

Recycling behavior of consumers' towards E-waste in Allahabad district of Uttar Pradesh

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ABSTRACT

The creation of electrical and electronic hardware (EEE) is one of the quickest developing worldwide assembling exercises. This improvement has brought about increment in squander electrical and electronic hardware (WEEE). Fast financial development, combined with urbanization and developing interest for customer merchandise, has expanded both utilization of EEE and the creation of WEEE, which can be a wellspring of risky waste that represent the danger to nature and to the manageable monetary development. To address potential ecological issue that could originate from inappropriate administration of WEEE, numerous nations and association have drafted the reuse, reusing and other type of material recuperation from WEEE to lessen the sum and kind of materials arranged in landfills. So the aim of this paper is to know about consumers' behaviors towards E-waste recycling in Allahabad. In view of this objective a poll overview was performed to investigate purchasers conduct, mentality and readiness to pay (WTP) for reusing of E-squander. There were 51 viable polls, and the survey were broke down with head segment investigation and multinomial calculated relapse examination. The outcomes uncovered that the genuine assistance life of E-items is commonly 3-5 years. About 42% telephone, 57% PC and 61% television squander is either put away at home or tossed as common trash. As India is a creating nation so because of the current degree of monetary turn of events and the conventional idea, just 47.9% of customers consented to pay for squander cell phone reusing, and most purchasers' WTP was 0 - 0.5% of the reusing costs. The fundamental elements influencing the buyers' WTP were area, training level and month to month pay. Consequently, makers of E-item and the legislature ought to generally share the obligation of waste cell phone reusing. With an improvement in open natural mindfulness, as a large portion of the shoppers don't think about "Green box Ecological program" customers might be able to manage the cost of reusing charges later on, through either a prepaid store, or buying the item with the expense installed in the cost. Moreover, it is essential to help natural training to advance ecological mindfulness.

Keyword: E-waste, recycling, survey, Allahabad

1. INTRODUCTION

The rise in e-waste generation has been partially explained by the increased usage of electrical and electronic devices due to its use in the day-to-day lives of individuals. The leadership in many developed nations, e-waste has become an environmental issue because of urbanization. Takes position begins. India's present-day e-waste management activities are suffering from a variety of drawbacks, such as unhealthy informal recycling conditions, insufficient recycling conditions, Legislation, and low consciousness. India faces the question of e-waste management due to a shortage of e-waste management. Knowledge among individuals about the harmful environmental and human effects of e-waste via informal collection of e-waste and lack of enforcement of rules for the the environmentally sustainable e-waste operation. The emphasis of this paper is on the current state of E-waste in India, e-waste related questions, e-waste handling activities, techniques and strategies Legislation, and low consciousness. India faces the question of e-waste management due to a shortage of e-waste management. Knowledge among individuals about the harmful environmental and human effects of e-waste via informal collection of e-waste and lack of enforcement of rules for the the environmentally sustainable e-waste operation. The emphasis of this paper is on the current state of E-waste in India, e-waste related questions, e-waste handling

activities, techniques and strategies Laws for e-waste handling. The aim of this paper is also to define customer attitudes. In some fields of e-waste management activities, e-waste disposal and e-waste recycling Uttar Pradesh's Lucknow district. Global organisational overview of the different green goals, waste the region, however, with few corporate players in India and uniformly, is very present. The unorganised / informal zone in India currently handles most of these electronic waste management sectors. In either case, because of the lack of expertise, expertise, resources, etc., the region has extremely labour intensive, environmentally unkind and unhealthy also persisted. If done in the E-waste management may become a commanding power in the right manner and in a comprehensive way. The world's economic market. E-waste originates from domestic and corporate sources (besides private and government waste). According to one report, 67% of WEEE is contained in the USA (HP, 2005). The number is likely to be considerably higher in India. The collection of the waste exists in different ways. The chains range from junk dealers to area junk dealers, field aggregators and, finally, recyclers. Corporate company houses cope with the old EEEE



Fig -1 E-waste

The markets. The extra complicated portion is typically sold to an everyday recycler, such as mother boards, assemblies, fused parts. They sold those metals to smelters. In certain instances, the origin solution is so crude that it often contaminates the output. The productivity of related strategies is still just about 30 percent. Some are sold directly in second-hand sales from the functional portion of the acquired WEEE, some are repaired and sold as a restoration items, some are donated to charity and some are leased.

2. METHOD USED

This paper follows an exploratory approach focused on a subjective analysis of the ecological and social viewpoints of the division of e-squander territories. Due to the non-accessibility of sufficient e-squander results, an exploratory protocol was introduced. Knowledge obtained through a detailed analysis of the subjective details associated with

the point distributed in the publications of various government and NGOs, research documents, news accounts, sites and websites, And so on. An summary was guided in this study paper with the assistance of a survey that involves all out of 15 inquiries each about the reuse of E-squander actions (it was thought of in this paper mobile, PC and television), which involves 78 people after the information has been examined through head section analysis and multinomial strategic relapse investigative technique witness

2.1 Sample size –research includes the survey report of 78 people.

2.2 Sample unit – UP (ALLAHABAD): There are four areas which are rural, urban, residential and commercial areas of Allahabad and have been selected, which are Allahabad municipal carp., George town, Sahganj electric market and Dadanpur so that heterogeneity of the sample can be ensured.

2.3 Users of electronics – Students, self-employed, salary based, govt. and private employers etc.

2.4 Questionnaire design:

Until the final data set, through a pilot survey conducted in Lucknow from January to May, 78 questionnaires were circulated to customers. A updated survey was performed from 15 Feb to 15 May based on the responses. The survey included questions on basic socio-economic knowledge and three other sections. Questions about gender, age, region, level of education, and monthly income were included in the socioeconomic details. The first of three supplemental surveys Consumer habits and attitudes towards recycling and disposal of e-waste were discovered in sections. The second section was intended to examine the environmental perception of e-waste recycling and disposal among users. The third section explores the ability of users to pay for the disposal and storage of cell phone waste and affects their ability.

3. RESULTS AND DISCUSSION

3.1 Results

We use in-person questionnaires to take a lot of inaccessible questionnaires, distributed 78 questionnaires via an on-site and home questionnaire in the 4 regions to ensure the sample size. We have shown that the highest number of questions not answered was 3, and the number of questions sufficiently answered was 75. The completion rate of the survey was about 96.15 percent and the rate of participation in the survey was about 93.3, the key factor behind high survey Completing and high participation rate was as follows (1) in the on-site methodology, we gave a lot of shocked gift and fast food and many more including free movies ticket etc. and (2) people are quickly given the answer for home method because many free and everyone effectively gives the answer due to parent availability. They are unable to take any gift if individuals do not give the answer and someone is scolded by their parents.

Total male(53.8 percent), 21-31year-old (41.5 percent) and junior college and bachelor (53.5 percent) respond in my survey study, this category of person is more interested in engaging in the survey, or that these individuals have more time to check the questionnaire website. A survey study describes the ethnic makeup of the sample.

Table -1: Demography composition of the sample

Sex of participants

		Sex of participants	Age of the participants	Monthly income of participants	Education of participants	City of participants
N	Valid	78	78	78	78	78
	Missing	0	0	0	0	0

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	MALE	42	53.8	53.8	53.8
	FEMALE	34	43.6	43.6	97.4
	3.00	1	1.3	1.3	98.7
	4.00	1	1.3	1.3	100.0
	Total	78	100.0	100.0	

Table -2: Age of the participants

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Age between 15-25 years	24	30.8	30.8	30.8
	Age between 26-35 years	24	30.8	30.8	61.5
	Age between 36-45 years	11	14.1	14.1	75.6
	Age between 46-55 years	13	16.7	16.7	92.3
	Age more than 55 years	5	6.4	6.4	98.7
	6	1	1.3	1.3	100.0
Total		78	100.0	100.0	

Table -3: Monthly income of participants

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Rs 0	14	17.9	17.9	17.9
	1-2000	9	11.5	11.5	29.5
	2001-3000	7	9.0	9.0	38.5
	3001-5000	4	5.1	5.1	43.6
	5001-8000	6	7.7	7.7	51.3
	8001-15000	16	20.5	20.5	71.8
	Greater than 15000	22	28.2	28.2	100.0
	Total	78	100.0	100.0	

Table -3 Education of participants

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Senior high school & below	46	59.0	59.0	59.0
	Junior college & bachelor master & above	29	37.2	37.2	96.2
	3.00	1	1.3	1.3	97.4
	4.00	2	2.6	2.6	100.0
	Total	78	100.0	100.0	

Table -4 City of participants

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Lucknow B	2	2.6	2.6	2.6
	Allahabad A	38	48.7	48.7	51.3
	Allahabad B	38	48.7	48.7	100.0
	Total	78	100.0	100.0	

3.2 Discussion

3.2.1 Average service life of mobile phone, laptop and TV in India:

Owing to nation growth, electronic devices will increase day by day, most people will change our smartphone, laptop owing to fashion, and more and more modern specifications will be applied to smartphone and laptop, so the effect will be that mobile and laptop life will be very short and most of the stuff will be shown in mobile and laptop in the case of tv, so tv life will increase comparatively. Small to the build life of the appliances. The key challenge is changing the smartphone, laptop, and tv that will damage most of them, trend out of market, and new specifications rise day by day due to the fact that the lifetime life of these electronic devices is very short such that e-waste increases exponentially. Which are too harmful to the atmosphere and too dangerous. Small to the build life of the appliances. The key challenge is changing the smartphone, laptop, and tv that will damage most of them, trend out of market, and new specifications rise day by day due to the fact that the lifetime life of these electronic devices is very short such that e-waste increases exponentially. Which are too harmful to the atmosphere and too dangerous. Small to the build life of the appliances. The key challenge is changing the smartphone, laptop, and tv that will damage most of them, trend out of market, and new specifications rise day by day due to the fact that the lifetime life of these electronic devices is very short such that e-waste increases exponentially. Which are too harmful to the atmosphere and too dangerous.

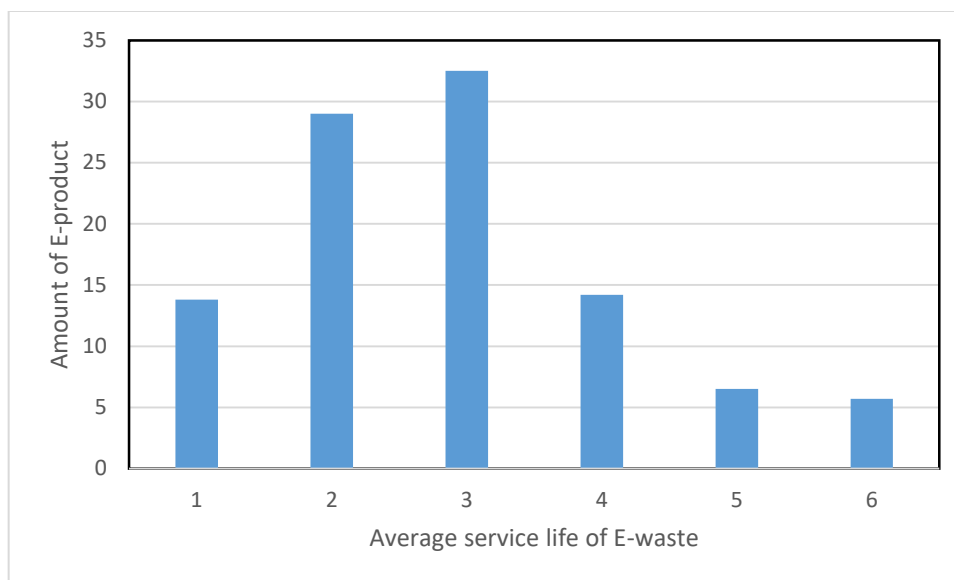


Chart -1: Average service life of E- product by survey report

3.2.2 Consumers' mobile phone, laptop and TV treatment methods:

From that survey, we seen that about 27% mobile was lost or given to someone or donate it and in laptop about 36% was donate and very small one are lost and in tv about 21% given to someone. These phones, laptop and mobile again used by consumer that's why life of these electronic instrument was increase to some year. About 43% of waste mobile phones, 53% of laptop and 64% of tv are stored in home. Only 33% mobile, 11% of laptop and 15% of tv were recycled in different ways, and some amount will recycled by "Green Box Program". And some one recycled by the "Old-for-New activity". And remaining of mobile, laptop and tv were sell to second-hand markets, in that many one was not recycled by reasonably ways only someone was recycled. In the second-hand market valuable element are kept and remaining electronic appliances are sold in very small amount like village and other component are damp in open space in the environment. Many of the phone, laptop and tv are sell to private work-shop for dismantlement using outdated technology, such as acid bath or open incineration, which would cause serious secondary pollution. All of that electronic substances will be hazardous for the environment.

3.2.3 Factor obstruct the behavior of customers in e-waste recycling:

From my survey report, the main cause come to that why large amount of electronic gadgets are not recycled, In that most of them does not know where to send the electronic waste that's why people give waste mobile, laptop, tv to our relative. And many of them afraid to their privacy so they kept their phone to themselves. And very small amount are used as a data storage of waste gadgets.

3.2.4 Consumers attitude towards the low recycling rate:

From the investigation the result that the recycling rate of waste mobile, laptop and TV is very low in India. So that we asked what is reason behind that the low rate about 33% of people show that the main reason is the absence of sound recycling system. About 27%, 24%, and 16% believed that main reason behind that is weak environmental knowledge, not proper law and regulation and absence of week government management, respectively in India. Someone said that there are not large amount of publicity about e-waste management. So that it is very necessary to make a proper recycling system to improve the e-waste recycling rate, we also need to strengthen publicity through various means to raise environmental protection awareness among the general public.

3.2.5 Consumers preference of waste mobile, laptop and TV recycling:

If we want to improve the recycling system in India, it was too much important to made easy and acceptable recycling management system. The survey of people show that about 26%, 17% and 14% of people are willing to send their phones, laptop and mobile respectively to sell through the "Old-for-New activity", and some people want some bonus for recycling our mobile, laptop and TV. Some people think that government should make collecting sites in their area, or their mobile should be collected by government. The main cause for this selecting by people are

that the collecting sites or business halls are largely distributed and close to communities, give a more easy recycling location for people. And other methods like choice of door to door collecting process are very low (11%) due to fear of privacy. And only very small amount (8%) of surveyor go to service centre because centers was too concentrated and very far from home and communities. Based on the laws and regulations encouraging WEEE to be recycled through a variety of ways, the “Old-for-New activity” should be standardized as soon as possible, and the “Green Box Program” should be given more publicity. Meanwhile, the government should build collecting sites in communities. Consequently, waste mobile, laptop and TV could be recycled effectively through these three main methods.

3.2.6 Consumers’ recovery consciousness:

So by the use of SPSS we can make a conclusion that by the using of independent sample, the second part of survey has high reliability and discrimination and good make validity. So from the questionair analysis we make a thought that regarding the toxic, hazardous substance and much valuable metal substance contained in mobile, laptop and TV. But some people does not know about “Green Box Environmental Protection Program” and the principle of EPR. In fact, people are more knowledge about the valuable metal are present in the TV, laptop and mobile. Generally, people have very less knowledge about the E-waste recycling process. In my view government should provide more valuable knowledge about e-waste and also NGO taking participating in it for social aspect, especially knowledge about law, management policy and also recycling system of e-waste. And other thing that if we want people take large participate in e-waste recycling so it is very nessary to provide knowledge, information at regular interval in whole over the India and make large population to responsible for e- waste.

3.2.7 Consumers’ WTP:

To the related law make the theory of EPR in relation to the issue of payment process of WEEE recycling. The one important process in EPR that the responsibility will be equally distributed in all people. It can include that key element of EPR consist of multi-stakeholder collaboration and coordination. The Management process of Recycling and Treatment of Waste Electronic Products, implemented on Jan. 1, 2011, determined that the government should provide special funds to support the recycling and treatment of waste electronic products; and other thing that consumer and producer both are pay for recycling. However, there was no any commercial responsibility requirements of sellers and consumers. Based on the experiences and study of developed countries a suitable and stable e-waste recycling system requires collaboration of stakeholders, including the government, producers, sellers, mobile telecom carriers and consumers. However, from my survey report many people does not think they should be held responsible for the take-back fees because of the tradition that in India they can obtain a bonus by selling their obsolete cell phones instead of paying recycling fees for waste mobile phone recycling. Other one, only very small consumers think that the five stakeholders mentioned above should participate jointly.

3.2.8 WTP:

According to the beneficiary pays principle, as the ultimate beneficiaries of production and services, people should be responsible for a part of the charge for waste laptop, TV and mobile recycling and treatment. However, 52.1% of the people from the questionnaire does not agree from that 2 due to current status of our nation’s because economic condition is not good and also we are a developing country. Another 47.9% of people are agree to pay some part of money for recycling process and treatment; however, the people have different opinions regarding the payment method. Approximately 20.3% wanted to pay deposits at the time of purchase, deducting costs from the deposits and returning the remaining part when handing in their e-waste products. The remaining 12.9% of consumers were more inclined to pay the costs to the recyclers as part of the actual e-waste collection. In this case, consumers exhibited low WTP. About 63.52% of consumers’ WTP was 0.5% of recycling costs, and 18.7% of consumers’ WTP was 6.10%. Only a small number of consumers would accept higher take-back fees.

4. CONCLUSION

According to the analysis of the survey result, the following result are gives:

- (1) Although the Indian government has enacted 12 laws and regulations to manage the recycling and treatment of e- waste, a special legal framework on small WEEE aiming to encourage stakeholders to participate in waste mobile phones, laptop and TV recycling is still necessary to be developed. All of the current recycling activities in India are voluntary initiatives, and there is no guarantee that consumers will participate in the formal program because they can obtain a bonus by selling their obsolete cell phones.

- (2) This survey show that in India, the actual service life of TV is less than 5 year and for laptop it is less than 4 year and for mobile it is less than 3 years, that is shorter than the designed service life because of consumers' force demand for new functions and styles.
Due to this large number of e- waste generated.
- (3) Generally 6 main ways that consumers will show their waste TV, laptop and mobile phones. About 53.1%, 48.5% and 46.1% of the consumers' TV, laptop and mobile phones respectively were stored at home, and most of the waste TV, laptop mobile phones will not be recycled effectively, meaning that this waste could be potentially hazardous to the environment and that the manufacture of new TV, laptop and phones would waste energy and resources.
- (4) Consumers' knowledge of regarding e-waste was very low due to weak absence of environmental publicity and education in India.
- (5) It is very important to establish a reasonable and acceptable recycling system to improve the recycling rate. The "Old-for- New activity", the "Green Box Program" and collection sites in communities were more popular with consumers in the questionnaire.

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