

“An Empirical Analysis on Dumping of e-Waste”

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ABSTRACT:

Every country nowadays facing a huge problem from the effects that is happening in the environment since the surroundings are not clean many people suffers a lot of health problem and there is lot of environmental problems. With the new advancement of technology and updations there is large amount of usage of electronics by people and after the end life of the product they dispose the product without proper method so as a result they are so much impacts that has reflected in the environment. Electronic waste which is also called as e-waste is generally defined as the waste which contains used electronics, chips and other electronic devices. Many people do not have proper knowledge to dispose the used e products that has resulted in large dumping of e- waste in the environment. Generally after its use the electronics are disposed, destroyed for the purpose of reuse, resale for a reasonable value or just throw away the product. The reasons for such large number of dumping of e-waste is due to increasing in technology updations and development in information technology and enhancement leads to large production of electronic products and devices and as a result e- waste is also derived more. An estimate of 20- 50 million tones is discarded every year. The study discusses about the causes and effects due to large dumping of e- waste and what are the remedial measures that can be done to control such problem and recycling methods. The questionnaire for this study is taken from 50 respondents under the simple random method and the result is ascertained by using co-reactions and chi-square tests value is less than 0.03% so the null hypothesis is rejected and there is an connection between the common question and related question. The alternative hypothesis has been proved.

KEYWORDS: technology, fertility, harmful, pollution, knowledge, disposed.

INTRODUCTION:

Electronic waste is one of the addresses problem which is increasing rapidly problems in every countries. The electronic waste expels radiations that are harmful to human health. The major

effects are due to harmful substances that causes direct radiations that directly impacts human health. The major causes are due to lack of proper infrastructure to recycle those waste and lack of prepped recycling techniques that has resulted in such serious problem. So the state must intervene to his problem and regulate policies to eradicate such harmful effects caused due to e-waste. (Pinto 2008)The author says that the problem has been caused due to large number of exports from various countries where the defective pieces are disposed in particular place. The consideration of this problem will resolve such issues which enables to seek environmental justice(Lepawsky 2014). The large manufacturing of electrical and electronic equipment that is the cause of growing e-waste since there is presence of rapid obsolescence and change in technology(Oteng-Ababio 2010).The product life cycle of electronic appliances is reduced in the last few decades since there is rapid advances in technology there is increase in e-waste more than the traditional wastes. To manage the e-waste there is need of proper recycling method to be followed and proper legislation regarding e-waste(Osibanjo and Nnorom 2007)

The e-waste that has been increased in the past few years has made environmental agencies to address this problem and adopt strategies regarding e-waste management. A proper system of collecting and recycling and adopting the process of disposing of e-waste will preserve the environment. (Wath et al. 2010). For a few decades the fields of electrical equipment are growing exponentially. Therefore the business as well as the suppliers facing a new challenge as how to manage such waste so here the issue of e-waste is created(Bhutta et al. 2011) The presence of rapid growth that is coupled with urbanisation and a increasing demand of consumer goods has given rise to increased demand to production and consumption. So company manufactures large number of electronic product more than the needs thus resulted in large dumping of e-waste. The Indian information technology has reached the stage of boom in the development stage which acted as driving factor in the Indian economy. The future effects of reducing dumping of e-waste should be implemented such as laws to prevent illegal dumping. Global effects and environmental impacts that has been experienced in the present decades that has harmful chemicals.(Needhidasan et al. 2014) The problem of e- waste arises in India due to improper recycling techniques. The manufacturers have to take the responsibility to proper those waste and properly dispose it that is the raw materials and defective pieces has to be segregated and dismantled properly.(Katait 2016)

Every used electronic appliances are considered as e-waste such as cellphones, batteries, refrigerators, defective electric parts, cables heavy metals such as nervous problem, brain health a public awareness about the problem will reduce such problem(Sivakumar Sivaraman 2013). Even in the case of developed people considered large number of electronic appliances that are still possess electronic goods. The people need to develop sustainability and while purchasing electronics one change will not reduce an all round change and cooperation will reduce such problem(Krista E. Dawson 2016). Some waste creates environmental impact that has various types of toxic elements that creates an irreversible change in environment. The failure proper

recycling will lead to damage of rare- earth animals to work electronic equipment. The part of the problem is smaller components.(Sankhla et al. 2016) The presence of toxic chemicals which creates an negative impact in the environment the consumers when purchasing the product must take into consideration the concept of sustainability. There must be the presence of uniform change(Kishore and Monika 2010) .In India most of the people regarding the problem of household they do not possess a proper knowledge as how to discard the electronic appliances so as to possess the recycling techniques to many parts of people.(Ramachandra 2006).**The aim of the study is to analyse the problems and effects caused due to dumping of e-waste.The objectives of the study is to discuss the effects, reasons caused due to dumping of e-waste, discuss the methods to control this problem of large number of dumping of e-waste.To discuss the recycling methods to reduce dumping of e- waste.**

MATERIALS AND METHODS

The research is taken from 50 samples and 1561 respondents and the questions were raised regarding dumping of e-waste the effects the causes of dumping of e-waste, what are the methods by which we can prevent such dumping of e-waste. The secondary data source is taken from web articles, citations, books, online citations and websites, newspapers etc.

HYPOTHESIS

HO: There is no significant relationship between large dumping of e waste and its impact on the environment.

HA: There is significant relationship between large dumping of e- waste and its impact on the environment.

CAUSES FOR DUMPING ON E-WASTE:

The main cause or rather reason for the increasing e waste is that the exaggerated variety of products because of development, technology, human mentality and population as a result of that disposal issues caused as more than something isn't smart.

Development in electronic industry

As of currently, it's calculable that there are over a billion personal computers within the world. In developed countries these have a median life of solely a pair of years. within the u. s. alone there is over three hundred million obsolete computers. Not solely developed countries the developing countries too have two-faced a steep rise in sales or what is more wastage during this trade. it's believed that sales of computers and net usage have gone up by four-hundredth in developing countries further. because the digital divide narrows we tend to should address the question of disposal of enormous numbers of "end of life" computers and alternative IT instrumentation. we will currently conjointly perceive that this trade is globalising at a quick rate

or rather AN forbidding rate. ALL of this can be as a result of development caused by economic process.

Technology updations

The technology is growing at lightning quick speed. This technology leads to the approaching of newer product and appliances. The major reason for this will be none apart from MNC's (international corporations). MNC's currently a days are therefore powerful that they will influence the total market system of a rustic in no time. It's these mnc's that offer higher technology. They have cash quite the budget of some countries further. What is more they need the ability to come to a decision worth and quality. However, it's not solely that MNC's profit once they begin a business. Though some sections could also be affected, the center category have began to prosper as a result of the costs have gone down and quality has exaggerated.

Human lethargic attitude

This has given power to the common people (middle category people) and this money power has helped them obtain additional product and in our case or the case of computers increase e waste by reasonably dynamic their mentality. As a result of cash power folks currently a days tend to substitute their older materials with the newer ones and this older materials if electronic connected is what's termed as e-waste. (N. Perkins et al. 2014)

Population :

With the increasing population of these are triggered even additional. It's easy to grasp by one among the foremost easy theories of unitary methodology. Therefore if one person buys one laptop therefore with increasing population the quantity of computers would conjointly increase with this methodology. Therefore we will conclude that with increasing population the quantity of e waste would conjointly increase as a result of these computers they bought once someday would be thrown with the introduction of higher technology devices which might be bought by the. Moreover of these interlinked with one another and along contribute to a significant environmental concern caused by e waste.

Exportation from developed countries:

Before the 1970's, only a few places within the world had strict rules concerning the disposal of risky waste; marketing the waste into landfills was a awfully common follow. However, over the course of the 1970's, several developed countries began to approve rules that managed the treatment of risky waste and chemical use within the surroundings like the toxic substances management act, clean water act, and clean air act. In compliance with these new rules, firms

manufacturing risky waste were forced to pay longer, money, and resources to get rid of it properly. This evoked several risky waste manufacturing businesses began to look for alternatives on a way to get rid of the waste at a lower value.

COMPANIES THE CAUSE OF PROBLEM

There are several firms operating as an area of the electronic business. These firms accepted for his or her quicker, cheaper and progressive electronic gadgets. With the advancement of competition among these firms, the speed of e-waste is additionally rising. Whenever a brand new device is launched within the market, simply when a month the higher version of that device is introduced within the market by another company. as compared to the previous one, the new device has higher options and improved practicality at an equivalent value or slightly on top of. that the discarding quantitative relation is bigger than ever.(Wikström and Marklund 2001)Another issue that contributes to the advancing rate of e-waste is that the dearth of utilization facilities in several countries or the slow method of utilization. several components of those devices are often reused or recycled however solely few countries taking tight measures during this regard.

EFFECTS ON DUMPING ON EWASTE : EFFECT ON ENVIRONMENT :

The processes of dismantlement and taking out electronic waste in developing countries semiconductor diode to variety of environmental impacts as illustrated within the graphic. There is presence of such harmful gasses that disrupted the natural fertility of land and those landfills can affects the soil and leads to disruption of natural land where no plants or harvesting can be done.

EFFECTS ON HUMAN BODY :

Electronic waste affects nearly each parts of the body that affects the physical body and also causes mental stress thus it contain chemicals and retardants that leads humans to various health problems. The health effects of those toxins on humans embody birth defects, brain, heart, liver, excretory organ and frame injury. they're going to conjointly considerably have an effect on the nervous and procreative systems of the body.(van Birgelen 1998),Electronic waste presently constitutes a pair of to five p.c of the US municipal solid waste stream. (Swan et al. 2005)

IMPACT ON NATURAL RESOURCES

When natural philosophy containing serious metals like lead, barium, mercury, atomic number 3 (found in portable and pc batteries), etc., area unit improperly disposed, these serious metals leach through the soil to succeed in groundwater channels that eventually run to the surface as streams or little ponds of water. native communities usually depend upon these bodies of water and therefore the groundwater. with the exception of these chemicals leading to the death of a number of the plants and animals that exist within the water, intake of the contaminated water by humans and land animals ends up in plumbism. a number of these serious metals are malignant neoplastic disease. In this approach, harmful serious metals and chemicals from e-waste enter the “soil-crop-food pathway,” one among the foremost important routes for serious metals’ exposure to humans. These chemicals aren’t biodegradable—they move the setting for long periods of your time, increasing the chance of exposure.

REMEDIES TO CONTROL DUMPING OF E-WASTE RECYCLING

Recycling is the major method by which we can control large dumping of e- waste by knowing proper recycling methods. The circuit boards contain such precious metals as gold etc.. and such base metals as copper, iron, aluminum, etc. .a method e-waste is processed is by melting circuit boards, burning cable protection to recover copper wire and open- pit acid natural action for separating metals valuable. typical methodology used is mechanical shredding and separation however the utilisation potency is low. Properly confiscating or reusing physics will facilitate forestall health issues, cut back greenhouse-gas emissions, and build jobs. recycle and refurbishing provide a additional environmentally friendly and socially aware different to downcycling processes. (Nigro and Ryder 1983)

SPREADING AWARENESS

The U.S. Environmental Protection Agency encourages electronic recyclers to become certified by demonstrating to associate degree commissioned, freelance third party auditor that they meet specific standards to soundly recycle and manage physical science. this could work thus on make sure the highest environmental standards square measure being maintained. .Customers square measure inspired to settle on certified physical science recyclers. accountable physical science

employment reduces environmental and human health impacts, will increase the employment of reusable (Johri 2008) and refurbished instrumentation and reduces energy use whereas preserving restricted resources.

PROCESSING TECHNIQUES

In several developed countries, electronic waste process typically 1st involves disassembly the instrumentation into numerous elements typically by hand, however more and more by machine-controlled shredding instrumentation. the benefits of this method are the human's ability to acknowledge and save operating and serviceable elements, as well as chips, transistors, RAM, etc. The disadvantage is that the labor is most cost-effective in countries with very cheap health and safety standards. (Godlee 1995)

FINDINGS

Data analysis

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Area * Are you aware of e-waste?	1561	100.0%	0	.0%	1561	100.0%

Area * Are you aware of e-waste? Crosstabulation

Count		Are you aware of e-waste?			Total
		yes	no	maybe	
Area	chennai	412	475	401	1288
	2	65	83	125	273
	Total	477	558	526	1561

The above table shows that 412 people have said that the people are aware of the e-waste and 475 people have responded that that are unaware about the concept of e-waste and 401 people have neutrally agreed to the question that they are aware of e-waste where majority of people belong to Chennai followed by minority of people belong to other cities.

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	21.928 ^a	2	.000
Likelihood Ratio	21.225	2	.000
Linear-by-Linear Association	18.292	1	.000
N of Valid Cases	1561		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 83.42.

Chi square test analysis

If the chi square test value assumption is less than 0.03 then null hypothesis is rejected, from the second table it is cleared that p value is less than 0.03, they are low correlated therefore the null hypothesis is rejected and there is an connection between the common question and related question. The alternative hypothesis has been proved. From the alternative hypothesis there is significant relationship between large dumping of e-waste and awareness and its impact on environment.

Correlations

	Are you aware of e-waste?	Who are the worst polluter?	I believe my health has already been affected by Pollution?
Are you aware of e-waste?	1	.064 [*]	.342 ^{**}
Pearson Correlation		.011	.000
Sig. (2-tailed)			
N	1561	1561	1561
Who are the worst polluter?	.064 [*]	1	.263 ^{**}
Pearson Correlation			.000
Sig. (2-tailed)	.011		
N	1561	1561	1561
I believe my health has already been affected by Pollution?	.342 ^{**}	.263 ^{**}	1
Pearson Correlation			
Sig. (2-tailed)	.000	.000	
N	1561	1561	1561

*. Correlation is significant at the 0.05 level (2-tailed).

** . Correlation is significant at the 0.01 level (2-tailed).

The above result of correlation table is where it is analysed about the awareness about e-waste it is said that are compared with dependent variables about the awareness of e-waste which is denoted by term 1 which are compared with the worst polluters that are taken into consideration that are compared with e-waste and the worst polluter which has the value of .064. The correlation has been made between the worst polluters that are prevailing in the environment by the dumping of e -waste which has the value of 1 and the comparison has been made that the large dumping of e-waste affects the human health that has the value of .342 and the worst polluter that are denoted by the value of .263

Symmetric Measures

	Value	Asymp. Std. Error ^a	Approx. T ^b	Approx. Sig.
Interval by Interval Pearson's R	.108	.025	4.301	.000 ^c
Ordinal by Ordinal Spearman Correlation	.109	.025	4.327	.000 ^c
N of Valid Cases	1561			

- a. Not assuming the null hypothesis.
- b. Using the asymptotic standard error assuming the null hypothesis.
- c. Based on normal approximation.

DISCUSSION

From the above study it is said that the majority of people said that the majority of people are aware of e-waste so here the general people are aware of the dumping of e-waste where the majority of people belong to Chennai so the people in Chennai are very aware since the people are affected by the large dumping of e- waste. In the total population of 1288 out of people 475 people are aware of the people are 421 people are unaware about this problem and 401 people are sometimes aware of the problem. Many people are aware of the e-waste since they are affected by this problem. The general cause of e-waste is due to technology advancements and dealers of electronic appliances and the dumping of e-waste has increased from past consequent years. So the government must take measures to solve the problem through legislative policies one change is not sufficient to solve the problem it is every individual should take active participation in controlling the problem. More than, the manufacturers of electronic devices must properly dispose the used electronics. The interpretation is done for the purpose of analysing the effects, causes and methods to eradicate such large dumping of e -waste.

Occupation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	self employed	734	47.0	47.0	47.0
	govt employee	518	33.2	33.2	80.2
	non government employee	244	15.6	15.6	95.8
	4	65	4.2	4.2	100.0
	Total	1561	100.0	100.0	

Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	female	803	51.4	51.4	51.4
	male	758	48.6	48.6	100.0
	Total	1561	100.0	100.0	

Area

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	chennai	1288	82.5	82.5	82.5
	2	273	17.5	17.5	100.0
	Total	1561	100.0	100.0	

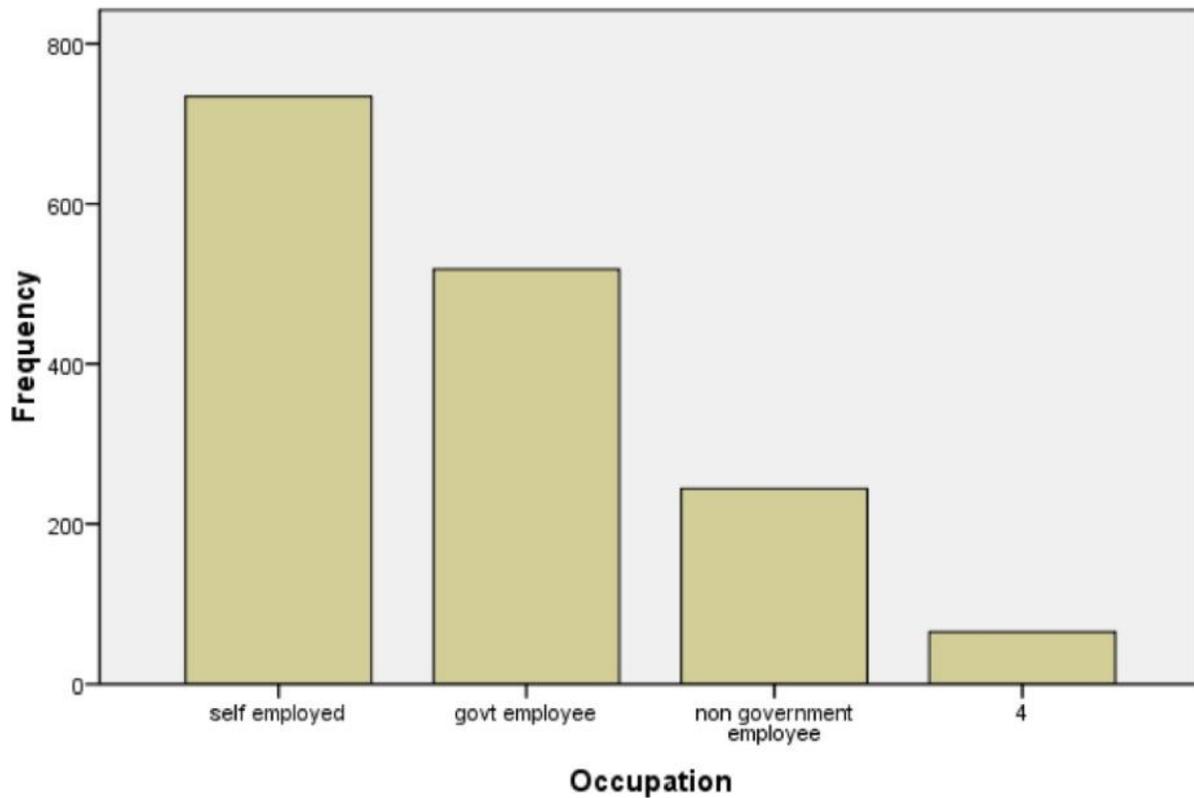
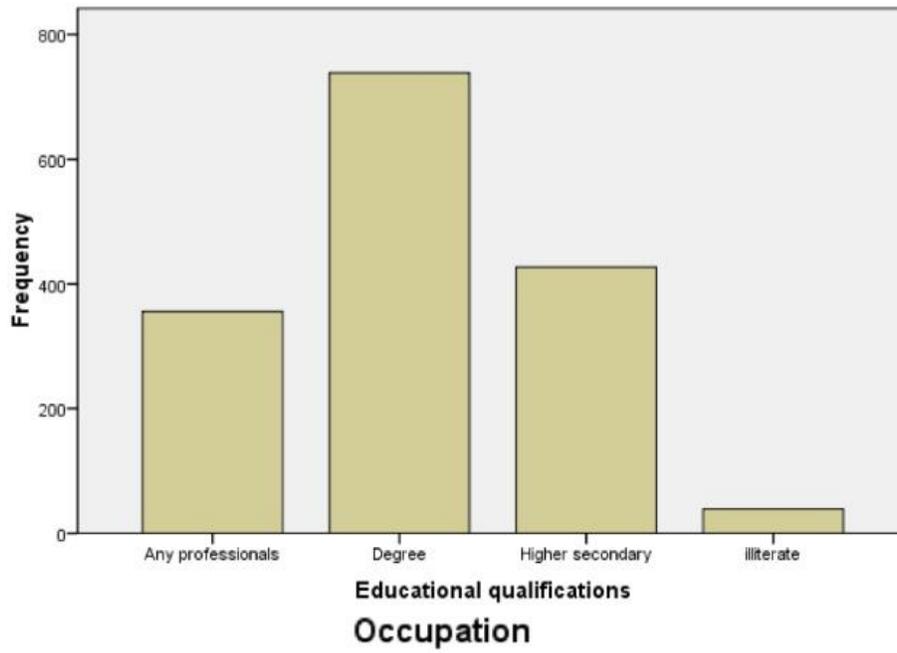
Income

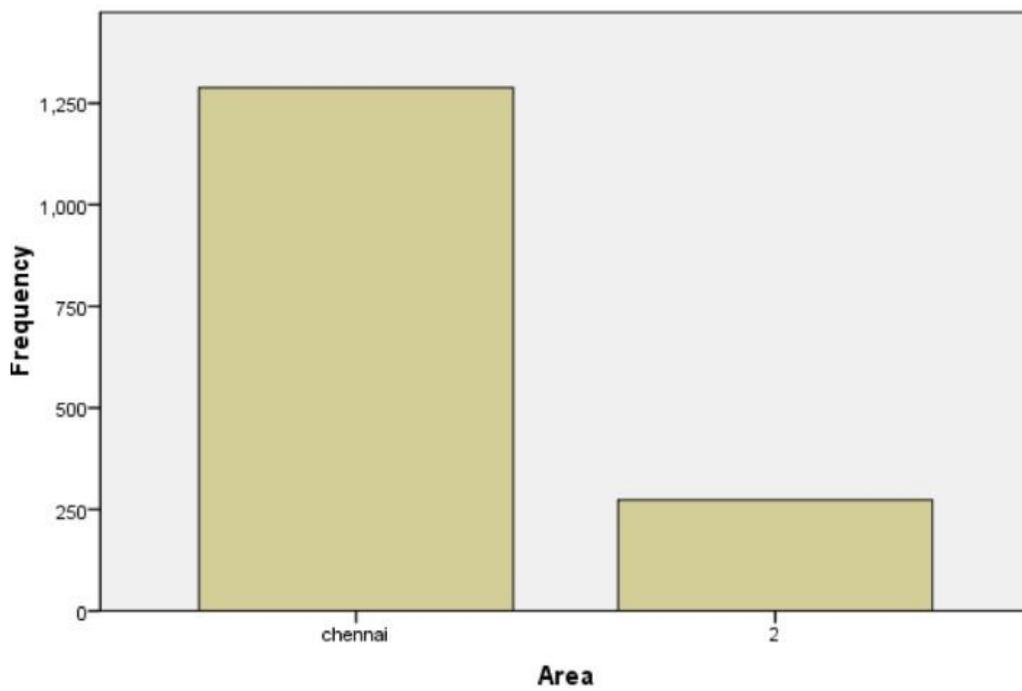
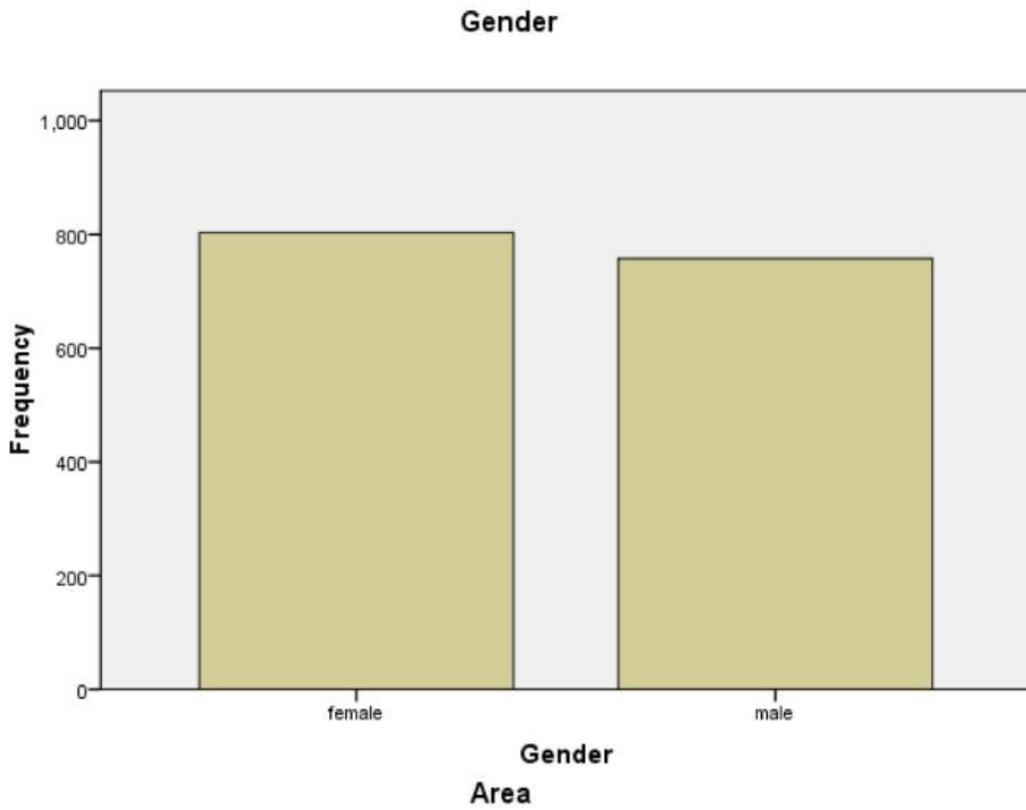
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	below2,00,000	532	34.1	34.1	34.1
	2,00,000 -4,00,000	655	42.0	42.0	76.0
	above 4,00,000	374	24.0	24.0	100.0
	Total	1561	100.0	100.0	

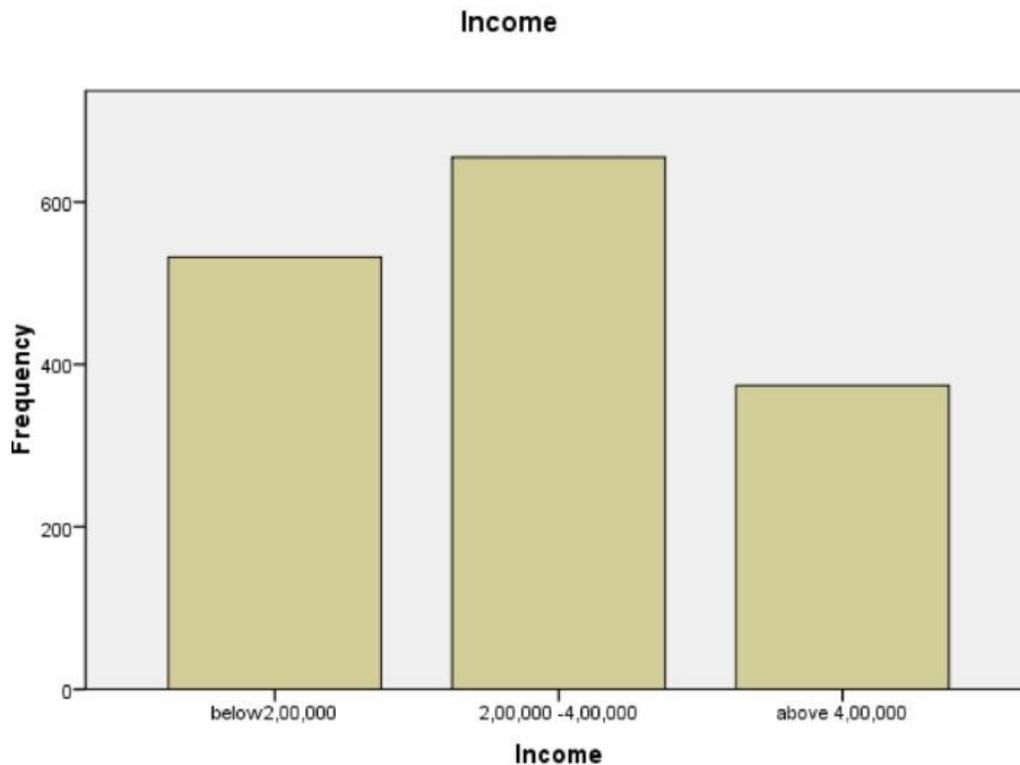
Educational qualifications

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Any professionals	356	22.8	22.8	22.8
	Degree	739	47.3	47.3	70.1
	Higher secondary	427	27.4	27.4	97.5
	illiterate	39	2.5	2.5	100.0
	Total	1561	100.0	100.0	

Educational qualifications







CONCLUSION

Electronic instrumentality and so e-waste are everywhere in our society. They're characterised by a complicated chemical composition and difficulty in quantifying their own at an area and international level. The pollution caused by their irregular management well degraded the surroundings principally in poorer countries, receiving them for exercise and recovery of their valuable metals. As for the results on ecosystems, human health and environmental restoration of areas burdened by sure polluters generated by e-waste, there aren't any sufficiently documented scientific studies. Intended by the diminution of environmental effects caused by the generated e-waste, several technological changes are effectuated. Strategies for improving the sustainability of e-waste management systems

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