The Score Card Approach Method of Evaluation of Public Awareness About E-Waste Hazards in Lagos State

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THE SCORE CARD APPROACH METHOD OF EVALUATION OF PUBLIC AWARENESS ABOUT E-WASTE HAZARDS IN LAGOS STATE

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ABBREVIATIONS

EEE: Electrical Electronics Equipment

LASEPA: Lagos State Environmental Protection Agency

SME: Small and Medium Enterprises

SPSS: Statistical Package for Social Sciences

DECLARATIONS

Availability of data and materials:

The datasets during and/or analysed during the current study are available from the corresponding author on reasonable request.

Competing interests:

The authors declare that they have no competing interests.

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Authors' contribution:

SE reviewed the data analysis. OL reviewed the survey questionnaire and manuscript. All authors read and approved the final manuscript.

Abstract

This study was carried out to evaluate the level of awareness of Lagos State residents about e-waste health hazards. Data were collected through the distribution of 424 well-structured and Likert scaled questionnaire with respondents selected based on the proportionate sampling. Unlike the common categorisation of awareness level as either Low or High based on the independent variables like age, sex, educational qualifications; and dependent variables like regulations, mode of disposal of e-wastes, information sources etc, this study adopted the score-card approach to determine the awareness level in its totality and specific term as either Very low - 1 or Low – 2; or Moderate – 3; or High – 4; or Very high - 5 in order of categorisation. On the final analysis, the result revealed a score of '2' which implies that the level of awareness is low. Significance tests were also carried out to examine if any significant differences exist among the respondents based on their gender, age and educational level with respect to the hazardous elements contain in e-waste. The study revealed that statistically, no significant difference exists between the awareness level of male and female regarding hazardous elements in e-waste; no statistically significant difference exists between the awareness levels of respondents about the hazards of e-waste based on their educational qualifications but there was a statistically significant difference between respondents' ages regarding hazards in e-waste.

Keywords: Awareness, E-waste, Proportionate sampling, Score-card, Categorisation.

1 Introduction:

There are a number of challenges militating against e-waste management in Lagos State, Nigeria. They include lack of culture regarding the sorting and separation of e-waste from other wastes; inadequate measures to checkmate cross-boundary transportation of e-waste; deficient national regulation or weak enforcement of the regulations even where they exist; inadequate technical capacity for environmentally sound management; no interface between informal sector and regulatory authority; and poor corporate social responsibility by the industry (Fagbohun, 2011; Tansel, 2017,

About 53,600 mt e-wastes comprising 860,000 computers, 530,000 printers, 900,000 monitors and 480,000 television sets are dumped, annually, at Lagos State landfills; hence the initiative of Lagos State Government to put in place the Lagos State E-waste Management Policy (LASEPA, 2011). Key provisions in the draft policy include, promoting capacity building through public awareness efforts, education, training, promoting research; and observations through monitoring, detection, attribution and even model prediction to guarantee the management of e waste in an environmentally sound manner

The assertion is also in tandem with the study of Senophiyah and Meenambal (2015) which reported that the lack of awareness on how e-waste should be disposed and inadequate policies to handle general issues relating to e-waste contributed to the problem in India. Likewise, in the USA, about 67% of the populace is unaware of restrictions on the disposal of e-waste in the USA (Ogunseitan *et al.,* 2009).

However, in Lagos, Nigeria; e-wastes recycling have been a source of economic benefit to many unskilled workers who play prominent roles in activities surrounding e-waste collection and

recycling. But, the crude or substandard or backyard methods of recycling being used by the unskilled workers are not only environmentally un-friendly, they can also cause severe damage to people's health (Balde *et al. (*2015). All these contravene the provisions of the "National Environmental (Electrical/Electronic Sector) Regulations, 2011"; the enforcement or implementation of which is yet below sea level (Okoye and Chijioke Odoh, 2014). Hence, there is an urgent need to ascertain the peoples' level of awareness about e-waste hazards; whether the awareness is based on gender, age and educational qualification of the people. The level of awareness of the people could also be an indicator of their concerns for their immediate environment.

2. Methodology:

The study adopted the approach of Shabe *et al.,* (2017) to evaluate the public level of awareness about e-waste. A total of 424 questionnaire were distributed with respondents selected based on the proportionate sampling method. The questionnaire was constructed in Likert scale and ranking for the items in the manner of "Strongly agree = 4", "Agree = 3", "Disagree = 2", and "Strongly disagree = 1". To make it easy for respondents to answer the close ended structured questions appropriately, they were instructed to tick one of the provided multiple-choice options.. The sample covers people with different background including age, educational level, gender, level of income and location of residency. The questionnaires were distributed to respondents through random sampling, based on the Proportionate Allocation Scheme (Chawla and Sondhi, 2011; Levey and Lemeshow, 2008). The proportional sampling was adopted to reduce the bias in over representation. Thus, there is proportionality in the size of sample in each stratum or group and the population percentage of the group. The groups are mutually exclusive

and collectively exhaustive by criteria of geographical locations (Akinade and Owolabi, 2014) as per the Lagos State administrative divisions.

The scorecard approach was based on the Frequency Table for Awareness Rating as derived from the questionnaire. The Scorecard Rating (SCR) is given as;

$$\text{SCR (for each question)} = \frac{\text{Each Likert scale coding x Frequency of occurrence}}{\text{Total No. of respondents}}$$

The awareness level was determined by dividing the total SCR (all the questions) by the total number of questions i.e:

$$\text{Level of Awareness} = \frac{\text{Total SCR}}{\text{Total No. of questions}}$$

The levels of awareness were categorized based on the following values:

i.	Very low:	1
ii.	Low :	2
iii.	Moderate:	3
iv.	High:	4
v.	Very high:	5

The Frequency Tables for Awareness Rating as derived from the questionnaire are detailed in Table 1 (a – m).

Frequency Tables for Awareness Rating

Table 1a: Disposal at dumpsite will not affect community health

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongly agree	81	19.1	19.1	19.1
	Agree	66	15.6	15.6	34.7
	Disagree	144	34.0	34.0	68.6
	strongly disagree	133	31.4	31.4	100.0
	Total	424	100.0	100.0	

Table 1b: E wastes have no dangerous substances to harm the env.

		Frequency	Percent	Valid Percent	Cumulative Percent

Valid		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongy agree	45	10.6	10.6	10.6
	Agree	74	17.5	17.5	28.1
	Disagree	224	52.8	52.8	80.9
	strongly disagree	81	19.1	19.1	100.0
	Total	424	100.0	100.0	

Table 1c: The environment is capable of neutralising e waste effects

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongy agree	72	17.0	17.0	17.0
	Agree	102	24.1	24.1	41.0
	Disagree	178	42.0	42.0	83.0
	strongly disagree	72	17.0	17.0	100.0
	Total	424	100.0	100.0	

Table 1d: Burning etc are good methods of e waste removal

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongy agree	88	20.8	20.8	20.8
	Agree	89	21.0	21.0	41.7
	Disagree	158	37.3	37.3	79.0
	strongly disagree	89	21.0	21.0	100.0
	Total	424	100.0	100.0	

Table 1e: E wastes have recyclable valuable elements like gold and platinum

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongy agree	9	2.1	2.1	2.1
	Agree	50	11.8	11.8	13.9
	Disagree	194	45.8	45.8	59.7
	strongly disagree	171	40.3	40.3	100.0
	Total	424	100.0	100.0	

Table 1f: Using crude methods like burning etc to remove valuables give good income

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongy agree	86	20.3	20.3	20.3
	Agree	197	46.5	46.5	66.7

		Frequency	Percent	Valid Percent	Cumulative Percent
	Disagree	79	18.6	18.6	85.4
	strongly disagree	62	14.6	14.6	100.0
	Total	424	100.0	100.0	

Table 1g: SME should be established to implement reward based collection services

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongy agree	11	2.6	2.6	2.6
	Agree	56	13.2	13.2	15.8
	Disagree	203	47.9	47.9	63.7
	strongly disagree	154	36.3	36.3	100.0
	Total	424	100.0	100.0	

Table 1h: E waste recycling can generate income for Govt through employee tax in SME

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongy agree	15	3.5	3.5	3.5
	Agree	37	8.7	8.7	12.3
	Disagree	194	45.8	45.8	58.0
	strongly disagree	178	42.0	42.0	100.0
	Total	424	100.0	100.0	

Table 1i: Informal ops and scav form the path for introducing e waste to the env

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongy agree	27	6.4	6.4	6.4
	Agree	56	13.2	13.2	19.6
	Disagree	205	48.3	48.3	67.9
	strongly disagree	136	32.1	32.1	100.0
	Total	424	100.0	100.0	

Table 1j: Informal ops and scavengers should be considered as major stakeholders in e waste mgt

		Frequency	Percent	Valid Percent	Cumulative Percent

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongy agree	21	5.0	5.0	5.0
	Agree	68	16.0	16.0	21.0
	Disagree	202	47.6	47.6	68.6
	strongly disagree	133	31.4	31.4	100.0
	Total	424	100.0	100.0	

Table 1k: Manufacturers and marketers of EEE are not major stakeholders in e waste mgt.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongy agree	127	30.0	30.0	30.0
	Agree	169	39.9	39.9	69.8
	Disagree	96	22.6	22.6	92.5
	strongly disagree	32	7.5	7.5	100.0
	Total	424	100.0	100.0	

Table 1l: Education and public awareness prog about e waste are important for e waste mgt

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongy agree	5	1.2	1.2	1.2
	Agree	1	.2	.2	1.4
	Disagree	111	26.2	26.2	27.6
	strongly disagree	307	72.4	72.4	100.0
	Total	424	100.0	100.0	

Table 1m: Continuous monitoring of the env. by Govt. for e waste pollutants is necessary for e waste mgt.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongy agree	10	2.4	2.4	2.4
	Agree	16	3.8	3.8	6.1

	Disagree	156	36.8	36.8	42.9
	strongly disagree	242	57.1	57.1	100.0
	Total	424	100.0	100.0	

Using the IBM Statistics (SPSS) Version 23, a Kruskal-Wallis H test was conducted to evaluate the null hypothesis that there is no statistically significant difference regarding the awareness level about e-waste hazards elements and the respondents' gender, age and educational qualifications.

3. Results and Discussions

3.1 Level of Awareness:

The result as shown in Table 2 indicates that the awareness level of residents about hazards in e-waste was LOW.

Table 2:

Residents level of awareness using the score card approach on awareness about e-waste

ITEM	DESCRIPTION	RATING				SCO CA RAT
		'Strongly Agree'	'Agree'	'Disagree'	'Strongly Disagree'	
1	Disposal of e-waste at open space or dumpsite	0.19	0.31	1.02	1.25	**2.77**

Table 2 contd:
Residents level of awareness using the score card approach on awareness about e-waste (section c of questionnaire)

ITEM	DESCRIPTION	RATING				SCO CA RAT
		'Strongly Agree'	'Agree'	'Disagree'	'Strongly Disagree'	
	can not in any way affect the health of the community					

ITEM	DESCRIPTION	RATING				SCO...
		'Strongly Agree'	'Agree'	'Disagree'	'Strongly Disagree'	
	concerned					
2	E-wastes have no dangerous substances that can harm or pollute.the environment (soil, water and air)	0.11	0.35	1.58	0.76	**2.80**
3	The environment is capable of naturally neutralizing e-waste effects, no matter the quantity dispose.	0.17	0.48	1.26	0.68	**2.59**
4	Burning, melting or chemical treatment of e-wastes are good methods of removing e-waste from the environment.	0.21	0.42	1.12	0.84	**2.59**
5	E-wastes have valuable elements like gold, silver, platinum, copper etc that can be recycled for economic gain.	0.08	0.35	0.92	0.40	**1.75**
6	Using crude methods like burning or melting to remove valuable elements from e-waste will give good income to the recyclers	0.20	0.93	0.56	0.58	**2.27**
7	Small and medium enterprises should be established to implement reward based collection services and recycling.	0.10	0.40	0.96	0.36	**1.82**

Table 2 contd:
Residents level of awareness using the score card approach on awareness about e-waste (section c of questionnaire)

ITEM	DESCRIPTION	RATING				SCORE CARD RAT...
		'Strongly Agree'	'Agree'	'Disagree'	'Strongly Disagree'	
8	E-waste recycling can generate income for the Government through employment.opportunities in small and medium enterprises.	0.14	0.26	0.92	0.42	**1.74**
9	Informal operators and	0.25	0.40	0.97	0.32	**1.94**

	scavengers constitute the path of introduction of e-waste substances into the environment					
10	Informal operators and scavengers should be considered as major stakeholders in e-waste management policy.	0.20	0.48	0.95	0.31	**1.94**
11	Manufacturers and marketers of electrical-electronic equipment are not major stakeholders in e-waste management policy.	0.30	0.80	0.68	0.30	**2.08**
12	Education and public awareness programme about e-waste issues are important for an effective e-waste management policy.	0.05	0.01	0.52	0.72	**1.30**
13	Continuous monitoring of environment (soil, water, air) by Government for e-waste pollutants is necessary for an effective e-waste management policy.	0.09	0.11	0.74	0.57	**1.51**
SCR:					**TOTAL**	**27.1**

Level of Awareness = $\dfrac{\text{Total SCR}}{\text{Total No. of Questions}}$ = $\dfrac{27.1}{13}$ = 2.1 = LOW

3.2 Research hypothesis on residents' level of awareness about e-waste hazards:

Significance tests were carried out to examine if any significant difference exist among the respondents gender, age and educational level and awareness level about the hazardous nature of e-waste.

3.2.1 Testing the Hypothesis, Ho: There is no a statistically significant difference regarding awareness level of respondents' gender about the hazards in e-waste.

Result: As shown in Table 3, there was no a statistically significant difference regarding awareness level of respondents' gender about the hazards in e-waste ($\chi^2_{(1,\ N=424)}$ = 2.751, p = 0.097), with a mean rank of 208.34 for male respondents and 232.16 for female respondents.

Table 3

Test Statistics for level of awareness and respondents gender

	Sex	No of respondents	Mean Rank	Chi Square	Degree of Freedom	Asymp. Sig.
E-wastes have no dangerous substances to harm the environment and human health	Male	350	208.45			
	Female	74		2.751	1	0.097
	Tota;	424	232.16			

3.2.2 Testing the Hypothesis, Ho: There is no a statistically significant difference regarding awareness level of respondents' educational qualifications about the hazards in e-waste.

Result: As shown in Table 4, there was no a statistically significant difference regarding awareness level of respondents' educational qualifications about the hazards in e-waste ($\chi^2_{(1,\ N=424)}$ = 5.145, p = 0.161), with a mean rank of 185.77 for primary, 218.74 for secondary, 201.11 for post secondary and 225.39 for post graduate educational qualification levels.

Table 4:
Test statistics for level of awareness and respondents educational qualifications

	Educational qualifications	No of respondents	Mean Rank	Chi Square	Degree of Freedom	Asymp. Sig.
E-wastes have no dangerous	Primary	22	185.77			

substances to harm the environment and human health	Secondary	92	218.74	5.145	3	0.161
	Post Secondary	164	201.11			
	Post Graduate	146	225.39			
	Total;	424				

3.2.3 Testing the Hypothesis, Ho: There is no a statistically significant difference regarding awareness level of respondents' age about the hazards in e-waste.

Result: As shown in Table 5, there was a statistically significant difference regarding awareness level of respondents' age about the hazards in e-waste ($\chi 2_{(2, N= 424)} = 50.684$, $p \leq 0.01$), with a mean rank of 140.90 for 15-24 years old; 211.34 for 25 - 44 years old; 228.39 for 45 - 64 years old and 264.73 for 65 and above years old respondents.

Table 5:
Test statistics for level of awareness and respondents' age

	Age	N	Mean Rank	Chi-Square	Df	Asymp. Sig
E wastes have no dangerous substances to harm the env.	15 - 24 years	80	140.90	50.684	3	0.000
	25 - 44 years	136	211.34			
	45 - 64 years	137	228.39			
	65 and above	71	264.73			
	Total	424				

N = No of respondents; Df = Degree of freedom

The Post Hoc test (Table 6) shows that the difference is significant between the awareness levels of respondents in their adulthood (i.e age bracket, 15-24 years) and older adulthood (i.e 25 - 44 years, 45 - 64 years and above 65 years). Also observable is the difference between the

awareness levels of respondents in the age bracket, 25-44 years and those above 65 years which significant.

From the **"Mean Difference (I-J)"** column in Table 7, it can be observed that the awareness level significantly reduces with respondents' age. It can be concluded; therefore, that significant fraction of middle class population is still unaware of the health hazard of e-waste unlike those in adulthood (15-24 years) who have access to information through the internet and various social media. Increasing the efforts to further promote the level of awareness about e-waste health hazards among this age group will be of great benefit in the future to an effective e-waste management.

Table 6:
Multiple comparisons: Bonferroni post hoc test for significant difference between level of awareness and age

(I) Age	(J) Age	Mean Diff. (I-J)	Std. Error	Sig.	95% Confidence Interval Lower Bound	Upper Bound
15-24 years	25 - 44 years	-0.5691*	0.11465	0.000	-0.8730	-0.2652
	45-64 years	-0.7239*	0.11449	0.000	-1.0274	-0.4204
	65 and above	-0.9722*	0.13267	0.000	-1.3239	-0.6205
25-44 years	15 - 24 years	0.5691*	0.11465	0.000	0.2652	0.8730
	45 - 64 years	-0.1548	0.09849	0.701	-0.4159	0.1063
	65 and above	-0.4031*	0.11913	0.005	-0.7189	-0.0873
45-64 years	15 - 24 years	0.7239*	0.11449	0.000	0.4204	1.0274
	25 - 44 years	0.1548	0.09849	0.701	-0.1063	0.4159
	65 and above	-0.2483	0.11899	0.225	-0.5637	0.0671
65 and above	15 - 24 years	0.9722*	0.13267	0.000	0.6205	1.3239
	25 - 44 years	0.4031*	0.11913	0.005	0.0873	0.7189
	45 - 64 years	0.2483	0.11899	0.225	-0.0671	0.5637

*Significant mean difference at 0.05 level

3.2.4 Summary of significance tests on respondents' awareness level about hazards in e-waste:

Table 7 shows the summary of results of hypotheses on respondents' awareness level about hazards in e-waste.

Table 7:

Summary of significance tests on respondents' respondents' awareness level about hazards in e-waste

Hypotheses: H_o: There is no a statistically significant difference in awareness level of respondents' (i) gender, (ii) educational qualifications, and (iii) age about the hazards in e-waste			
Variable	**Test of significance**		
	Test value	**Test result**	**Post Hoc**
Gender	$\chi2_{(1, N= 424)} = 2.751$, $p = 0.097$	Null (H_o) acceptable	-
Educational qualifications	$\chi2_{(1, N= 424)} = 5.145$, $p = 0.161$	Null (H_o) acceptable	-
Age	$\chi2_{(2, N= 424)} = 50.68$, $p \leq 0.01$	Alternate ($H_{i)}$ acceptable	Significant difference exists between the levels of awareness of

			respondents in the age bracket, 25-44 years and those above 65 years.

4. Conclusion

The awareness level of residents about the hazards of e-waste in general term and in order of categorization from Cat 1 - 5 was found to be Cat 2 and therefore implies a low level of awareness. It means that the residents have just a little knowledge of the existence of e-waste hazards. The hypothesis test indicated that there was no statistically significant difference between the level of awareness of male and female regarding the hazardous elements in e-waste; and statistically, no significant difference between awareness levels of respondents about e-waste health hazards based on educational qualifications. However, there was a statistically significant difference between respondents' ages regarding e-waste and its hazardous elements. This difference could be attributed to the dichotomy of interest between the old generations and young generations to technologies.

Large scale education and awareness campaign programme to increase the awareness level among the people of Lagos State specifically towards e-waste sorting, economic opportunities in formal recycling and treatment programs, requirements in laws and regulations etc. Education and awareness-raising will, therefore, continue to be crucial to an effective and efficient e-waste management in Lagos State.

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LAGOS STATE UNIVERSITY, OJO, LAGOS

CENTER FOR ENVIRONMENTAL STUDIES AND SUSTAINABLE DEVELOPMENT(CESSED)

<u>QUESTIONNAIRE ON THE LEVEL OF AWARENESS OF RESIDENTS OF LAGOS METROPOLIS ON THE HEALTH HAZARDS OF ELECTRICAL-ELECTRONICS WASTES (E-WASTES).</u>

INSTRUCTIONS:

For the purpose of this questionnaire, e-waste is loosely described as an unwanted electrical-electronic device or product that is no longer useful and is meant to be disposed off e.g obsolete or broken television, computers, DVD players, VCRs, cell-phones, printers, copiers, video game systems etc.

Please, fill in the blank spaces or tick (√) the Box where necessary. All responses are confidential.

SECTION A: **PERSONAL INFORMATION**

1. **Local Government Area (LGA) of Residence: …………….………….……………………………**

2. **How long have you lived in the LGA**: 1 – 4yr ☐, 5 – 9yr ☐, 10 - 14yr ☐, 15yr and above ☐

3. **Sex:** Male ☐, Female ☐

4. **Age:** 15 – 24 ☐, 25 – 44 ☐, 45 – 64 ☐, 65 and above ☐

5. **Educational Qualification:** Primary ☐, Secondary ☐, Post-Secondary ☐, Post Graduate ☐

6. **Monthly Income**: Less than N30,000 □, N30,000 – N49,000 □, N49,000 – N79,000 □, N80,000 & above □

SECTION B: DOMESTIC GENERATION OF E-WASTE AND DISPOSAL

7. How many electrical-electronic products do you **purchase** in a year? 0 □; 1-3 □; 4-6 □; 7-9 □; 10 or more □

8. How many damaged electrical-electronic products have you **disposed/thrown away** in the last five years? 0 □; 1-3 □; 4-6 □;   7-9 □; 10 or more □

9. What do you do with your **damaged** electrical-electronic products? Put into storage at home □; Strip for scrap material □; Put in a waste bin for disposal □; Sell on as spare parts to a technician □; Other (please specify)…………………………

10. How often do you have a cause to **repair** your electrical-electronic products? 6 months □; 1 year □; 2 years □; 5 years □; More than 5 years □

11. Which factors would affect your choice to **buy a second hand/used** electrical-electronic products? The level of income and price of new products □; The risk involved in repair/servicing of new products □; The brand/manufacturer of the new product □; Previous experience on new products □; Other (please specify)……………………………………………………………

12. Which factor would affect your choice whether to **repair** an electrical-electronic product or not? Cost of repair compared with replacement of product □; Availability of spare parts □; Availability of formal repair centers for the product □; Knowledge of skills needed to repair □; Warranty of product □; Other (please specify) … …………………………………………..

13. Which factor would affect you **trading-in** your old electrical-electronic products for a cash reward? Emotional attachment to the product □; Initial cost of the product □; The repairability of the product □; Logistics of the trading-in service (i.e. postage, collection) □; Other (please specify)…………………………………………………………

14. Which factor would influence your action to always **separate e-wastes** from other household garbage? Government laws/regulations forcing me to do so □; Opportunity to dispose the waste and receive for monetary/financial reward □; Availability of designated centers for collection □; Opportunity to get the damaged device replaced with a new one when taking to the manufacturer □; Other (please specify)………………………………………………………

SECTION C: AWARENESS ABOUT E-WASTE

Please tick (√) to indicate your correct response using – **SA- Strongly Agree; A- Agree; D- Disagree; SD- Strongly Disagree.**

No	DESCRIPTION	SA	A	D	SD
Environmental-Human Health Element of E-waste:					
15	Disposal of e-waste at open space or dumpsite can not in any way affect the health of the community concerned.				
16	E-wastes have no dangerous substances that can harm or pollute the environment (i.e soil, water and air).				
17	The environment is capable of naturally neutralizing the effects of e-waste, no matter the quantity of disposed e-waste.				
18	Burning, melting or chemical treatment of e-wastes are good methods of removing e-waste from the environment.				
Economic-Human Health Element of E-waste:					
19	E-wastes have valuable elements like gold, silver, platinum, copper etc that can be recycled for economic gain.				
20	Using crude methods like burning or melting to remove valuable elements from e-waste will give good income to the recyclers				
21	Small and medium enterprises should be established to implement reward based e-waste collection services and recycling.				
22	E-waste recycling can generate income for the Government through employment opportunities in small and medium enterprises.				
Social-Human Health Element of E-waste:					
23	Informal operators and scavengers constitute the path of introduction of e-waste substances into the environment				
24	Informal operators and scavengers should be considered as major stakeholders in e-waste management policy.				
25	Manufacturers and marketers of electrical-electronic equipment are not major stakeholders in e-waste management policy.				
26	Education and public awareness programme about e-waste issues are important for an effective e-waste management policy.				
27	Continuous monitoring of the environment (soil, water, air) by Government for e-waste pollutants is necessary for an effective e-waste management policy.				

Thank you very much for your contribution.