



CONSUMER ATTITUDE TOWARDS REPAIR OF ELECTRONIC PRODUCTS

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Abstract: In this modern era, every industries focus to achieve a new development and innovation which indirectly affects the nature. Repeated carbon pollution will affect all the resources in future. In order to bring out the carbon emission reduction among the industries all over the world, one of the practices named carbon credit accounting policies initiated in Kyoto protocol as carbon is tradable good which motivating companies to do more eco-friendly activities. This paper enlightens 1.The key initiative practices on carbon credit accounting followed by BHEL for sustainable development. 2. To evaluate the performance of carbon credit accounting in BHEL. 3. To enumerate the tax subsidies on carbon emission reduction. The research is based on case study approach and quantitative. The data has been retrieved from secondary sources such as sustainability report of BHEL.

Key Words: Carbon credit accounting, carbon emission reduction, Kyoto protocol.

1. INTRODUCTION:

An e-waste roadmap 2023 for India an initiative under India E waste Program highlights “Informal and Formal Partnerships in the Indian E-waste Sector” evidently specified the major challenges towards the E waste roadmap is to establish repair and refurbishment. The same study insists about “Repair takes on a major role in extending lifetime of products”. The sector is affected with great obsolescence rates because of express technological revolutions which is routing to shorter product life span. This situation should be spotted, and appropriate steps should be taken to increase the life span of electronic products. Major developed countries have designed such changes that allows in diminishing the obsolescence rate of electronic and automobile products by, instrumenting policy like ‘Right to Repair’. The Right to Repair movement should also be initiated in India to bring out environmental utilization. Indian society has usually been fixed with the code of circular economy. A thriving culture of reuse and repair has led to creation of jobs and ensured elongation of life of materials and resources. Demand for such services has ensured sustainability of these jobs. However, changing consumer preference coupled with planned obsolescence of EEE has dented the practices that supported the principles of circular economy and resource efficiency. Right to Repair approach will lead to consumption of eco-designed products, awareness, and capacity building towards e-waste management. Finally, right to repair initiative, will direct consumers to be responsible towards product usage and disposal. The standpoint aims to increasing interest towards right to repair, due to partly to consumer interests and environmental concerns. The mainstream of this study, is to understand the consumer opinion towards repairing existing product instead of buying new electronic products. Choosing repair instead of replace is not an easy task, the rapid introduction of new products and upgradation controls the idea of repair. This article sheds light on the opinion of consumer towards repair of electronic products. Generally consumers viewpoint focuses on consumer perception and experience towards repair of their electronic products.

2. A REVIEW ON “REPAIR”:

Two decades ago, the Indian consumer sector had a repair economy that functioned synergistically with the new products market that helped in increasing the life of used goods and diverting them from the waste stream. Somehow the repair economy has fallen apart, with products being designed to be disposed of and not designed for easy repair. ‘Right to repair’ is a concept which needs to be reintroduced into the Indian market.

The fields of Participatory Design and Service Design to develop an inquiry into future repair practices (Adrien Laville:2022), presents the concept of a municipal scheme promoting a better use of electronic products through the developing a dedicated spaces where items can be repaired, recycled or sold. The main idea of the concept is to bring



together the repair and recycling journeys, this contributes to the research on Interaction Design and sustainability by arguing that the field can embrace a transdisciplinary perspective to design both infrastructure changes and their technological mediations.

From the 'Building the Link: Leveraging Formal-Informal Partnerships in the Indian E-Waste Sector.' **GIZ, 2017**, states that repair takes on a major role in extending lifetime of products in the circular economy. Repair of products and refurbishment grids are reinforced with a better reusable parts and components connected to e-waste management, as well as by offering ground level professional services on repaired goods. The movement or policy for Right to Repair and Refurbishment are brought into formal material flows. Another article (**Bernd Kopacek** E-waste Sector Specialist, and Advisor, IFC's India E-waste Program, **2017**) in India, electronic products are used for much longer. When something is wrong, Indian consumer are first prefer repair, for several times before spare parts are harvested and finally it becomes obsolete. An important spotted practice among Indian citizens attach a "value" to their products to its end-of-life.

(**ASSOCHAM**) Associated Chambers of Commerce and Industry of India, Indian Trade Association furnished, Rs 115,000 crores as market value for used goods in the year **2015**. As a matter of fact, the pre-owned goods economy runs parallel to the new goods economy. In the last couple of years, major e-retailers like Amazon and Flipkart have also jumped into the business of selling 'refurbished' electronics. This is a positive sign from the resource utilization perspective as it increases the life span of the product, ensures repair, reuse, and displays conscious consumerism. In recent years consumers developed a models as new products enters into the market, consumer find that it is much comfortable and easy-go to buy new electronic product than repair an old product. Precisely there is an extreme rate of obsolescence, this results as electronic manufactures are producing much higher volumes of waste. Additionally, the accessibility & availability of variety of new products, changing life style, rapid urbanization, and improved purchasing capacity of the of consumers have also impacted repair attitude of the electronic products among consumer.

3. OBJECTIVE OF THE STUDY:

The focus of the study, know the opinion towards repair practices among consumer. The main objective of the study was therefore to get to know the perception of consumers and the identify the highly influencing parameter towards repair practices.

The two major research objectives implies:

- To identify the factors that encourages consumers to repair electronic products instead of replacing it.
- To study the demographic group that is highly involved in supporting or developing this change.

4. RESEARCH METHODOLOGY:

The method used in this research was qualitative research, which was done through an in-depth interview among 200 respondents (electronic product consumers) from Chennai. The main focus is to obtain descriptive data through structured questionnaire. In this study there are three major dimension, that contributes towards the perception of consumers on repairing electronic products. Mainly economic factors, psychological factors and market factors. Each parameters are divided into three variables, namely economic factors: 1. Cost of spare parts, 2. Cost of services 3. Deprecation value, psychological factors: 1. Attachment towards the electronic products 2. Trust towards repairability 3. time and convenience of repair and Market factors: 1. Attracted towards new updates 2. Lack of parts information 3. Shift in price trend.

5. RESULT ANALYSIS AND DISCUSSION

This segment represents the collection of data and results acquired from the study. Analysis include, demographic parameters (age) as the major focus and opinion parameter of respondents. ANOVA for significant difference among Age Group with respect to Preference towards repair

Factors	Age Group in years			F value	P Value
	20-40 years	41-60 years	Above 61 years		
Economic Factor	37.34 (3.276)	40.89 (6.201)	40.67 (4.131)	6.990	0.001**
Psychological Factor	15.45 (2.294)	16.22 (2.463)	15.67 (2.582)	0.800	0.452
Market Factor	35.73 (5.276)	39.04 (6.201)	23.67 (4.032)	5.050	0.011**



From the ANOVA it is stated, since P value is less than 0.01, null hypothesis is rejected at 1% level with regard to factors of Economic and Market factor. Hence there is significance difference among the Age group in year with respect to preference towards repair. The analysis investigates whether age of the respondent from the different groups contribute significantly to repair preference. To provoke more deeply the consumer age group was classified in three segments from 20 years to 40 year are adults, from 41 years to 60 years are middle aged adults and respondents above 61 years are old adults. The test reveals that Age of consumers influences towards repair of electronic products. Moreover the Mean value is significantly differ with age group 41-60 with respect Economic factor and Market factor. This is due to consumers are more likely to switching the products i.e. 62% of respondents likely to upgrade their product rather than running behind repair and they feel it is time consuming.

Friedman test for mean ranks of Preference towards repair

Parameters	Mean Rank	Rank	Chi-Square value	P value
Economic Factor	2.85	1	15.069	0.001* *
Psychological Factor	2.04	3		
Market Factor	2.45	2		

From the Friedman test it is found that respondent involvement towards repair is highly influenced by Economic factor. Majority of respondents feel that Price of spare parts or components are not at reasonable price. The money which is spend for the repairability can be invested in new product was another highlighted factor by the respondents. The parameter market factor indicates flowing mean factors are high: availability of cheap new products, availability of upgraded products and risk of old products contributes high towards the perception.

6. LIMITATION OF THE STUDY:

The idea behind this study is to understand the consumer opinion about repair which is the starting point for further research. Only three parameters were taken into consideration, focusing majorly two demographic factors namely, age and gender among the respondents in Chennai. Several dimension and variables should be explored with huge population.

7. SCOPE OF THE FURTHER RESEARCH:

This study gives an understanding of the occurrence of repair, that happens based on two definite things. First, the consumer should practice repairing electronic items rather than switching to new products, and the second point manufacturers must make repairable product parts and components available in the market. Repairability is a multidimensional concept that can be examined in future study, the law and movements which supports the repairability i.e. right to repair should be advocated among consumer in future study.

8. CONCLUSION:

The results suggest that consumers are generally supportive and willing towards repair practices for their electronic products and expecting that laws should be enforced to protect Right to Repair. Consumer have vital role in responding to the market trends, but, they should also be aware of the increased electronic disposal in recent years. They can demand or practice for long lasting electronic products. The researcher believes, the results of this study can inform others or be used by consumer activist groups to examine the repair aspect of the electronic products and highlight the importance of extending the life of electronic products that could reduce emission of e-waste. Consumer behaviour and attitude towards product use and disposal should be in better successive phase, rather than exploitation of consumer and environment.

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