International Journal of
Recent and Futuristic Management
A Peer-reviewed journal

IJRFM 01 (2016) 036-043

E-Waste Management: A New Strategy for Marketing

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A B S T R A C T : With advancement of technology, human life has become dependent on electronic gadgets ranging from television to mobile. Today we cannot think of our life without electronic gadgets. Reasonable proportion of our income is spent on electronic equipment's which makes our life easy. With expanding use of electronic equipment's, there is increasing concern of management of waste arising from it, popularly known as e-waste. According to the report of United Nations the global quantity of e-waste generation in 2014 was around 41.8 Mt. The global quantity of e-waste in 2014 is comprised of 1.0 Mt lamps and 3.0 Mt of Small IT and 6.3 Mt of screens and also monitors, 7.0 Mt of temperature exchange equipment (cooling and freezing equipment), 11.8 Mt large equipment, and also 12.8 Mt of small equipment. The total amount of e-waste is expected to increases up to 49.8 Mt in 2018, with an annual growth rate of 4 to 5 per cent.

Present study is an attempt to present e-waste management from marketing strategy point of view. The companies can develop marketing strategy which help them to increase their sales along with contribution towards e-waste management by collecting e-waste from end consumers and channelizing the same for systematic and environment friendly recycling. Study is based on the primary survey of households in order to understand the e-waste management at household level along with their perception and expectations from e-waste. This would lead to a win-win situation where the companies also get benefit as well as the final consumer too gets the advantage.

Keywords: Electronic gadgets, Equipment's, e-waste, environment, management

1. Introduction

E-waste means any waste electrical and electronic equipment, which has become obsolete with its overuse, misuse, breakage, etc. It consist of a whole range of electrical and electronic items such as domestic and electronic equipment many of which may contain toxic materials.This is generally found at our places either at our homes or work places. Some of this equipment's, devices or gadgets can be repaired, refurbished for further use and some may not. When it cannot be reused or repaired, these can be extracted in whole or in part, as certain elements or parts that can still be used in the manufacture of other devices. E-waste if used for other parts its fine and good but if not used than it should be discarded in a proper way, so that it does not harm the nature and in turn the human beings. As E-Wastes contain Lead, Mercury, Cadmium and flame retardants that cause multiple toxic Problems. If not properly handled these seep into our natural water reservoirs and rivers. This water than finds a way back into our farms, forests and foods and affect the well-being of humans. This

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should be treated properly so that the earth remains a better place to stay for the animals, human beings and nature itself. Some of these leeks from the e-waste are very harmful for generations to come.

This study is about using e-waste management as a marketing point of view as well as to come to an approximate estimate about the e-waste present in the household with respect to income, gender, education, etc. Looking towards today's life you cannot think about a day where an individual does not use an electronic gadget. Moreover we would say that from morning till late evening he is overcrowded in terms of usage of electronic gadgets. As we all know that every product has got its own life and similarly the electronic gadgets we use also have the life and as the number of gadgets increases day by day it's necessary that we need to have a proper way to destroy as well. Moreover in this study we have also looked into what the common man understands about e-waste and action he would take when he has some e-waste being generated.

Expensive IT infrastructure is a fundamental component of most business processes and has improved productivity exponentially. But it is one of the major reasons for consumption of energy, water, emission of greenhouse gases and generation of electronic or e-waste. Hence, the transition towards the idea of 'green IT' has caught up, and "Go Green" concept is used to the greatest extent. E-waste is of great concern due to the toxicity and carcinogenicity of some of the substances which it contains. Toxic substances like lead, mercury and cadmium are found to the greatest extent in e-waste. Even Carcinogenic substances like polychlorinated biphenyls are found in electronic goods. A typical computer monitor contains more than 6% lead by weight. Capacitors, transformers, PVC insulated wires, PVC coated parts often gives dangerous amounts of polychlorinated biphenyls. As very well said by Nokia India's managing director D Shivkumar"E-waste is going to be one the major problems facing the world after climate change and poverty"1

2. Dealing with E-waste

Currently, around the world, the volume of obsolete computers and other e-wastes are growing at an alarming rate. The development of huge quantity of electronic waste presents an enormous environmental and health hazard to the community. This is show by below table which shows the amount of waste that 500 million computers can create.

Table:1 How much waste is in 500 million computers?2	
Plastic	6.32 Billion Pounds
Lead	1.58 Billion Pounds
Cadmium	3 Million Pounds
Chromium	1.9 Million Pounds
Mercury	632,000 Pounds

There are basically 4 ways in which e-wastes has been treated till date, but none has been found to be completely satisfactory.

The most common one has been storing e-wastes in landfills, but it is not found to be useful because of its hazardous nature and that is why dumping in landfills is banned in many counties as well.

The other method which is commonly used is to incinerate or burn the goods concerned, and also this method release heavy metals such as lead, cadmium and mercury into the atmosphere. Thus it pollutes the air and that is the reason this method is also of less use to deal with e-waste.

Reusing the product is the other way to deal with e-waste. Re-use constitutes direct second hand use, oruse after slight modifications are made to the originalfunctioning equipment like memory upgrades, etc. In India the reuse of second-hand electronic goods is a good option as the value of the product falls and even one gets a chance to use premium gadgets at affordable price.

Recycling is the last and ultimate option and it appears to be a safe method to utilize or dispose e-wastes. “Recycling” of hazardous wastes, even under the good circumstances, has little environment benefits as it simply moves the hazards into secondary products that eventually have to be disposed of. Recycling is therefore an important result, especially if we consider this e-waste contains many good and little materials.

E-waste management current practice and what could companies do to help e-waste management:

Recycling would be the best and the safe option for the companies to go for e-waste management. E-waste management companies can directly collect the e-waste from the corporates and can have a tie up with them for e-waste management. All e-commerce business which is booming right now can also follow the same strategy can allow exchange of products from the customers and finally sells it to the e-waste management companies. But the problem lies with the retail users who are also having a huge dump of e-waste in their houses as the usage of gadgets and electronics is growing day by day. With this purpose in mind the study has been conducted that the companies should go for exchange of products even if it is not in working condition or even if it’s no of the same category. For eg. Exchange of mobile against mobile is surely being done but exchange of tablet against mobile or dvd player, etc. could also work and it could be a win-win situation for the company as well as the end user. As the end user will not be worried about the disposal of the e-waste which he is having, moreover he would buy a thing which he is not going to use currently but only because he got the value of the waste product, he would buy a new one. For company it would obviously increase the sale and ultimate as a part of corporate responsibility they can collect such e-waste from the retail user and supply it to the concern recycling unit, thus in turn they would helping the society by making a better place to stay.

If we look around globally this is the major concern and there are few countries who are managing it very successfully. Most successful examples can be found in countries such as Switzerland and the Netherlands. Generally, the Swiss e-WMS can be viewed as an ERP-based system; stakeholder has their own clear definition of role and responsibilities. In order to optimize the closed loop of material flow, raw materials are first converted in finished electric and electronics equipment’s by the manufacturers, and then sold to the end users. At the end of the life of the product after going through the retail and consumption they are collected from the end user and recycled to produce a new product. Apart from recycling the other materials which cannot be recycled goes to incineration for energy recovery, a small portion of it goes to the landfill, nearly 2%. Producer responsibility Organizations, such as SWICO and SENS, collect ARF from producers on their sales or import of an appliance. Then, ARF are passed down to retailers or distributors who invoice consumers for their purchase of new appliance. This ARF is used to pay for the all e-Waste recycling system, distribution, including collection, decontamination, sorting, dismantling and recycling of the disposed EEE products3.

There are in all 138 registered units which takes care of e-waste management in India and which has put together capacity to manage 349154.6 MTA4.

Objectives:

The primary objective of the study was to understand the perception of young generation about e-waste issue and e-waste management with a view to suggest the marketing strategy for corporate world which will help them to increase their sales along with their positive contribution towards e-waste management. The other objective is to see the amount invested into the purchase of electronic equipment's and the expected scrape value of the electronic holdings within the household. Moreover to see how they would be willing to manage the e-waste which they are holding with them.

Research Methodology:

In order to know the situation and perception of youngster about e-waste and e-waste management primary survey was conducted among educated respondents with educational qualification of graduation, post-graduation or professional. The primary data were collected from sample of 230 students with the help of structured questionnaire. The collected data were analyzed using SPSS.

Data Analysis

The classification of respondents by their gender indicates that 65 percent were male while 35 percent were female. The family size of the respondents indicates that largest number of respondents i.e. 47 percent have four members in their family. Nearly 80 percent respondents have family with up to five members. The classification of respondents by income indicates that nearly 40 percent have annul family income of 5 to 10 lakh while 37 percent are from 3 to 5 lakh income group.

Use of Electronic Equipment's and Availability of E-Waste

Table:2 Use of Electronic Equipment's

Equipment's	Average Quantity (per family)
TV	1.78
Tablet	1.42
Mobile	5.60
Laptop	1.86
Refrigerator	1.17
AC	2.18
Ipod/ipad	1.12
Music player	1.24
VCD/ DVD/ video player	1.25

The analysis of availability of electronic equipment's among respondents indicates that average quantity of mobile is highest among selected equipment's followed by AC and television. In order to assess the availability of e-waste among respondents there were asked to report the total electronic gadgets available with them and quantity of non-working gadgets. For the convenience purpose only selected electronic equipment's were included in the survey. The result of the survey indicates that 31.03 percent of i-pod / i-pads are non-working conditions followed by music player 27.01 percent and 13.17 percent among mobiles.

Table: 3 Proportion of Non-Working Electronic Equipment's	
Equipment's	Percentage
Television	7.88
Tablet	11.51
Mobile	13.17
Laptop	3.81
Refrigerator	3.49
AC	0.98
Ipod/Ipad	31.03
Music player	27.01
VCD/DVD/Video Player	35.94

Duration of use of Electronic Equipment's

Table:4 Duration of use of Electronic Equipment's	
Equipment's	Average Duration (Years)
TV	8.2
Tablet	2.4
Mobile	4.3
Laptop	3.4
Refrigerator	7.1
AC	4.3
Ipod/ipad	3.5
Music player	5.5
VCD/ DVD/ video player	6.5

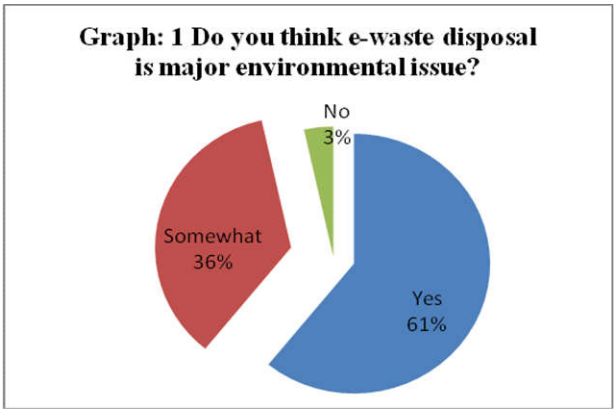
The above table shows the average duration of years the following equipment's were used. From the above table it is clear that the average of the equipment's which have been in used since many years is TV, Refrigerator and DVD player. Whereas the equipment's which have been in use since last few years are tablet, mobile, laptop, ipod and AC. All these gadgets which have been into huge demand now days have a comparative less product life compared to the product which has been in use since many years.

Expected Scrape Value of Electronic Equipment's

The above table shows the scrape value of the equipment's which has been selected to collect the research data. From the above table we can easily see the minimum expected scrape value of the product as well as the maximum value. From the above table we can clearly say that the average maximum scrape values of the products are Laptop, AC, Refrigerator and TV.

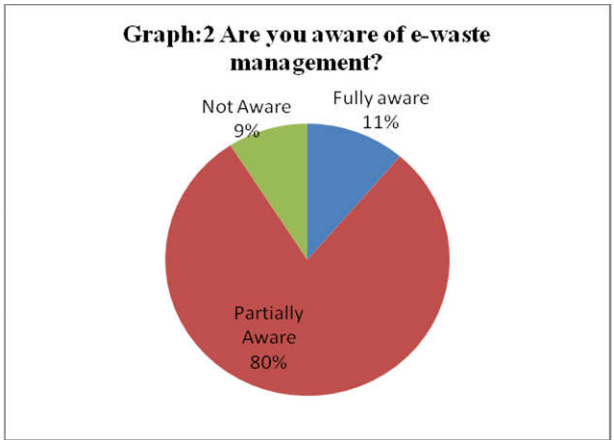
Table: 5 Expected Scrape Value of Electronic Equipment's			
Equipment's	Minimum	Maximum	Average
TV	1000	70000	11476
Tablet	1000	20000	6507
Mobile	300	30000	5985
Laptop	1000	40000	18385
Refrigerator	1000	56000	11840
AC	3000	40000	15128
Ipod/ipad	0	15000	5120
Music player	0	15000	3163
VCD/ DVD/ video player	0	13000	2279

E-Waste Disposal as Environmental Issues



The perception of respondents about e-waste as a major environmental issue shows that 61 percent has agreed with the same while 36 percent consider it as a problem to some extent. There was no significant difference across gender on the issues (Chi-square 0.919, $p>0.05$). But when consider the perception across various income group, results were significant (Chi-square 18.543, $p<0.05$). With increasing income level the perception about e-waste disposal as environmental issue also changes.

Awareness about E-Waste Management



Analysis of awareness about e-waste management among respondents indicates that only about 11 percent respondents were fully aware about e-waste management while 80 percent respondents have indicated that they are partially aware about the same. Further analysis indicates that there is no significant difference between male and female with regard to awareness about e-waste management (Chi-square 4.833, $p<0.05$). But income was one of the parameter with significant impact on awareness. The awareness about e-waste management was relatively more among higher income group as compared to lower income group (Chi-square 13.917, $p<0.05$).

E-Waste Management at Individual Level

Table:6 E-waste Management at Individual Level

Option	Average Rank
Exchange	1.98
Kabadi (Scrap vendor)	2.47
Dustbin	3.33
Resale	2.22

In order to access the process followed or preferred by respondents with regards to e-waste management at individual level in terms of getting rid of non-working electronic equipment's, the respondents were asked to rank their preference among exchange, resale, sold to scarp vendor or throwing in dustbin. The results indicate that most respondents would like to exchange their non-workingequipment's for new one if option is available. In the absence of such option respondents would like to get rid of their non-workingequipment'sby resale if some on is available for the same.

Household Consumption of certain Goods in Rural and Urban areas.

Table:7 Household Consumption of Various Goods in India (% users)5

Equipment's	Rural	Urban
radio, tape rec., 2-in-1	18.7	17.4
television	49.6	80.4
VCR/ DVD player	10.3	30.5
air cond., air cooler	5.9	23.5
refrigerator	9.4	43.8
PC/ laptop incl. soft.	1.5	14.9
mobile phone handset	77.6	92.2

The above data is taken from national sample survey office handbook June 2014. From the above data it is very clear that the maximum users in rural area are of mobile, television and radio. Whereas if we see in urban areas the maximum users are of mobile, television, refrigerator and dvd player. These maximum users in these particular products would lead to the maximum waste of these products.

Findings and Conclusions

It has been found from the data that consumption of electronic equipment's per family first comes mobile, followed by AC and television.

The household which have more no. of e-waste the first comes ipod, followed by music players and mobile.

The equipment's which have been used since many years and they are a part of the household includes TV, refrigerator and DVD player.

It have been found from the study that the expected average scrape values of the products Laptop, AC, Refrigerator and TV are high to low respectively.

From this study the 61 percent respondents has agreed that the e-waste disposal has the major environmental issues, it need to be taken into consideration for proper disposal of e-waste.

80% of the respondents were partially aware about e-waste concept whereas only 11% were fully aware about the e-waste management. So the companies should conduct some awareness program so that the consumer could be a part of this e-waste management program.

From this study with respect to individual management of e-waste, the respondent prefers exchange on priority base followed by resale, scrape vendor and finally would be dustbin. Looking towards this the company should come out with the strategy for exchange of products like mobile, tv, refrigerator, etc. Though this is being done by many companies but they should come out with new strategy like exchange of any non-working mobile, tv, refrigerator, etc. with any other gadget. This strategy could be a win-win situation for the company as well as the end user. For the company it could be a part as a CSR activity where they would be helping in protecting the environment and landfills by managing e-waste properly. For the user it would be beneficial as it would help them in buying a new product. Moreover this strategy would help the company in insisting the buyer to buy a product even if they are not in need of buying, but as it would be an attractive offer it would help them to increase the sale.

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