

E-WASTE MANAGEMENT IN INDIA: AN INITIATIVE TO MAKE INDIA DIGITALLY CLEAN

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ABSTRACT

Waste operation is a serious concern wherever there's human actuality. E-waste is one of the most complex and heavily accumulated forms of waste we're living with. Every day, newer and technologically bettered electrical and electronic bias is introduced in the market. In the ultramodern cultures, bias like mobile phones, computers, TV sets, air conditioners, refrigerators, mixer-grinders, etc. are essential. Moment, the consumer is fashion or style-conscious and adopts the rearmost immolation in the market indeed when the being products may be functional. In India, operation of E-waste has been prioritized since the announcement of the E-waste (Management & Handling) Rules, 2011. The legislation commanded the conception of Extended Patron Responsibility (EPR), according to which the manufacturers of electronic goods are responsible to manage end-of-life bias. Further to this, the E-waste (operation) Rules, 2016 commanded Patron Responsibility Organization (PRO) to take over collection and operation of E-waste on behalf of manufacturers, dealers and refurbishers. Presently, India is the only southern state in the country without an established E-waste recycling unit. Right from the purchase of an electronic device, its operation, fustiness and final disposal, the consumer is arguably an important stakeholder in E-waste operation. Hence, the study aims to understand the perspective of the ménage consumers in E-waste operation. In terms of academic significance, this study proposes to fill the knowledge gap of ménage consumers' intentions in India regarding E-waste disposal and the walls encountered in informal methods of E-waste disposal. From the practical consideration, this study expects to emphasize the ménage consumers' part in E-waste operation, and the necessity for the other stakeholders to deliver applicable installations for them, to share in effective E-waste operation. The study proposes a sustainable development model for E-waste operation in India that can transfigure the being E-waste script in the state and the country.

Keywords: *E-waste, Responsibility, Management, Obsolescence, Manufacturer's, Legislation.*

Introduction

The United Nations General Assembly in September 2015 envisaged 17 global pretensions known as Sustainable Development Goals (SDG) to transfigure the world in an attempt to attain sustainable development by the time 2030. One of these pretensions is attaining responsible consumption and product, which is extremely grueling for husbandry across the world. Clinging to sustainable practices with respects to the product of goods is a huge responsibility for directors or manufacturers. The rapid-fire growth of technology, it's briskly acceptance by the millions and the appetite to find newer product variants, is creating a global waste in the form of obsolete electronics. The dependence on the terrain for procurement of raw accoutrements that are used in the product of electronic equipment, and the attendant destruction during end-of-life of electronics is thus creating a

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massive burden on Mother Earth and causing imbalances in the environmental sustainability. Authorities are concerned about the mounting E-waste and the difficulties in disposal, as it harms the people and the terrain. Although various regulations and controls have been introduced to reduce the hazards related to E-waste across countries, several problems remain unsolved. The lack of awareness among the public regarding E-waste hazards and the lack of access to recovering installations, added to the growing dependence on technology are creating massive E-waste disposal challenges in the state. The question therefore arises, what should we do about it? Therefore, the study attempts to understand the consumer challenges and intentions in E-waste disposal in the background of behavioural propositions, and to uncover the walls in formal E-waste disposal in the state. It's anticipated that the consumer intention will serve as a provocation to the authorities to bring in focused efforts to attack and overcome the hazards of E-waste in the State.

What is E-Waste

Every single day, tons of obsolete electronics are discarded across the world. Executive authorities in various countries, both developed and developing are facing enormous constraints in dealing with E-waste. Still, there has not yet been a widely espoused description for E-waste. Numerous performances of E-waste delineations have been given by various governments, agencies and associations worldwide. A generally quoted description of E-waste is, "WEEE means electrical and electronic equipment which is waste, including all factors, subassemblies and consumables which are part of the product at the time of discarding," by European Commission Directive 2002/ 96/ EC. The Organization for Economic Co-operation and Development (OECD) defines E-waste as "any appliance using an electric power force that has reached its end- of- life". Basel Action Network defines E-waste as "a broad and growing range of electronic bias ranging from large ménage bias similar as refrigerators, air conditioners, cell phone, particular stereos, and consumer electronics to computers which have been discarded by their druggies". According to working the E-waste Problem (Step Initiative), "E-waste covers particulars of all types of electrical and electronic equipment (EEE) and its corridor that have been discarded by the proprietor as waste without the intention of play." E-waste is defined by the Central Pollution Control Board, Government of India as "wastes generated from used electronic bias and ménage appliances which aren't fit for their original intended use and are fated for recovery, recycling or disposal". The accumulation of E-waste within homes was common in India. Different kinds of obsolete electronic equipment, including large equipment, cooling equipment, small equipment, lighting equipment, defenses and observers, and small IT and telecommunication equipment were stored in homes for long durations. The ménage consumer being ignorant of the applicable methods of dealing with E-waste resorts to storehouse. The fear of particular data security leakage frequently prevents the stoner from disposing of particular electronic equipment. This adds to extended and informal disposal practices. This also explains the need for faster disposal of E-waste through provision of better installations.

E-Waste Management

A study report by the United Nations University stated that roughly 50 million metric tonnes of discarded waste electrical and electronic equipment (WEEE) are generated across the world annually. Xianlai Zeng, an associate professor of solid waste operation at Tsinghai University, China observed that 20 percent of E-waste goes to formal recycling processes; 40 percent reaches E-waste dumps and informal sectors in different corridor of the world; and the remaining 40 percent isn't reckoned for and remains stored or disposed in tips (Pearce, 2018). In moment's digital period, allowing from an entrepreneurial perspective, E-waste operation, specifically recycling of obsolete electronic bias is a contemporary business occasion; also with the discovery that civic mining is cost-effective compared to virgin mining. Civic mining is the recovery of essence like bobby, gold, etc. from discarded electronics whereas virgin mining is the birth of accoutrements directly from the ores. Obsolete discarded electronic bias are boots trappers of rare and precious earth essence, for illustration, the volume of gold present in a ton of smart- phone is hundred times the volume present in gold ore having the same weight. Roughly \$62.5 billion worth coffer is contained in E-waste per annum. "Effects with entrapments" or electronic waste is a marquee term for trash electronic bias which encompasses various processes in operation. factors used in manufacturing and assembling electronic bias and products are made from essence, plastics and other petroleum- grounded accoutrements, minerals and non-metallic substances, and other raw accoutrements with characteristics of superconductivity and sequestration. Design for Environment (DFE) and Eco Design generalities emphasize the design stage of product development for electronic bias that insure ease in end- of- life recycling, remanufacturing as well as exercise of equipment and factors comprised in them (Grave and Olsen, 2006) in order to reduce the environmental impacts. Once

Electrical and Electronic Equipment (EEE) reaches its useful end, it's essential that these are collected meetly and treated to insure an indirect frugality. To insure that consumers of EEE, both homes and marketable (bulk) druggies (CPCB, 2016) return used end- of- life electronic equipment to authorized agents, several collection schemes and juggernauts have been enforced. European Union (EU) legislation restricts operation of dangerous substances in EEE (Directive 2002/ 95/ EC), and promotes collection and recycling of dangerous substances in WEEE (Directive 2002/ 96/ EC); still, this has not led to a fool- evidence collection or recycling of E-waste.

Challenges with E-Waste

Operation Across the world, there are multitudinous challenges associated with electronic waste operation. In developing countries numerous arising diligence warrant structure and profitable capacities due to which they fail to misbehave with the set regulations. A major share of electronic wastes end up in informal sectors or leave yards in Ghana and Nigeria in the African mainland, China, India, Pakistan, etc. The informal sector in different countries around the world is a tone governed network that doesn't come under the rules and regulations of the concerned governments and have their own system of operations. Crude methods of dismembering and rooting accoutrements from scrap electronics in unsafe surroundings lead to health problems to workers in the units, and poisonous pollution impacts on air, water, and soil coffers. Studies have set up serious health impacts in children, new- born and parents due to exposure from E-waste poisons. Studies have also reported cases of global warming by poisons present in E-waste and other conditioning in the informal sector. The onus is now on all the stakeholders to make sure a proper system is developed to manage the E-waste imminence. Consumers being the stoner of EEE as well as the post-usage holder of WEEE have a significant part to perform in managing scrap electronics. The enterprise from an informed consumer can go a long way in perfecting E-waste operation encyclopedically.

Awareness of E-Waste Management

13th October 2018 was observed as the veritably first transnational E-waste Day. The ideal of this day was to increase awareness about WEEE hazards and the different methods of proper disposal for E-waste. The day marked awareness and knowledge juggernauts, conferences, and other events across the globe to promote knowledge about electronic waste and disposal methods. The Sustainable Development Goals by the United Nations set forth 17 sustainability pretensions in the time 2015 for a period of 15 times according to which the member countries would make efforts towards attaining these pretensions. There are a many pretensions in the given list that have significance in terms of E-waste operation. These are; thing 3 – good health and sanitation, thing 6 – clean water and sanitation, thing 8 – decent work and profitable growth, thing 11 – sustainable metropolises and communities, thing 12 – responsible consumption and product, and thing 14- life below water (The Global E-waste Examiner, 2017). Across the world, with growing consumerism in electric and electronic product kinds, the attendant emergence of discarded bias is causing health and environmental hazards. Bhat and Patil (2014) stated, "Consumer awareness plays a major part to route E-waste to the authorized collection centres and authorized recyclers for safe disposal". It's thus a necessity for the living community to be well- informed about the challenges in discarded electronics and the need for safer practices in its operation. Through awareness and knowledge of E-waste, effective collection and recycling can be possible also successful E-waste operation system can be established. Lack of awareness among stakeholders about the hazards of indecorous E-waste disposal is a global challenge. Thus, applicable E-waste disposal is achieved with the awareness and stations of stakeholders. The effectiveness of E-waste operation is associated with individual stations and geste, as well as disposal habits. There are fairly smaller exploration studies in the area of E-waste awareness and disposal when compared to other areas fastening on import- import of E-waste, recycling, health impact, life- cycle analysis, chemical and birth related studies, etc. A major criterion that motivated consumers in the state to share in E-waste disposal was financial or fiscal returns. The public has been oriented to entering freights for the trade of obsolete electronics. A system for E-waste operation that ensures return for obsolete electronics can be successfully enforced. During the airman study, repliers denied amenability to pay for recovering installations. Hence, it wasn't practical to anticipate payments from the consumer for the disposal of electronic waste.

E-Waste Disposal Methods

In developed countries, with the provision of advanced mechanisms for collection, treatment and recycling of E-waste, better systems for E-waste operation were set up. Disposal of E-waste by icing the safety of human health and the terrain is a formal approach. Collection of E-waste by manufacturers

or directors, authorized collection centers and retail stores affect in formal way towards operation of WEEE. Still, disposing of E-waste in developing countries is strikingly different. Rapid consumption and relief of EEE leads to huge volumes of ditched E-waste across the world. The ICT and telecommunications sector has brought remarkable changes in the development of India as an arising employment centre. This has also upraised the cultures of residents with better living conditions. At the ménage position, the consumption of advanced electrical and electronic equipment has increased. From ménage appliances to kitchen equipment, entertainment bias, particular care equipment, IT and telecommunication equipment, etc. are constantly upgraded by consumers. This also leads to the accumulation of replaced WEEE in the homes. Numerous times, consumers prefer to store bias until they could be profitably changed during seasonal offers, or vend in alternate- hand markets or scrap-market for the stylish value. Volume accumulation as a variable wasn't set up to be studied before on account of E-waste and hence couldn't be cited. In the absence of proper installations or collection systems for E-waste and more importantly, lack of structure for scientific treatment, E-waste operation in developing countries has come extremely grueling to society and the terrain. Selling of E-waste in the informal sector through scrap collecting units, or throwing away in scrap dumps, etc. are generally rehearsed methods in developing countries where lack of awareness and presence of various walls affect the E-waste operation system. Piecemeal from these methods, storehouse and practices of giving obsolete equipment or giving to musketeers and families were also common. Considering the nature of these methods, a third form of disposal videlicet extended disposal emerges. Extended disposal refers to scripts when obsolete electronic bias meant to be reclaimed and reused get delayed in reaching the force chains due to practices of storehouse and donation. Occasionally indeed alternate- hand shops add to extended disposal as ménage returns remain as dead stocks. Studies fastening on these different forms of E-waste disposal grouped as formal, informal and extended disposal weren't set up in the literature. Disposal practices could be grouped to dissect consumer practices in E-waste disposal from a holistic perspective. Hence, e waste disposal is measured from three aspects (dependent variable-formal, extended and informal disposal) in the study performing in three different sets of suppositions with the same independent variables.

Conclusion

The exploration concentrated on E-waste operation practices followed by homes in India. Different practices for E-waste disposal similar as formal disposal, extended disposal or storehouse, and largely informal disposal were set up among homes. Although intentions to dispose and reclaim obsolete electronic wastes were set up in the study, these intentions hardly materialized to formal disposal due to the presence of several walls. These included lack of a proper system for E-waste operation, lack of acceptable regulations and laws, and lack of public awareness. Through an expansive literature review, it was set up those numerous advanced countries rehearsed effective E-waste operation practices with combined efforts from all stakeholders. The need for a well-organized E-waste operation model was thus linked in our country and in India. The study suggested a sustainable development model for E-waste operation that would combine both formal and informal sectors in E-waste operation for a systematized collection and disposal of ménage E-waste. Furnishing financial incitement schemes was suggested that would discourage homes from indecorous disposal and storehouse of obsolete electrical and electronic equipment. The study was an attempt to punctuate the need for a proper system that would insure effective E-waste operation in India. The proposed model in the exploration could be applicable to countries or regions with analogous characteristics in establishing a sustainable and environmentally safe E-waste operation system.

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