

# A study on awareness of youth towards e-waste with reference to Nashik city

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**Abstract** - Every coin has two sides and technology is no exception to this. Technology has given many products to modern human beings to simplify their lives. However the generation of e waste has also increased manifold in past few years that pose a serious challenge for 21<sup>st</sup> century. Problems of not handling e waste effectively are numerous like pollution, hazardous materials like lead, mercury and cadmium entering the ecosystem, waste of important natural resources, health issues of sanitation workers who handle such waste without proper training and many more. Thus it is very important to have effective e-waste management. The first step towards achieving this is to create awareness about e-waste. This paper is an attempt to study the awareness of youth about e waste in Nashik city.

**Keywords:** e waste, e waste management, awareness of youth

## I. INTRODUCTION

As human life has evolved over past several decades, technology has also evolved many folds. In 21<sup>st</sup> century, moreover, technology has become an integral part of human life. Almost all activities carried out by people involve a touch of technology. Though technology is eternal, technological products are not. As a new technology is developed, the current technology becomes obsolete. With technology becoming outdated, various devices and gadgets also become obsolete. The primary objective of technology is to make human life simple. To simplify complex lifestyle of human beings in this era, various products are found in almost all middle class and upper class homes like TV, refrigerator, microwave, air conditioners, coolers, computers, pen drives, smartphones, DVD players, CDs and DVDs, home theatre systems, toys, batteries, electrical chimneys and other kitchen and home appliances. The life period of such products ranges from 5 years to 15 years depending on the product. With increasing earning and spending capacities of people and declining prices of consumer electronics, some products are changed even earlier. When a new technological product is purchased, the old one is usually exchanged. However, when the technology becomes obsolete the old technological products are either thrown into regular dustbins or are stored in their houses for a long period of time before scrapping it. This creates lot of e waste and is very detrimental to the environment.

Besides, growing industrialization has also added to this grave problem of generating e waste. Problems of not handling e waste effectively are numerous like pollution, hazardous materials like lead, mercury and cadmium entering the ecosystem, waste of important natural

resources, health issues of sanitation workers who handle such waste without proper training and many more. Thus it is imperative to have effective e-waste management. Disposal and recycling will both help in appropriate management of e-waste. The first step towards achieving this is to create awareness about e-waste. This paper is an attempt to study the awareness of youth about e waste in Nashik city. Since youth are the segment of people that uses more of technological products than any other age groups, this study is focused on youngster's awareness and perceptions.

## II. LITERATURE REVIEW

E-waste is an informal name of what is otherwise known as Waste from Electronic and Electrical Equipment (WEEE) (Pavan & Dasgupta, 2010). One kind of waste that human beings have failed to deal with until now is electronic waste. Despite the fact that this waste is actually a treasure trove of expensive metals, like gold and platinum, among others, not much is done by way of recycling it (ESR Gopal, 2013). India is a huge market for many global organizations as it seen as one of the fastest growing economies in the world. However, there are several disadvantages of this phenomenon. The Hindu (2016) had reported that India is the fifth largest producer of e waste in the world discarding roughly 18.5 lakh tonnes of electronic waste each year. E-waste consists of all waste from electronic and electrical equipment which have reached their end-of-life period or have been disposed of by the original user and are destined for recovery, recycling or disposal. The alarming e-waste generation is a serious issue more for the developing countries like India as the developed countries have to an extent addressed the issue

through policies and scientific methods for managing e-waste (Chaudhary M. et. al, 2018).

#### Objectives:

To study awareness of youth towards e-waste in Nashik city

To study disposal behaviour of electronic waste by youngsters

To study perceptions of youth about recycling of e-waste

#### Hypothesis:

H0: Willingness to learn about correct ways of recycling e-waste is not associated with the gender of the recycler

### III. RESEARCH METHODOLOGY

The research is based on primary and secondary data. Primary data is collected by using a structured questionnaire to know the awareness of youth towards e waste. Secondary data is collected and compiled by use of websites, journals and online resources. This research study is of descriptive nature and used the quantitative research method. Data was collected during the month of February 2019 covering Nashik city only. The study is focused on understanding awareness of youth as this is the major segment of people that uses lot of technological products than any other age groups.

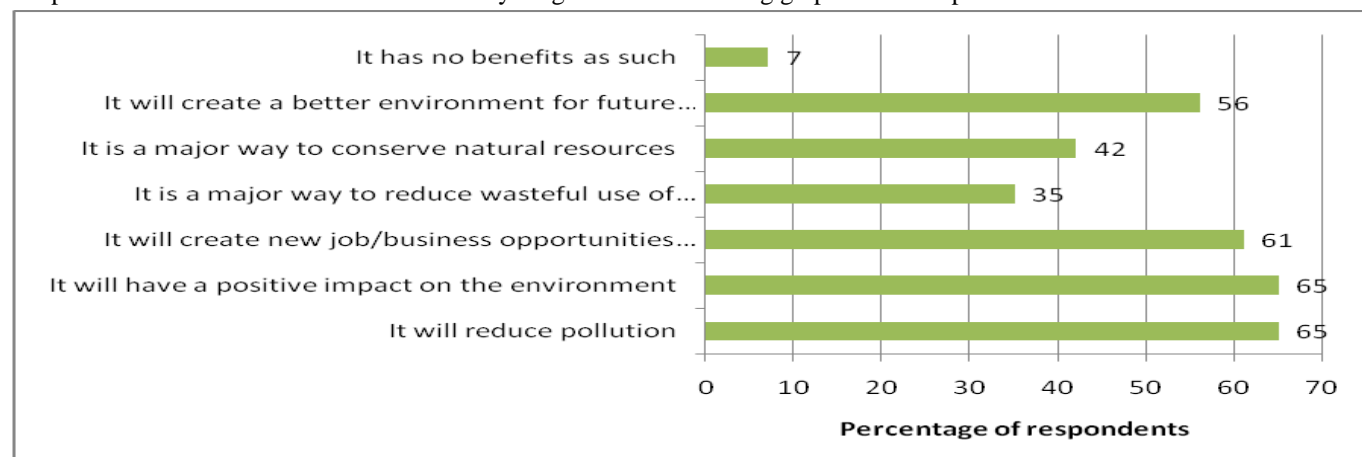
Convenience sampling was used for selection of respondents. Data was collected online using Google forms as this class of people are more likely to generate e waste. The research instrument was constructed after analyzing the extensive literature review of the related works done in the past. Apart from demographic details like age, gender and occupation, the questionnaire contained 10 questions to study awareness of e waste and perceptions about recycling among young generation. 157 responses were obtained at the end of the survey. The study predominantly used Pearson's Chi Square test for analysis of data.

### IV. ANALYSIS AND RESULTS

Data collected from target respondents about awareness of e waste was tabulated and frequencies were calculated. 57%

#### Perceptions of youth about recycling of e-waste

Respondents were asked about benefits of recycling e waste. Following graph shows responses recorded:



(Source: Primary Data)

of the respondents were male and 43% of respondents were female. 77 % of the respondents were in the age group 20 to 25 years of age and rest 23% were in the age group of 26 to 30 years. 63% respondents were students, 28% were salaried employees and 9% were business persons/self employed professionals. Following are the results of the study:

#### Awareness of youth towards e-waste in Nashik city

It was found that 89% of respondents were aware of e waste and 11% of respondents were not aware of e waste. 77% of respondents considered their old/ un-used electronics as 'waste' while 23% of respondents did not consider their old/ un-used electronics as 'waste'.

82% respondents think that e-waste has hazardous impact on the environment, 4% respondents think that e-waste has no hazardous impact on the environment and 14% respondents are not aware if e-waste has any hazardous impact on the environment.

#### Disposal behaviour of electronic waste by youngsters

The treatment of e waste was found to be varied among the respondents as follows:

- ✓ 42% respondents sold their e waste to scrap dealers.
- ✓ 25% of the respondents gave their old and unused electrical and electronics equipment to a known contact for disposal.
- ✓ 21% respondents stored their old and unused electrical and electronics equipment for some period of time and later threw it in regular dustbins.
- ✓ 5% respondents threw e waste in regular dustbin immediately
- ✓ 7% respondents gave other responses like they keep it for standby, have not done anything about it yet and dismantle them and re use

89% respondents said that no one from their your personal contact dispose e waste in a professional manner while only 11% respondents said that some of their personal contacts dispose e waste in a professional manner.

Most of the respondents (65%) believed that recycling of e waste shall be beneficial to reduce pollution and have positive impact on the environment. It was also found that most of them agreed that recycling could provide new employment opportunities (61%) and create a better environment for future generations (56%). However 7% respondents believed that there are no benefits of recycling as such.

Majority of respondents (81%) are not aware of e waste recycling centre near them while only 19% of respondents are aware of e waste recycling centre near them. Also majority of respondents (75%) are not aware of the International E-Waste Day Celebrated that was first celebrated on 13 October 2018.

68% respondents feel that e waste will be a global major challenge in next 10 years after global warming, 4% feel that it will not be a problem while 30% are not sure if such problem will exist in future.

### Testing of hypothesis:

**Table 1: Crosstabulation**

			Willingness to learn correct ways of recycling e waste		Total
			No	Yes	
Gender	Female	Count	6	61	67
		% within Gender	9.0%	91.0%	100.0%
	Male	Count	8	82	90
		% within Gender	8.9%	91.1%	100.0%
Total		Count	14	143	157
		% within Gender	8.9%	91.1%	100.0%

(Source: Primary Data)

The above table illustrates that both male and female have willingness to learn correct ways of recycling e waste. To test the hypothesis, Chi-square test is applied for which the results are presented below:

**Table 2: Chi-Square Tests**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	.000	1	.988

(Source: Primary Data)

As the test statistic is based on a 2x2 cross tabulation table, the degrees of freedom (df) for the test statistic is 1 and 5% level of significance. The p-value of the test statistic is  $p = 0.988$ . Since the p-value is greater than our chosen significance level ( $\alpha = 0.05$ ), we accept the null hypothesis. Rather, we conclude that there is not enough evidence to suggest an association between gender and willingness to learn correct ways of recycling e waste.

Thus on the basis of results, it can be stated that no association was found between gender and willingness to learn correct ways of recycling e waste.

## V. CONCLUSION

With advent of technology, exponentially growing industrialization, emphasis of government on Digital India Initiative, growing consumer preferences towards technological products and falling prices of consumer electronics generation of electronic waste is inevitable. However, as of now, waste is segregated on only in two categories viz. dry and wet waste. Priority should be given to spread awareness about e waste and its proper disposal. It can be concluded from the study that general awareness regarding what constitutes e-waste, awareness about e-waste and benefits of recycling are well known to the youngsters of Nashik city. However, they are not aware of proper disposal methods. Also majority of respondents are not aware of any recycling centres near them. International E-Waste Day was celebrated for first celebrated on 13 October 2018 is also not known to many of the respondents. Attempt can be made by authorities to popularize this day by roping relevant and contemporary personalities to popularize the concept of recycling of e-waste. That shall ultimately help in increasing awareness of e waste and in turn, more responsible behaviour towards correct disposal for reuse and recycling of e waste.

### Limitations of the study and scope for further research:

One of the major limitations of this study is that data was collected from respondents belonging to Nashik city only, which could affect the results. Future studies can examine awareness towards e waste using a bigger geographical area. Another limitation of the study is that it contains perceptions of youth only. Researchers can conduct similar studies involving children, teenagers, adults and senior citizens as well. Lastly, convenience sampling was used in the research study which has its own limitations.

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## QUESTIONNAIRE

1. Are you aware of electronic waste?  
Yes No
  2. Do you consider your old/ un-used electronics as 'waste'?  
Yes No
  3. What do you do with your old/ un-used electronics?  
Throw it in dustbin immediately  
Store for some period of time and then throw it in dustbin  
Give away to a known contact for disposal  
Sell to scrap dealers  
Others:
  4. Do you think e-waste has hazardous impact on the environment?  
Yes May be No
  5. According to you, what are the benefits of recycling e-waste?  
It will reduce pollution  
It will have a positive impact on the environment  
It will create new job/business opportunities for recyclers  
It is a major way to reduce wasteful use of landfills.  
It is a major way to conserve natural resources  
It will create a better environment for future generations  
It has no benefits as such
  6. Are you willing to learn about correct ways of recycling e-waste?  
Yes No
  7. Does anyone in your personal contact dispose e waste in a professional manner?  
Yes No
  8. Are you aware of any e waste recycling centre near you?  
Yes No
  9. When was the first International E-Waste Day Celebrated?  
13 Oct 2018 5 June 2018 22 Mar 2018 Not aware No such day celebrated
  10. Do you think that e waste will be a global major challenge in next 10 years after global warming?  
Yes No Not sure
- Age:  
Gender: M/ F  
Occupation: Student/ Salaried/ Business