CHAPTER 1

INTRODUCTION

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CHAPTER: 1
INTRODUCTION

1.1 Introduction

This chapter an attempt made to study background of E-waste Management in India and Mumbai. Moreover this chapter also presented the study, Hypotheses, Scope, Significance and Limitations of the study. In addition to Research methodology and summary.

This chapter emphases on understanding the basics of research topic and concepts from various perspectives viz. social, technical, environmental and economical etc. The objectives of this chapter to put on light on area under research. It also focuses on the scope, objectives and in short research methodology adopted to complete study on given topic.

The splurge of technology in the last two decades results in e-mail, e-business & e-commerce. The most modern expression to gain the ‘e’ prefix has a more questioning separation – waste. Electronic & Electrical Waste which is universally called as ‘e-waste’ is the latest consequence of the technology driven society. In this part it does not considered scrap electronic mails, but actual presence of electronic parts i.e. which is tangible, touchable which is a either part of electronic and electrical products or whole systems in itself.

Our generation has experienced and gone through the transformation of variety of electronic products and their range. We have so much dependent on these electronic products and which leads to a new environmental challenge electronic and electrical waste nothing but ‘e-waste’.

“Part of it broad and emergent array of e devices like day to day family or domestic products such as fridge, coolers, cell phones audio systems, user electronics and computers related systems. Electronic and electrical waste is dangerous, and it is multiplied at alarming rate
as users are discarding it at exponential rate. Part of it over thousands different materials, which are not only fatal but creates dangerous pollution once discarded improperly. These toxic materials include Plastics Mercury, Lead, Bromides, and other hazardous oxides etc."

A different explanation for E-waste is the outcome of the process when different communities throw away or handover their electronic or electrical appliances for recycling or get rid of it.

E-waste includes Television sets, Personal gazettes, Music Systems, CD Players, VCRs, shooting or photographic devices, communication devices, photocopiers, Fax machines and Mobiles, audio frequency equipment’s, Video Games and other household electronic equipment’s.

Good number common types fall under this kind of waste are cathode ray tubes (CRTs) and Personal computers. What really matters in differentiating these waste into any other solid waste are its toxicity, variety and complexity in actual components. All these categories of waste include a very high and low value of dangerous and poisonous materials like Cadmium, lead (Pb), Mercury (Hg) & higher percentage of Plastic products. In additional to above one more common part plays vital role in e-waste which is printed circuit boards (PCBs) it contain lead (pb) and bromine flame retardants (BFRs). The above materials are not only carcinogenic to human life but dangerous to environment as well.

In today’s globalized village concept these items are convincingly tagged, and their numbers are exponentially multiplying day by day as larger part of the developed society can afford it. As electronics are available at affordable prices, so the replacement rate has also increased, with the speed of technological innovation and development they offer tremendous functions, in lesser sizes and attractive aesthetics.
This development and transition phase started long back, it means the products where purchased during few past years are now lined up in the scarp or disposal system. And this older heavy products plus newly discarding products are only increasing pressure and toll on the municipalities and other government controlling bodies in all developing and under developed nations.

The transition in technology, its haphazard use and increase in purchasing power helps to increase this problem up to much non-imaginary level. The problem is not only about its compilation but it is more complex at the management and discarding part due dangerous in built materials which is not in case of solid waste management. And due to this a large amount of investment is also required to handle and properly work on this problem so many governing bodies and municipalities are reluctant to provide proper treatment to this environmental damaging and ever increasing problem.

No discrete law is made on this type of waste in India and even now it is fall part of Harmful or Perilous Waste rules. Repetitively, electronic waste also largely held by people in the tolerant sector.

At present, many nations facing beneath fates:
• Store it and expect treatment
• use it as a landfill or send to incineration
• Use again and again specially after repair
• Reprocessed at reprocessing services in different areas
• Reprocessed in jails or in detention centers
• Distributed to budding nations like India. (India is the largest importer of e-waste due to its IT business, high population and low labor cost).
1.2 Statement of the Problem

“As end users and buyers in budding and transforming nations, like India, amplify their utilization of automatic and wired products, it is but obvious these products are finding out in disposal area or part of disposing system. Due to this collection, handling & treatment in short management of such part of solid waste is a huge challenge ahead of municipal agencies, creators & buyers. And this would push to ponder what really happens to discarded products when it reaches to any such waste management activity.

1.3 Background of Research

E-waste is not only a developed countries problem but also a concern area for developing and under developed world. E-waste problem can only be tackle by knowing it thoroughly, educating users about their ignorance attitude towards electronic garbage, by taking proper steps and by joining global hands to reduce its repercussions.

1.4 Objectives of the Study

“The purpose of this research is to understand, identify and to amplify in depth knowledge about the waste management practices of finished electronic products. It also focus on their disposal of end-of-life appliances, which includes their assortment, compilation, providing finance & recycling, by the way of depiction, investigation and similarity of the widespread operations.
The research aspires to:

1. To identify the harms and opportunities of e-waste management as it is a very fast emerging threat to environment.

2. To study the e-waste management practices in India with special reference to MMR and identify its pros and cons.

3. To identify variety of regulations and policies related to e-waste management in India.

4. To collect and analyze information from all related participants like retailers, e-waste handlers, government officers and end-users who can effectively provide a helping hand to tackle this issue.

1.5 Hypotheses

Following are the hypotheses of the study

1. E-waste management could not be controlled even if individuals recycle more electronic products or if they use same products just by enhancing its capacities.

2. Even through proper e-waste managing system, precious metals cannot be recovered and funds from the sale of precious metals are not sufficient to use for re-plantation of trees to compensate the environmental damage.

Two different hypotheses are cited here by knowing two different aspects viz, controlling of e-waste generation and restoring environmental damage by using resources obtained through waste management activities.
1.6 Significance of the Study

1.6.1 National Status:

The amplification of e-waste problem in India as it is prominent leader especially after the boom in Information and Communication Technology. India has witnessed and part of advancement of this transformation from many decades due to which this e-waste problem is one of the biggest problem in our country as we have no appropriate management system available since many years. But now it is the demand of an hour to establish a proper waste disposal and management system which can if not reduce but to control this ever growing problem.

India lacks special, separate and appropriate disposal system and due to this the statistical data is also not properly manage and make available to public or researcher which leads to improper environmental problems and creation of vicious circle out of it.

Normal trend is to replace new product with the older one with some discount factor and it pushes to increase in unnecessary electronic demand. In the Business sectors where the electronic items are either exchange or replace on bulk basis, the same is handed over to second hand sellers. The percentage is almost near to 80.

Other than business sector, sectors like academician or educational or instructive or Non-governmental organizations also rely on such outdated systems. As per projection the approximate quantity of outdated small computers spread out annually through personal and commercial activities will be around 1.30 million.
The data of association of Indian computers and electronic equipments about dismantled electrical and electronic items has been projected to be 1.49 k tones/year.

The outcome of a survey organized in the Mumbai region in India to examine the standard convention & existence period of the individual computers, TV & cellular devices reflected that, it is .40 to 1.80 varies from earnings to earnings for individual computers. For TV sets it is 1.08 to 1.8 & for Cellular devices it is 0.91 to 1.75.

The another outcome about the stumpy income group use computers for 5.98 years, at the same time higher income group continue it for 3.32 years. For TV it is 5.15 years and for cellular devices it is 1.66 years. Even though per personal waste generation in India relatively less, but pure capability of wastes production will be huge. The augmentation speed of the cellular devices is (80%) very tall contrast to that of Individual computers (19%) and TV (17%).

In addition to this many developed nations are dumping their e waste in developing (south Asian) and under-developed countries (African) to get rid of it.

1.6.2 International Status:  
The EPA (Environmental Protection Act) estimates that around 31,000,00 desktops and 13,000,00 portable computers were thrown away in 2007-08. It means approximately 113 k PCs were thrown away per day. The EPA further projected that approximately 32 screens were thrown away in 2007-08. Report published in 2006, EPA also mentioned approximately 399,00,000 elements find a way into scarp system annually.
Environmental Protection Act also projected in next year i.e. in 2008, 317,00,000 tons of electronic waste in the United States of America alone was generated where rate of recovery was approximately 17% only. And the remaining was discarded through the blast furnace way which again produces air pollution and leads to dangerous repercussion. The non-discarded through proper way not only create management problem but the elements present into those parts like leads, mercury, cadmium start reacting with exposed environment and develops serious issues.

Electronic waste considered as exponentially multiplying waste area and its proper management is very important and principal priority around the globe. Approximately additional 51,00,000 tons produced or sidelined annually and leads to dumping places act can be use to just fill lands. Discarded electronic items contain approximately 8.2% of the solid waste in wealthy nations. Around the globe maximum 20% of such waste is gone through or pass through proper channel whereas rest is either sell it to budding or poor countries or deserted to nations like Nigeria, Bangladesh, India and other many south Asian or African nations.

After knowing the national and international scenario it is very imperative to undertake study, especially when Mumbai (local region – Study area) is ahead in all e-waste related problems. There are various different studies had been conducted in different part of globe but none is conducted in India by addressing this problem from stakeholders and related concerns. This study address the local and problems related to e-waste and its management which also reflects in other parts of our country from various viewpoints to understand the current practices and their impact on society in specific and environment in general. This study also helps to future researcher not only in the field of environment and management but also in addressing legal and technical aspects of E-waste.
1.7 Scope of the Study

This study about e-waste management is undertaken in the geographical area of Maharashtra State with an emphasis on territory on Mumbai Metro Region. State of Maharashtra is percentage wise high in e-waste generation and managing it in the country. This is because Mumbai happens to be overly populated, commercial capital and significantly most developed city of the state.

It is detailed study, pertaining to end users behaviors toward E-waste and its management. The study is conducted to examine different perspectives like general practices, legal frameworks, and problems. E-waste management is not only limited to the end users but it actually starts from them, whereas other stakeholders play role as the end-users. The study is based on the survey results collected through 5000 users from all the occupational profiles spread across 12 suburb of MMR.

The period of data collection was 2011 to 2014. The professional users in corporate sectors and IT companies were not the part of this survey. The behavioral aspect of end users towards e-waste management was the basis purpose of the study.

1.8 Limitations of The study

Area covered by research is Mumbai Region, and hence the other major IT hubs like Pune, Bangalore etc. and rest parts of the country, which are equally responsible for this problem are not considered and covered due to geographical constraints.
The research considers approach of mainly public, private and non-government organizations (NGO) where in every individual is equally responsible, but they cannot be consider other than sample size while solving the problem. This is a major limitation in this research.

1.9 Research Methodology

Scientific methodology was used in research work done for studying the E-waste management.

The Research design stipulates the details - the nuts & bolts-of implementation. The research design of this study involved the following components.

1. Designing the descriptive and exploratory part.
2. Specifying the sampling process & sample size.
3. Defining the information needed, Measurement scales & scaling procedures.
5. Data collection and data analysis.

1.9.1 Research Design of this study

This study is aimed at studying the current scenario about e-waste management in countries highly plus densely populated and largest e-waste generated as well as dealing metro city. The respondents herein precisely mean the end users, manufacturers, workers belong to unorganized sector and representatives of pollution control activates. Analytical and Descriptive type of Research study is conducted for the topic “A study of e-waste management with special reference to Mumbai Metro Region”.

Since the study is concerned with establishing the relationship between variables like salary bracket, common purchasing so discarding and loose government policies and poor implementations is also guided by initial hypothesis hence descriptive research method is used for the study.
The study has clearly defined that what is to be measured and adequate method for measuring along with a clear definition of population to be studied. Since the aim is to obtain complete and accurate information, the procedure is carefully planned. Single cross-sectional design was used for this research study.

a) Research Context
The research context of this study focuses on the e-waste producers, handlers, sellers, social workers and dealers in Mumbai Metro Region (MMR).

Also the few representatives of pollution control board also answered. The sampling approach was done by way of constructing strata of the end users so as to minimize the potentially error of exclusion i.e. ignoring the real producers from all categories. However more importantly this approach also helped in tracking the industry who are actively involved in e-waste management activities as industry perspective was equally important to understand the problem thoroughly.

b) Research Approach
A research of this nature required inculcating quantitative as well as qualitative methods. Since the magnitude of research on waste management always has several dimensions to be explored, there was a possibility that those entire dimensions may not be able to incorporate only through questionnaire method and hence to substantiate this exploration the researcher also used the other qualitative tools like Focus Group Discussion and Depth interviews. Those qualitative tools were broadly used with the actual waste dealers and associated segments. The study was designed and conducted with four objectives in mind.
1. To explore the various measures taken towards dealing such ever rapidly increasing waste type

It studied the various activities which were undertaken by the authorized and unauthorized groups for managing e-waste.

2. To study the motivating factors for authorized and unauthorized sectors to became a part of e-waste management system

It explored the key reasons as to why authorized and unauthorized sectors of the industry want to initiate and carry out any such study.

3. To identify the benefits including natural and economical by reduction and eradication of this problem derived by the change in lifestyle and technology up gradation.

It evaluated the benefits derived by the parties from e-waste management process; this also includes the environmental restoration perspective and support to future technology.

4. To investigate the barriers and various challenges faced to proper and effective e-waste management activities.

This was to find that whether any of the party came across any obstacles/problems while dealing and working in this field, and how did they overcome

1.9.2 Information needed for the study

The information needed for this study is obtained by focusing on each component of the objective and analytical framework, research questions, and hypotheses.
1.9.3 Questionnaire development & Pretesting of Questionnaire

A questionnaire in this study used to ask number of questions to respondent one to one basis to convert their responses after codification in a statistical form of information related to e-waste management. The questionnaires used here is technically sound and presented in a lucid manner. The language used is simple English so the respondent understands the crux of the questions so to reduce the normal errors occurs during any surveys. It has proved to be effectual way of congregation information more accurately ultimate for huge samples and that too from a large geographic area.

Questionnaire tool proved to be helpful for several reasons:

i) Questionnaires were cost effective. This was principally accepted as when such huge population is under study researcher has to focus on its monetary constrains so not to increase its research budget.

ii) In order to convert hardcopy date i.e. survey data in the form of questionnaire to soft copy format to go for further statistical analysis it is very necessary to keep questions free from any bias and as simple as it can be.

iii) The survey trough questionnaire method is people’s friendly and maximum population is aware of this particular technique, which make respondent very comfortable and not worried or anxious.

iv) In this method of primary data collection researcher is less involved so bias related to the topic gets automatically reduced. This helps in reduction in errors during analysis step.
1.9.4 Questionnaire Development

For finding out management of e-waste

Questionnaire Development took place in two stages:

i) A review of the relevant e-waste management practices around the world, its literature and information from state pollution control board.

ii) A final pretest for measuring purification to reach final questionnaire, the first task was to identify the areas in which the end users respond and through the review of literature and subsequently a pilot study, and areas of workers understanding.

The second task was to find out, how those activities practice at the unorganized and organized sectors and if so at what precision and at what level.

The study incorporated the time frame of near to four years, so each activity was evaluated in terms of its presence and its frequency of occurrence in the last four years from the calendar year 2010-20011 to 2013-2014. A small survey was conducted with 200 end users whereas around 185 were received which constitute around 92.5 %. Based on the results from the small-scale survey, the final questionnaire for the main survey was developed.

The final questionnaire (refer appendix for Questionnaires) contained the questions concerning end users practices undertaken and also to evaluate the frequency of those activities in the previous four years. The final questionnaire contained two main parts; Part A consist of demographic based questions whereas part B includes questions on actual problem under study.

For finding out the reasons for undertaking e-waste management activities at the organization and individual levels have numerous reasons viz. to get connected
with such organizations and hence carry activities in partnering with the waste management activities. It was important to understand those reasons or the motivating factors behind carrying out such a different level of job, which is dangerous and hazardous to human health and nature.

1.9.6 Sampling Design
Designing of Sampling for a research is a very important step especially for a survey method of data collection. In this different steps are arranged such that a flow is created to collect relevant information which helps in understanding the views of the population under study.

Steps are mentioned beneath:

- Identify Universe
- Create Sampling outline
- Proper technique for Sampling
- Establish the size of samples.

There is a need to study the current waste status and management practices from across all the various types of regions and populations to get a complete perspective. For the sampling purpose there are various methods are used for drawing samples from the universe. After in depth study and keeping focus on purpose and nature of study stratified sampling was selected.
In Stratified random sampling the research universe is separated into lesser, homogenous groups, generally known as strata. The area under study is bigger than the Mumbai city itself, so different areas (total 12 regions, strata) were selected for sampling purpose as these reasons are high representative of e-waste generation and related problems. Each region is comprised of universe in itself. Human population wise these regions are not less than any other city in India. Furthermore on the basis of house-hold income bracket, there was a need to separate the respondent as the purchasing power is very important variable to affect the accumulation of e-product and e-waste further. Then the sample has been drawn on the ground of purposive sampling technique, as the geographic limit of these 12 regions is very high. The non-probabilistic technique like convenient sampling is carefully chosen as every house has more or less potential e-waste and to provide proper representation to a large chunk like Mumbai region and that is one of the reason why Mumbai and Maharashtra leads the e-waste generation problem list from many years.
Fig: Sample selection from Universe to final respondent

a) Target population for this study is defined as follows: The MMR is bigger than the Mumbai city itself; it contains many big municipal corporations and small municipal corporations too. The area is highly and densely populated.

b) Sampling Outline (Frame): A sampling outline is the demonstration of the essentials of universe under study. The sampling frame for such a study would involve proper representation of each element to collect proper data n reduce sampling errors

c) Sampling Size: This means the total quantity respondent considered for the survey. It is decided on various judgments like household income, number of family members, occupations and locations.
d) Respondents: The research opinion poll was planned with the study purpose in mind. Based on the information needs, different questionnaires were designed to obtain information from each class of respondent’s i.e. from end users, employees from authorized industry and labors from unorganized sector and people from slum, representatives of pollution control organization and from few non-governmental organizations.

The categorization of the universe under study into different strata & the sample representation is shown in below table.

Table: Population Source: 2011 census

<table>
<thead>
<tr>
<th>Sr. No</th>
<th>Locations</th>
<th>Populations</th>
<th>Samples</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>Andheri</td>
<td>1,500,000</td>
<td>350</td>
</tr>
<tr>
<td>02</td>
<td>Borivalli</td>
<td>1,300,000</td>
<td>500</td>
</tr>
<tr>
<td>03</td>
<td>Byculla</td>
<td>7,500,00</td>
<td>500</td>
</tr>
<tr>
<td>04</td>
<td>Chembur</td>
<td>6,500,000</td>
<td>500</td>
</tr>
<tr>
<td>05</td>
<td>Dadar</td>
<td>1,600,000</td>
<td>300</td>
</tr>
<tr>
<td>06</td>
<td>Ghatkopar</td>
<td>1,550,00</td>
<td>400</td>
</tr>
<tr>
<td>07</td>
<td>Kurla</td>
<td>1,600,000</td>
<td>350</td>
</tr>
<tr>
<td>08</td>
<td>Mulund</td>
<td>1,000,000</td>
<td>500</td>
</tr>
<tr>
<td>09</td>
<td>Sakinaka</td>
<td>4,500,00</td>
<td>500</td>
</tr>
<tr>
<td>10</td>
<td>Thane</td>
<td>1,800,000</td>
<td>500</td>
</tr>
<tr>
<td>11</td>
<td>Panvel</td>
<td>1,600,000</td>
<td>300</td>
</tr>
<tr>
<td>12</td>
<td>Vasai</td>
<td>4,50,000</td>
<td>300</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>16,900,000</strong></td>
<td></td>
<td><strong>5000</strong></td>
</tr>
</tbody>
</table>

Source: Census 2011
From the end users for the sampling purpose 5000 samples from 12 different locations (suburbs) were carefully chosen. These sites are high e-waste assembling and affected areas on the basis of population and unorganized and laborious working conditions.

Opinions and responses from environmental NGOs like Toxic links, epwai and from NASSCOM were also collected. The responses from officers and staff of government departments were collected in the form of questionnaires. Semi-government agencies like universities, municipal corporations, college students etc. were also collected in sampling.

e) Sample Selection error: The survey was self-administered at the time of data collection and the problem of item non-response error was alleviated to some extent by the intervener instructions, which explained the need for every item to be answered, and by the assurance of confidentiality.

1.9.7 Nature and Source of Data Collection

Broadly the study incorporates the primary as well as the secondary sources for the data collection as under

a) Primary source:
The research is based on the primary data and research has conducted survey method to collected fresh data. Almost every part of society is one or other way involved in this issue so different questions were prepared to understand their views.
b) Secondary source:

- Reports of various Organizations, NGO’s, research groups and social activity groups from same field.
- Records and Information maintained by various governments and other related agencies regarding e-waste and hazardous waste can be analyzed and use as per the requirements.
- The forms, technique and mechanism adopted for dealing with e-waste management problems can be considered while moving ahead.
- Reviews and reports regarding e waste management.
- Books and other publications, Research papers and review reports published in journals, Unnoted and other non-classified information.

1.9.8 Data Collection tools and Analysis Plan

The primary data collected is collected from the respondents through Questionnaire method, the data is additionally authenticated through Focus Group Discussion and Depth Interviews for different objectives of the study.

a) Questionnaire Method

A questionnaire consisted of a number of questions framed based on the research construct which further were based upon the hypothesis of the research. A experimental research was undertaken through interface with several end users as well as waste management workers to decide on to the research construct which has further gone in proving the hypothesis. The surveys in nearly cases were e-mailed to respondents and received reply is entered in the proper place given to help in statistical testing.
b) Focus Group Discussions (FGD):
FGD was piloted in acceptable e-waste management organization to know more about current scenario and practices.

c) Depth Interviews:
Direct Personal Interviews (DPI) was conducted to strengthen the understanding and collect rich experiential knowledge. It has offered vast scope and a detailed discussion due to its one–on-one nature. At the same time, it gave greater flexibility to change the course of discussion, depending upon the responses generated during the interview.

This research has included interviews with different experts in industry in their respective specializations. A detailed plan was prepared for the depth interview proceeding to behavior. The organized planning helped conduct the interviews in a successful way. The questions for the interview were exclusively prepared with lots of benchmarking for each expert in this related field. Interviews were conducted by the audio recording mode wherever necessary. Hence, the documentation and retrieval of data was quite effective for analysis. In some cases telephone interviews were conducted for lack of appointment and far distance location precisely with the industry.

1.9.9) Data Analysis and Interpretation:
The data collected by primary sources are check manually and efforts are made to remove any errors, incomplete or illogical responses and then data is coded and converted into tabular and graphical format with the help of spreadsheet application. The data was segregated on the basis of their demographic profiles, buying patterns and habits of discarding after end of their useful life or on other reasons of discarding.
Further the data was interpreted and analyzed with the appropriate analysis tools like Pearson’s Coefficient to establish correlation between variables. To understand the relationship between dependent and independent variables regression and correlation both techniques were used. The ANOVA is used to check the dependency of independent variable (right individual practices) and dependent variable (minimization of e-waste). ANOVA is preferred to inspect the dependency of samples on demography or not. If the results were in favor of demographics, then it indicates the different factors in demographics leads to different outcome as their practices differ with respect to e-waste and its management. The research was followed by findings, suggestion in terms of a waste management practices and had also identified the further scope for the research in this area.

1.9.9 Conclusion

The research approach applicable in this research was based on various primary data collection techniques to collect as much relevant data as possible from various sources. A research of this nature would require inculcating quantitative as well as qualitative methods.

Since the magnitude of this research on e-waste has several dimensions to be explored, there is a possibility that those entire dimensions may not be able to incorporate only through questionnaire method and hence to substantiate this exploration the researcher would also use the other qualitative tools like Focus Group Discussion and Depth Interviews. With stated that background, the researcher has followed the Descriptive research method since the study is concerned with establishing the relationship between two variables and is also guided by initial hypothesis.
Within the descriptive method the study is of cross-sectional design since the researcher would cover the data at one point of time. Through the statistics composed from this investigation, information is obtained that offers directions for scheming e-waste management strategies to stop further environmental degradation and restoring its previous conditions.

1. **Summary**

Economic growth should not be directed at the cost of compromising the environment otherwise the entire globe will have to face its dreadful repercussions. Due to lack of an advanced & efficient electronic waste management system in the country, some protocols for workers involved in disposal of e-waste have to be there. It is tough to effectively deal with e-waste management globally until a universally accepted definition of e-waste is framed.

In India there are legal, technological as well as organizational challenges associated with e-waste managing. Poor and loose environmental procedures and low economic development allows and promotes easy flow of hazardous wastes into the environment. Socioeconomic factors, infrastructure deficiencies and inadequate legal provisions hinder proper e-waste management in the country. Increased attention is required towards bringing e-waste into reuse, recycling and recovery.

Consumers also need to be educated and made aware of the issues as their attitude and behavior will play a significant role in this problem. For creating mass consciousness among youth, such issues can be taught or discussed at school and college levels as well.
For a sustainable e-waste management system, public-private partnership can play an effective role. It is extremely essential to involve informal sector for developing an effective and efficient e-waste management system but their role needs to be restricted to collection and dismantling. It is very vital to educate them about the electronic waste threats so as to reduce the occupational health hazards as well.

E-waste is an environmental threat but at the same time is also a huge source of valuable constituents and resources. Since it is growing at an alarming rate all over the world, a universal approach must be taken to meet the challenge successfully. There is a need to change our attitude and behavior towards electronic goods (e-goods) and e-waste. Efforts must be put in for keeping a control on the irresponsible use of electronic products. Owing to faster changes in technology and availability of e-goods at cheaper rates, the rate of discard of old equipment’s is increasing at alarming rate.

Therefore, measures must be taken for manufacturing e-goods so that their work life can be extended, upgraded and recycled. This would promote sustainability and lead to a healthy and safe life while preserving the environment.

1.11 Conclusion
This chapter gives overall idea about the problem of the study in brief the methodology used to understand it from all perspectives. This chapter discussed the background of E-waste management in India and Mumbai. In addition to that this chapter also presented objectives, Hypotheses, Scope, Significance and Limitations of the study followed by research methodology.
1.12 References


3. CHATTERGY SANDEEP, “National Scenario of Electronic Waste in India, Department of Information Technology”. New Delhi. India.


14. The National Association of Software and Service Companies (NASSCOM)
