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ICT & E-Waste

Kanika Chourasia

Abstract: ***This paper illustrates the uses of information and communication technology (ICT) and its uses around the globe. This paper shows how Green ICT is helping an organization to prove its green credentials. What is E-waste and what are the hazardous effects of E-waste on environment. This paper also discusses the analysis which has been done on the amount of E-Waste generation in developing countries in past few years.***

Keywords: ICT, E-Waste, Green ICT

1. Introduction

The swift emergence of the information and communication technology (ICT) sector has placed India on the global stage during the last one and a half decades. An explosion in the free flow of information and ideas has brought knowledge and its unlimited applications to the global information society. Which lead to create new choices and opportunities in the development process. It acted as a motivation for growth across the Indian economy, including in areas such as automobiles, real estate, travel and tourism, railway, banking industries and mortgage. ICT is helping India to change its image across the globe. ICT is contributing to better governance.

What is ICT?

Information and communications technology (ICT) refers to all the technology used to handle telecommunications, media, intelligent building management systems, transmission system, network-based control, audio-visual processing and monitoring functions. Information and communications technology (ICT) is often used as an extended synonym for information technology (IT). It is a more considerable term (i.e. more broad in scope).It lies stress on the role of unified communications and integration of telecommunications (telephone lines and wireless signals), computers and necessary enterprise software, storage, middleware, and audio-visual system, so that users are able to access, store, retrieve, manipulate and transmit information.

Effective impacts of ICT on human

Access to Information: One of the greatest effects of ICT on individuals is the huge increase in access to information and services. Internet is growing at a faster speed with the help of ICT. Some of the positive aspects of this increased access are better and cheaper communications such as VoIP phone and instant messaging. The use of ICT to access information has brought new opportunities to use free time for enjoyment. The facility to make contacts and form relationships with people around the world, and the ability to obtain goods and services from a wider range of suppliers, improved access to education. Due to growth of internet on-line tutorials and distance learning are popular methods of education today. Virtual reality, interactive multimedia are widely used today. New job opportunities are being created today with the help of ICT like flexible working hours, mobile and virtual offices and jobs in the communications industry.

New tools, new opportunities: The second big effect of ICT is that new tools are accessible now a days that did not previously exist. Some examples of stand-alone (ICT) system are:

a) There were some processes that were out of reach of most people. ICT may be used for these processes. Like photography, where digital camera, photo-editing software and high quality printers have enabled people to produce results that would previously require a photographic studio.
b) People with disabilities get benefitted with Green ICT. E.g. screen reading or Screen magnification. An earlier partially sighted or blind person has to work in braille. There are some software with the help of which blind people can work with ordinary text.

On Environment

There are many positive aspect of ICT on environment. Like reduction in consumption of paper, Reduction of use of writing and printing inks, Reduction in transportation, monitoring and controlling work can be done easily, less manpower is required. All of these contribute to maintain healthy environment on earth.

Negative impacts of ICT on people

Job loss: Loss of a person's job is one of the largest negative effects of ICT. It has both economic consequences, loss of income and social consequences, loss of self-esteem status. Due to several reasons Job losses may occur, like manual operations being replaced by automation. For example robots replacing people on an assembly line job, Data processing operating costs in other countries are lower. So this kind of work being sent to these countries.

Reduced personal interaction: Being able to work from home is usually regarded as being a positive effect of using ICT, but there can be negative aspects as well. Most people need some form of social interaction in their daily lives and if they do not get the chances to meet and talk with other people then they may feel isolated and unhappy.

Reduced physical activity: Another negative effect of ICT is that users may adopt a more sedentary lifestyle. Lifestyle involving little or no physical activity is called sedentary. This can lead to health problems such as obesity, heart disease, and diabetes.

On environment

First of all sometimes people (especially in businesses) print unnecessarily large amount of files, emails or things from the internet which wastes paper and harms trees. Which is irrelevant. People who use computers never really turn off the computer when computer is of no use. Which leads to wastage of electricity that could have been saved and reduce the amount of burning of fossil fuel. The metals and chemicals contribute to global warming because from these discarded computers it causes water contamination and air pollution. Which has negative effect on environment.

ICT and its E-WASTE

E-waste consists of all waste from electronic and electric appliances which have their end –of- life period. These appliances are no longer fit for their original intended use. These appliances are destined for recovery, recycling or disposal. It includes computer and its accessories monitors, printers, keyboards, typewriters, central processing units, chargers, mobile phones and remotes, Digital Versatile Disc, compact disks, headphones, Air conditioners, refrigerator, batteries, LCD/Plasma, TVs and other household appliances. The composition of e-waste is diverse and falls under 'hazardous' and 'non-hazardous' categories. Broadly it consists of ferrous metals, glass, plastic, wood, and plywood, concrete, printed circuit boards, ceramics, rubber and other items. It consists of non-ferrous metals like Steel and Iron which constitute about 50% of the waste, followed by plastic (21%), non-ferrous metals (13%) and other constituents. Non-ferrous metals consist of metals like copper, aluminium and precious metals like silver, gold, platinum, palladium and so on. Central pollution control board (CPCB) estimated India's e-waste at 1.47 lakh tons or 0.573 MT per day. A study released by the electronics industry association of India (ELCINA) at the electronics industry expo- "componex nepcon 2009" had estimated the total e-waste generation of India at a whooping 4.34 lakh tons by end 2009. The PCB has estimated that it will exceed the 8 lakh tons or 0.8 MT mark by 2012. There are 10 states that contribute to 70% of the total e-waste generated in the country, while 65 cities generate more than 60% of the total e-waste in India.

Quantity of WEEE (Waste Electrical and Electronic Equipment) generated in Indian states

States/UT	WEEE (Tons)
Andaman and Nicobar Islands	92.2
Andhra Pradesh	12780.3
Arunachal Pradesh	131.7
Assam	2176.7
Bihar	3055.6
Chandigarh	359.7
Chhattisgarh	2149.9
Dadra and Nagar Haveli	29.4
Daman and Diu	40.8
Delhi	9729.2
Goa	427.4
Gujarat	8994.3
Haryana	4506.9
Himachal Pradesh	1595.1
Jammu and Kashmir	1521.5
Jharkhand	2021.6
Karnataka	9118.7

According to ASSOCHAM, an industrial body in India the compound annual growth rate of E-Waste is 30%

Harmful effects of e-waste on human body

Components	Constituents	Affected part
Circuit boards	Lead and cadmium	Kidney, liver
Motherboards	Beryllium	Lungs, skin
Cathode ray tubes	Lead oxide	Heart, muscles
Flat screen monitors	Mercury	Brain, skin
Computer batteries	Cadmium	Kidney, liver
Cable insulation	Polyvinyl chloride	Immune system
Plastic housing	Bromine	Endocrine

Obstacles in Management of E-Waste

Lack of awareness is the major obstacle in E-Waste management. People did not know the term E-Waste they have not listen yet about E-Waste. So this is the major obstacle for E-Waste management. A survey is done by students in Mumbai and find out that more than 62 % people not aware about E-Waste and 94% feels that there is a need to create more awareness. In 2014 the E-Waste generated by Delhi is 67000 tons and Bangalore was 57000 tons. Every year India generates 4, 00, 000tons of e-waste out of which only 19000 tones are getting recycled.

Solutions should be adopted

E-waste are originating day by day in developed countries. E-Waste is becoming problem for everyone, so now it's time to reduce the impact of e-waste and to take important steps towards Green Computing. With Green computing we can make our environment clean and free from all kind of toxic chemicals. One of the possible solutions regarding this can be to make strict policies. Developing countries must have to go through the policies strictly or to adopt these policies seriously. The developing countries must also avoid taking E-Waste from the developed countries at low prices. E-Waste is then used for manufacturing of some other products which cost them cheaper. Another solution can be with the contribution of citizens as well as the manufacturers/producers. The citizens or consumers can also contribute towards this. Consumers/citizens should buy only those electronic products which can be recycled or it can be reuse and also those which contains a less toxic chemicals. In educational institutes make green ICT subject compulsory one rather than an optional one, new events can be organized to gather new ideas from students. Products based on Green IT could make products

cheaper and less hazardous. Green IT products have the abilities to attract more customers than normal products. By introducing in educational institutions is the only way to invite more project and ideas. Awards, scholarships should be provided so that more and more contribution in this field can be made. Awareness among public is required. Cheaper, unhealthy, hazardous products should not be used by anyone. Warning should be written on electronic gadgets it should be written weather it is green product or not. Government should charge extra tax on those companies which are not following Green ICT rules as well as not producing Green ICT products. Strict action should be taken by the government against those companies.

2. Conclusion

From this paper we can conclude that Developing countries are saying that they are opting Green IT policies but in reality things are going in reverse direction. Developing countries needs to think about their policies and strategies in a serious manner. Attention is required in this field and our main motive is to show the present scenario. So far, we consumer have only cared for the speed, price and performance aspects of the electronic gadgets but have hardly care about ecological impacts while buying them. But the growing concerns on environmental protection and sustainable development, people have started thing about safer and greener models.

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