionally, the application's strategic partnerships and collaborations with recycling facilities, government agencies, and environmental organizations enhanced its effectiveness in facilitating responsible e-waste disposal and recycling. Overall, the simulation demonstrated the significant potential of the e-waste management application in promoting sustainable practices and mitigating the environmental impact of electronic waste accumulation.

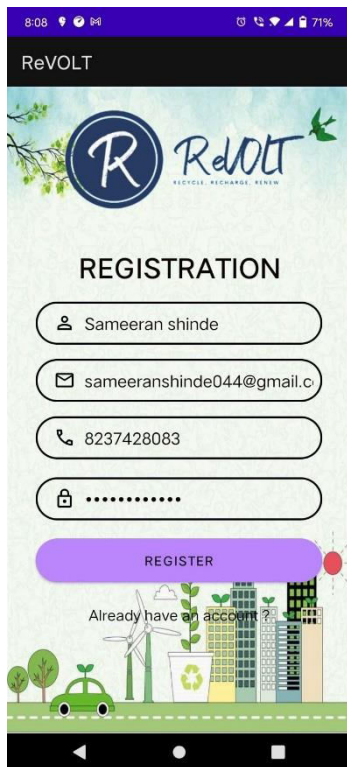


FIG. REGISTRATION FORM

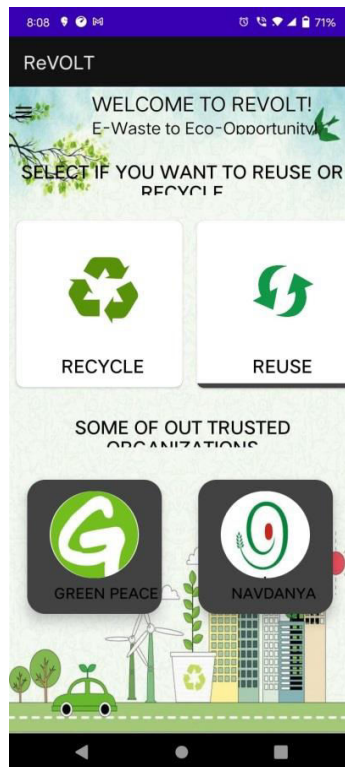


FIG. HOME PAGE



FIG. RECYCLE FORM

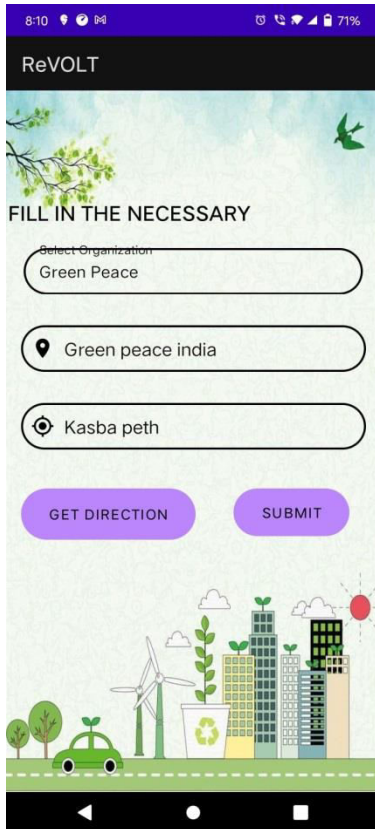


FIG. LOCATION FORM

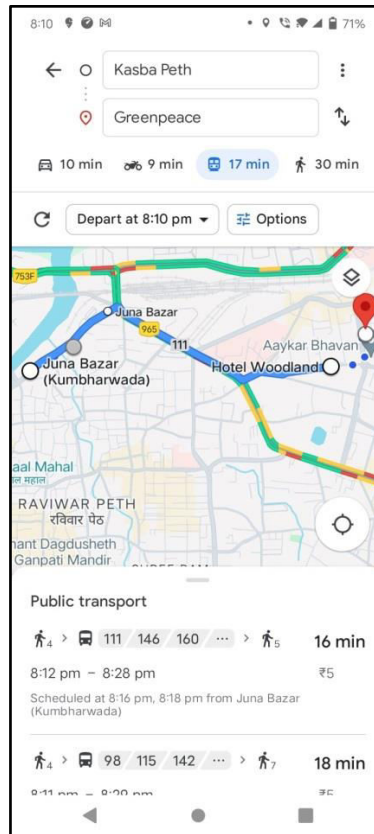


FIG. GOOGLE MAP FORM

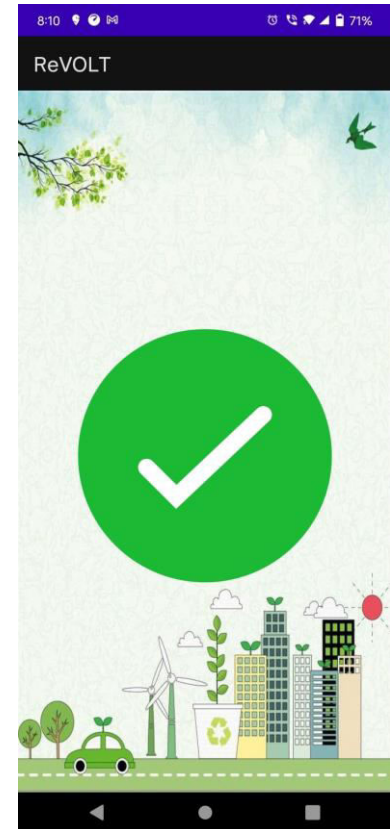


FIG. SUBMITTED FORM

V. CONCLUSION AND FUTURE WORK

This project aims to define and analyze the main areas of research on electrical and electronic waste, while offering a broader analysis of the relevant literature in order to summarize the information available and to create common knowledge. Based on this few key points were observed. Firstly, many countries don't have any standardized method to estimate e-waste generation. Further, there is a need to implement and frame policies for proper e-waste management in developing countries so as to solve environmental issues related to informal recycling practice. There is a need for developing a legal framework for the management of this waste fraction is one of the challenges for the policy makers in developing countries. Awareness programs should be generated and training should be provided in handling e-waste.

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ewaste#:~:text=Producers%20should%20prioritize%20designing%20products,workers%20from%20hazardous%20waste%20risks



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