ATTITUDE AND SKILLS ON E- WASTE MANAGEMENT AMONG UNDERGRADUATE STUDENTS

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Abstract

"E-waste" is a popular, informal name for electronic products nearing the end of their useful life. The present study was conducted to know the attitude and skills of undergraduate students about E-waste management which is the rapidly growing problems of the world. To find out the attitude and skills of undergraduate students regarding E-waste management, Survey method of research was used. A sample of 210 students was selected from different colleges of thanjavur district through Simple Random sampling technique. The self developed E-Waste Management attitude and skills questionnaire was used to collect the data. It was found that all the students irrespective of their attitude and skills of existence of e-waste. The result of the research is that there is no significance in attitude and skills of E-waste management in undergraduate students of gender, locality, subject and type of management. Hence the hypothesis of research is accepted.

Keywords: *Attitude, Skills, E-waste management, Undergraduate students*

I Introduction

Electrical and electronic waste, also known as electronic waste or waste electrical and electronic equipment (WEEE), or in short called as e-waste, is used to describe obsolete or end of life electronic appliances. There is no generally accepted definition of e-waste around the world. However, e-waste is often misunderstood as comprising only computers and related IT equipments, or worse still, mistaken as e-mail spam. It is universally understood as electronic waste disposed of by end users and includes a wide range of products, from devices to complex goods. Therefore, e-waste comprises both white goods such as refrigerator, washing machine and microwaves and brown goods which consist of TV, radios and computers that have reached their ends for their current holder. E-waste mainly comes from several sources:

- Residue or leftover materials from electronic products manufacturing process.
- Leftover parts or materials or discarded electrical and electronic equipment generated from a repair shop.
- Obsolete electrical and electronic equipment coming from governments, companies and other facilities.

- Obsolete electrical and electronic products mainly from households.

"E-waste" is a one of the rapidly growing problem today in the world. Disposal of e-waste is an being global environmental and public health issue, as this waste has become the most rapidly growing segment of the normal municipal waste stream in the world. E-waste contains hazardous constituent that may negatively impact the environment and affect human health if not properly managed. Due to lack of adequate infrastructure to manage wastes safely, these wastes are buried, burnt in the open air or dumped into surface water bodies. E-waste poses the most direct health risks when it degrades and the internal chemicals are released to the environment.

II Need and Significance of the study

Electrical and Electronics Equipments are made of a multiple of components these toxic substances may have direct impact on human health and the environment if they are not handled properly. This hazard occurs due to the improper recycling and disposal processed used. Public awareness of the e-waste is problem is only a start, the public has to be willing to support the companies that help to properly dispose of the e-waste even if the cost of their products is slightly higher. Consumers hold the power but need to be educated with the facts. The facts are recycling starts with the individual, with a little effort and an internet connection the average individual could learn where to recycle their electronic products. It is livelihood for unorganized recyclers and due to lack of awareness; they are risking their health and the environment as well. This article gives raise to the idea to investigate the Attitude and Skills on E- waste management among undergraduate students.

III Review of Related Literature

Govindarajan,K., and Sivannatham.R(2019) conducted study attitude on E-waste management among undergraduate students in thanjavur district. Normative survey method was adopted in this study. Attitude was the variable used for the study. Totally 320 samples of undergraduate students from government and aided Arts and Science College in thanjavur district of Tamilnadu has been selected. The attitude questionnaire developed by the investigator used the study. The results showed that the research is that there is no significance in attitude of E-waste management in undergraduate students of gender, locality, type of management and subject. Hence the hypothesis of research is accepted.

Md Tasbirul islam & Nazmul Huda (2018), a study on reverse logistics and closed-loop supply chain of waste electrical and electronic equipment (WEEE)/E-waste: A comprehensive literature review. The method involves four steps, the steps were followed and further main types of research in the field of RL and CLSC of E-waste, namely designing and planning of reverse, distribution, conceptual framework and qualitative studies were identified and reviewed.

Brijesh sivathanu (2016) a study on user's perspective: knowledge and attitude towards E-waste. This paper stuggests the various pathways to create awareness so that the attitude of the consumers towards disposal of e-waste can be changed which would be helpful to the

society to handle E-waste properly and focus towards efficient and effective E-waste management.

IV Statement of the problem

The title of the present study is "Attitude and Skills on E- waste management among undergraduate students".

Objectives of the study

- To find the level of Attitude and Skills on E-waste management of undergraduate students.
- To study the difference in Attitude on E-waste management among the Undergraduate students with respect to Gender, Locality, Subject and Types of Institutions.
- To study the difference in Skills on E-waste management among the Undergraduate students with respect to Gender, Locality, Subject and Types of Institutions.
- To find out the relationship between Attitude and Skills on E-waste management of undergraduate students.

Hypothesis of the study

- There is no significant difference in Attitude on E-waste management of the undergraduate students with respect to Gender, Locality, Subject and Type of institutions.
- There is no significant difference in Skills on E-waste management of the undergraduate students with respect to Gender, Locality, Subject and Type of institutions.
- There is significant relationship between Attitude and Skills on E-waste management of undergraduate students.

Methodology of the study

The Normative survey method is adopted for the study. The variables used are the Attitude and Skills.

Population

Undergraduate students of Arts and Science College in thanjavur district are the population of this study.

Sample

The sample consists of 210 undergraduate students from both government and self finance college in thanjavur district.

Tools

The E-Waste Management attitude and skills questionnaire was used to check the awareness of students regarding existence, danger and management of e-waste. The inventory contains 16 and 13 objective items. This was a self developed tool.

Validity and reliability of the tool

The sample reliability is established by test-retest method by the investigator and the reliability co-efficient in found to be 0.78. Hence the tools are highly reliable. The validity of the test was assessed on the basis of the judgment of the experts.

Procedure of data collection

The Attitude and Skills Questionnaire will be given to the selected sample with a request to fill in the required data enclosing a copy of permission letter from the college principal.

V. Data Analysis

Descriptive Analysis

Table-I Mean and SD of variable Attitude and its sub-variables

Variable	Values		
	No.	Mean	SD
Attitude	210	13.25	4.88
Male	107	12.33	3.79
Female	103	12.47	3.88
Rural	106	12.01	3.66
Urban	104	12.88	3.79
Arts	105	12.21	3.40
Science	105	12.48	3.47
Government	108	12.57	3.36
Self finance	102	12.02	3.27

Table-II Mean and SD of variable Skills and its sub-variables

Variable	Values		
	No.	Mean	SD
Skills	210	10.78	3.66
Male	107	9.66	2.58
Female	103	9.79	2.60
Rural	106	9.84	2.33
Urban	104	9.99	2.97

Arts	105	9.46	2.76
Science	105	9.89	2.39
Government	108	9.77	2.18
Self finance	102	9.65	2.23

Differential Analysis

Attitude

Table-III Mean, SD and‘t’ value of Attitude and its sub-variables

Variable	Values			t	S
	No.	Mean	SD		
Male	107	12.33	3.79	1.56	NS
Female	103	12.47	3.88		
Rural	106	12.01	3.66	1.47	NS
Urban	104	12.88	3.79		
Arts	105	12.21	3.40	1.80	NS
Science	105	12.48	3.47		
Government	108	12.57	3.36	1.67	NS
Self finance	102	12.02	3.27		

Skills

Table-IV Mean, SD and‘t’ value of Skills and its sub-variables

Variable	Values			t	S
	No.	Mean	SD		
Male	107	9.66	2.58	1.23	NS
Female	103	9.79	2.60		
Rural	106	9.84	2.33	1.10	NS
Urban	104	9.99	2.97		
Arts	105	9.46	2.76	1.59	NS
Science	105	9.89	2.39		
Government	108	9.77	2.18	1.49	NS
Self finance	102	9.65	2.23		

Correlation Analysis

Table-VIII

Variable	Values

	No.	'r'	S
Attitude and Skills	210	0.72	S
Male	107	0.63	S
Female	103	0.30	S
Rural	106	0.26	S
Urban	104	0.43	S
Arts	105	0.52	S
Science	105	0.47	S
Government	108	0.38	S
Self finance	102	0.32	S

VI. Findings, Suggestions and Conclusion

Findings

Descriptive Analysis

Attitude

- ✓ The level of Attitude on E-waste management of undergraduate students is moderate.
- ✓ Mean score of female Attitude is greater than the male on E-waste management of undergraduate students.
- ✓ Mean score of urban college students Attitude is greater than compared to the rural college students.
- ✓ The students studying in science are at a higher level than the students studying in Arts with respect to Attitude.
- ✓ The students studying in government college is greater than the students studying in self-finance college with respect to Attitude.

Skills

- ➢ The level of Skills on E-waste management of undergraduate students is moderate.
- ➢ Mean score of female Skills is greater than the male on E-waste management of undergraduate students.
- ➢ Mean score of urban college students Skills is greater than compared to the rural college students.
- ➢ The students studying in science are at a higher level than the students studying in Arts with respect to Skills.
- ➢ The students studying in government college is greater than the students studying in self-finance college with respect to Skills.

Differential Analysis

Attitude

- There is no significant difference between male and female with respect to Attitude on E-waste management among undergraduate students.
- There is no significant difference between rural and urban with respect to Attitude on E-waste management among undergraduate students.
- There is no significant difference between arts and science with respect to Attitude on E-waste management among undergraduates students.
- There is no significant difference between government and self finance with respect to Attitude on E-waste management among undergraduate students.

Skills

- There is no significant difference between male and female with respect to Skills on E-waste management among undergraduate students.
- There is no significant difference between rural and urban with respect to Skills on E-waste management among undergraduate students.
- There is no significant difference between arts and science with respect to Skills on E-waste management among undergraduates students.
- There is no significant difference between government and self finance with respect to Skills on E-waste management among undergraduate students.

Correlation Analysis

- There is a significant relationship between Attitude and Knowledge on E-waste management of undergraduate students. Also there exists significance relationship among male, female, rural, urban, arts, science, government and self finance.

Suggestions for the further research

- This study can be extended to higher secondary school students and Engineering students.
- This study is limited only to the selected undergraduate students in thanjavur district only and it to be extended to all types of schools and colleges.
- The present study was carried out during the short period of time with limited samples.
- The findings and conclusion are needed to be verified larger group size of the samples.

Conclusion

While the world is marveling at the technological revolution, countries like India are facing an imminent danger. The magnitude of these problems is yet to be documented. However, groups like Toxic Links India are already working on collating data that could be a step towards controlling this hazardous trade. It is imperative that developing countries and

India in particular wake up to the monopoly of the developed countries and set up appropriate management measures to prevent the hazards and mishaps due to mismanagement of e-wastes. Considering the severity of the problem, it is imperative that certain community based projects and management options are adopted to handle the bulk e-wastes. The result of the research is that there is no significance in attitude and skills of E-waste management in undergraduate students of gender, locality, subject and type of management. Hence the hypothesis of research is accepted.

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