

# An Empirical Study on Consumer Behaviour Regarding E Waste Disposal

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## ABSTRACT

Electronic waste generates toxic substances like heavy minerals and flare, venturous to human and environmental health. However, the consumer behavior for disposal of e-waste is quite different from other waste materials. In e-waste, the electronic waste equipment is kept inside the home rather than reverting them to the manufacturing factories for recycling. This challenging issue is spreading rapidly because of advanced and innovative technology invented every few minutes, which changes the functionality of electronic gadgets, and people are attracted to new products. The motive of the paper is to examine the consumer behavior toward e-waste disposal, whether they like to keep the waste and do not trash or recycle it, whether they criticize or dispose of them. The result reveals the statistical analysis regarding the customer behavior based on the survey conducted on the 102 participants and tries to provide a practical understanding that justified the research's motive by adequately evaluating the nine questionnaires, which helped conclude the research properly. The outcome demonstrates that people are willing to dispose of the e-waste as the questionnaire shows that about 99% of the people wanted to recycle the electronic waste.

## I. Introduction

In this fourth industrial revolution, the inter-net and its related sections like IoT, artificial intelligence, and data played a prominent role and acted as an economic booster for any busi-ness or country. All these elements, which are the critical factor of the digital economy, are directly and indirectly connected with elec-tronic equipment, which is the swiffer flour-ishing waste all over the world. Because of cost-effectiveness, affordability, and accessibil-ity of the interne and related technologies in the mass, its demand and

consumption are also rapidly growing globally. In order to provide affordable electronics gadgets in developing and under-developing countries, innovations, and discoveries in electronic gadget technologie very frequently changed, which rapidly replace the old techniques with new and ad-vanced technology.

Electronic waste (E-waste) electronic equip-ment that is either outdated or not in working condition is either thrown or discarded in the garbage is considered electronic waste. Elec-tronic waste is also known as digital rubbish, consisting of computers, television, fax ma-chines, electronic gadgets, electrical appliances, and equipment. The rapid growing technol-ogy updated so frequently leads to introducing enormous e-waste, which is very dangerous as it releases several toxic materials like cad-mium mercury, lead, a. This

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toxic material has a severe impact on the environment and devastating for ecology, flora, fauna, and human well-being. Because of the enormous emergence of waste, both the developed and developing countries are concerning, enhancing the penetrable and annihilating impact of global warming. These countries put their measures and struggling to combat this terrible accelerating waste disposal. The global e-waste monitor 2017 shows that the world is discarding around 15 million turn-off e-waste per year, out of which only 20% is formally recycled. Electronic waste generated was enhanced annually as the data demonstrate in the year 2019, about 54 million metric tons of e-waste was produced globally, with the top country that generated the enormous amount of e-waste was China.

**II. E-waste awareness, consumption, disposal, and recycling behavior**

The supplementary raw ingredients generated from electronic waste have a significant quality and capability of reusing, recycling, and re-manufacturing, which is comprehended by several countries and utilizing the e-waste as a circular economy source act as a revolutionary change to handle the giant e-waste production effectively [1]. In the circular economy, the central role is played by the consumer or the user who is the actual occupier of electronic devices equipment. For this, consumer awareness is the essential element for the strategic management of electronic waste [6]. Awareness can be generated by effective law, policies, recycling programming, formal and informal sectors that participate in e-waste management. Along with this administrative work, effective collaboration of government with public participation is a prerequisite additionally with the consumer behavior which helps in better understanding the lifespan of electronic waste and why so frequently electronic products become garbage. In order to educate the mass about electronic waste and how

to convert its e-waste product into a circular economy, the first and foremost step is consumer behavior regarding electronic waste. Consumer behavior is broadly categorized as concerns expenditure behavior, disposing behavior, storing behavior, and the recycling behavior of the one who utilizes the electronic gadget services. There are several reasons which contributing the prominent factor in enhancing the behavior of storing and contributing e-waste, such as:

- Deficiency of knowledge on where to dispose of e-waste.
- Buy a new product because of advanced technology
- Thrown are disposing of the electronic gadgets as it is not correctly functioning.
- The availability of products at a very cost-effective price attracts consuming behavior.

Table 1: Electronic Waste and its Classification  
E-waste category examples

E-waste category	examples
Large household appliance	Refrigerator, Freezer, Washing machine
Information and communication equipment	Computers, Laptop, Mobiles, Printer
Consumer Electronics	Toaster, coffee machine, clock, watches, hair dryers
Small Household Appliances	Vacuum cleaner, watch, Grinder, Hair dryer
Lighting equipment	CFL, Fan, Switches, Sodium vapour lamp, Wires
Medical Devices	Radiotherapy, Cardiology, Dialysis equipment

**III. Electronic waste : Indian perspective**

India is one of the leading consumers of electronic gadgets and demonstrates the culminated speaking graph in utilizing the information communication and technology services (ICT) worldwide. There is no separate mechanism for e waste management and therefore actual data regarding e waste generation is not appropriate will available in India. Central pollution control board (CPCB) is the main executive body to look after the e-waste generated in the country [2]. The global e-waste monitor 2020 demonstrates that India is the third largest e-waste producer in the world and contributing 3.2 million tonnes of e-waste in 2019. One of the most leading organisations of India ASSOCHAM evaluated e-waste and its management by entitled the report as

electronic waste management in India proclaimed that India will generate about 5 million tonnes of e-waste by the end of the year 2021[5].

#### IV. Literature Review:

Humans always attract to the innovative, cutting-edge technology embedded with the facilities, like it is quick, automatic, and practical, easy to operate and make the work easy for humans. With the extensive utilization of advanced technology like ICT and its related methodologies pave the way for the use of Electronic and Electrical Equipment (EEE) in the global market, which offers to grow exponentially. However, the life span of these technologies is relatively low because of frequent advancements in this technology [3]. This continuously changing in the improvement and development of electronic and electrical gadgets paved the way for generations of extreme electronic waste. This creates a challenge for the world to manage effectively generated electronic waste material. The paper's main motive is to analyze the consumer behavior towards electronic waste management in the Indian leading metropolitan city and the financial capital Mumbai. Consumer behavior is broadly categorized as concerns expenditure behavior, disposing behavior, storing behavior, and the recycling behavior of the one who utilizes the electronic gadget services. The search for significant concentration on the critical elements of electronic waste such as e-waste disposal, e-waste recycling, and e-waste management. [4] Electronic waste (E-waste) electronic equipment that is either outdated or not in working condition is either thrown or discarded in the garbage is considered electronic waste. Electronic waste is also known as digital rubbish, consisting of computers, television, fax machines, electronic gadgets, electrical appliances, and equipment. Electronic waste is one of the significant challenges facing the world to effectively manage as it generates toxic material that is vulnerable to the environment and human health. The rapid growing technology updated so frequently leads to introducing enormous e-waste, which is very dangerous as it releases several toxic materials like cadmium mercury, lead, and so on. The electronic waste is generated fast-growing, especially in developed countries like the USA, China, and Europe. However, developing countries that are the attractive market of electronic and electrical products also act as a dumping ground for low-cost electronic items, becoming more concerned about generating large amounts of electronic waste worldwide [5]. The paper

aims to analyze the challenges and issues faced by the developing countries to effectively tackle electronic waste management, which has a hazardous impact on human and environmental well-being.

Global warming is one of the most devastating and vulnerable concerns of the world. In order to inculcate the environmental sustainability habits, UNO and other leading world organizations promulgate specific measures to combat effectively. With global warming, a new challenge has come in front of the world is waste electrical and electronic gadgets, which is known as E-waste.

Electronic waste are electronics appliances that are either outdated or not in working condition and are either thrown or discarded in the garbage is considered electronic waste [6]. Electronic waste is also known as digital rubbish, consisting of computers, television, fax machines, electronic gadgets, electrical appliances, and equipment. Electronic waste is one of the significant challenges facing the world to effectively manage as it generates toxic material that is vulnerable to natural and human well-being. Because of the developing digital economy, ICT artificial intelligence produces electronic equipment that strives for enormous and massive electronic waste because the life of the electronic equipment is concise. The paper demonstrates how to effectively tackle electronic waste and its relation with consumer behavior in the European country Romania.

Electronic waste generates toxic substances like heavy minerals and flare, venturous to human and environmental health [7]. However, the consumer behavior for disposal of e-waste is quite different from other waste materials. In e-waste, the electronic waste equipment is kept inside the home rather than returning them to the manufacturing factories for recycling. This challenging issue is spreading in a rapid manner because of advanced and innovative technology invented every few minutes, which change the functionality of electronic gadgets, and people are attracted to new products. To address this issue, the paper implemented the basic psychological need theorem (BPNT) and word of mouth (WOM) to analyze the consumer transforming behavior and determine the self-reported buyers' e-waste disposal attitude. The paper is centric to the Asian country Pakistan to investigate the e-waste generated by Pakistan and the consumer behavior towards its disposal. The research outcome demonstrates that the favorable result

retrieves from WOM methods that improve customer's self-awareness and motivate them for e-waste and subsequently impact their e-waste disposal behavior and methodology.

## V. Methodology

The qualitative method will select to analyze the relevant information based on an empirical finding by conducting a survey method. The survey consists of specific questionnaires. The research systematically evaluated employing primary and secondary resources to conduct smooth analysis and reached a particular conclusion [8]. This research will opt for the survey method to gather and analyze the relevant information related to the consumer behaviour toward e-waste disposal. This study will also use secondary data from scholarly literature, online resources for research purposes. In quantitative methods which is also called secondary approach, the researcher focuses on enhancing the understanding mainly oriented and revolving around secondary sources like government official sites, journals, and business newspapers.

The primary methodology is adopted, which is a qualitative approach where a random sample is collected by survey method, and empirical calculation is done to obtain the appropriate outcome. For collecting data, a simple random approach is utilized. In this research, 102 samples are randomly collected, and the survey is conducted in online mode to obtain the perspective of the responders who voluntarily participated in the survey. In the survey, nine questionnaires were asked from the participant, and the outcome is generated based on their responses.

## VI. Results:

The result reveals the statistical analysis regarding the research and tries to provide a comprehensive and practical understanding that justified the research's motive by adequately evaluating the questionnaire and assisting to conclude the research properly.

What is your gender?

It is one of the prominent questionnaires from the research point of view because male and females have different psychology and show different attitudes toward buying and destroying electronic gadgets. This survey, where 102 participants responded, shows that

64.4 % of the people are male while 35.6% of the responders belong to the female category

Who keeps e-waste disposal for a long time, man or woman?

The research question states that who keeps the e-waste for a long time, the answer is male as they kept their e-waste for a longer time, which is interlinked with the above question and shows that male occupied more electronic equipment and kept them for a longer time.

What do you do with your electronic waste disposal?

The critical element of the research is to find out the mentality behind what the customer did with the e-waste after the disposal or un-worthy. The study demonstrates that consumers behave in two ways they sell or trash it but do not keep it, or they keep it for a long time; it may be used again. The survey shows that both the ways have an equal share of a percentage means 50% of the responder kept the e-waste with the hope of reusability, while 50% of the responder sell or trash it but did not keep with them.

Do Consumers like to keep e-waste disposal for a long time?

The question is correlated with the above questionnaire, shows the mixed attitude of the consumer that consumers behave in two ways: they sell or trash it but do not keep it, or they keep it for a long time; it may be used again. The survey shows that both the ways have an equal share of a percentage means 50% of the responder kept the e-waste with the hope of reusability, while 50% of the responder sell or trash it but did not keep with them.

Do you want to recycle your e-waste disposal?

Because of massive electronic equipment available in the affordability range of people that flourish the market with a variety of electronic appliances having small life spans and become waste after a few years either because of advanced technology attraction or the inappropriate functionality of the electronic goods, this generates the e-waste challenge which spreads in rapid mode. To demolish or subdue the e-waste, people's participation and willingness to recycle the waste played an inevitable role. Thus the question has vital importance to understand the consumer behaviour regarding recycling of the disposal.

The survey shows that about 99% of the responder were in ex-treme favour of recycling electronic waste. How many electronic items do you dispose of per year? This question provides a glimpse of the reality that a person can use so much electronic equip-ment annually [9]. As the survey was conducted over 102 participants, which is the nano num-ber compared to the India giant population, the data still shows that at least 2 or 3 electronic equipment is disposed of by a person every year. The number of e-waste products can be unimaginable, although this question at least gives some broad understanding

## VI. Conclusions

Electronic waste (E-waste) electronic equip-ment that is either outdated or not in work-ing condition is either thrown or discarded in the garbage is considered electronic waste. Electronic waste is also known as digital rub-bish, consisting of computers, television, fax machines, electronic gadgets, electrical appli-ances, and equipment. Electronic waste is one of the significant challenges facing the world to effectively manage as it generates toxic ma-terial that is vulnerable to the environment and human health. The rapid growing technol-ogy updated so frequently leads to introducing enormous e-waste, which is very dangerous as it releases several toxic materials like cadmium mercury, lead, and so on. This poisonous ma-terial has a severe impact on the environment and devastating for ecology, flora, fauna, and human well-being.

Because of the developing digital economy, ICT artificial intelligence produces electronic equipment that strives for enormous and mas-sive electronic waste. However, the life span of these technologies is relatively low because of frequent advancements in this technology. This continuously changing in the improvement and development of electronic and electrical gadgets paved the way for generations of extreme electronic waste. This creates a challenge for the world to manage effectively generated electronic waste material.

The study tries to analyze the consumer behaviour properly and their perspective toward e-waste disposal and the research reveals that people favour two distinct approaches for removal of the waste they sell or trash it but do not keep it, or they keep it for a long time; it may be used again. The survey shows that both the ways have an equal share of a percentage means

50% of the responder kept the e-waste with the hope of reusability, while 50% of the responder sell or trash it but did not keep with them. To demolish or subdue the e-waste, people's participation and willingness to recycle the waste played an inevitable role. Thus the question has vital importance to understand the consumer behaviour regarding recycling of the disposal. The survey shows that about 99% of the responder were in extreme favor of recycling electronic waste.

Eventually, the consequence demonstrates that people are willing to dispose of the e-waste as the questionnaire shows that about 99% of the people wanted to recycle the electronic waste. Thus the research reveals that consumers immensely used the electronic equipment; however, the government needed to make more efforts for recycling, reusing, and reproducing the electronic equipment. Additionally, this awareness regarding e-waste should also promptly be done in action mode to inculcate the drawback of e-waste in human health and environmental well-being.

## VII. References

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