

THE EFFECT OF SECOND-HAND ELECTRICAL/ELECTRONIC APPLIANCES ON THE SOCIETY: A CASE STUDY IN THE WA MUNICIPALITY OF THE UPPER WEST REGION

AGNES GALYUONI¹ & ISSAKA SALIFU²

¹Lecturer, Department of Electrical/Electronic Engineering, Wa Polytechnic, Upper West Region, Ghana

²Tutor, Department of Electrical/Electronic Engineering, Wa Technical Institute, Upper West Region, Ghana

ABSTRACT

The aim of the research was to identify the effects of second-hand electrical/electronic appliances on society. Due to people's lack of knowledge on the effects of second-hand electrical/electronic appliances, they find it comfortable using them. The sample of the study consisted of dealers, repairers, and users of second-hand electrical/electronic appliances in the Wa Municipality, in the Upper West Region. A well- designed questionnaire for dealers, repairers, and users of these second-hand electrical/electronic appliances were used in the collection of data. The data was first collated using Statistical Package for Social Science (SPSS) and later analyzed using several tools including tables and charts. The results showed that second-hand electrical/electronic appliances mostly patronized were television and fridges and the least being printers, scanners and electric heaters. Most of the users of these appliances do not follow any precautions when using them. The users of these appliances reported that their power consumption was very high and consequently they could not easily afford to pay their electricity bills. Besides, a lot of e-waste were being created during the disposal of these appliances which cause a lot of environmental and health problems in the society especially in the Wa Municipality in the Upper West Region. It is therefore concluded that people who earn less go in for these second-hand appliances because they cannot afford to buy the brand new ones and these appliances consume more power thereby increasing their poverty levels. The users also lack much knowledge on the negative effects of these appliances on their lives but only know of them being the source of income as reported by the dealers and repairers hence, the continued purchase and usage of these appliances.

KEYWORDS: Electronic Appliances, Electrical Bills, Health Implications & Responses

INTRODUCTION

The trade and use of second-hand electrical appliances in our homes, offices, and industries (factories) which in fact has a number of effects on us has been in the public spotlight due to different ecological, economic and social reasons. Notwithstanding these reasons, second-hand electrical/electronic appliances pose some problems in our lives. These include; depletion of the ozone layer resulting in increasing ultraviolet (UV) radiation at a ground level causing skin cancer, eye cataracts, damage to the immune system in both animals and human beings. Also, there is high maintenance and running cost increasing poverty level among the users as well as causing harm to the country's economy, fire outbreaks in our homes, offices, and industries destroying human lives, state properties, and personal properties, environmental pollution and, water pollution.

In 2011, there was a fire outbreak in the residence of the former president of Ghana in the person of Flt. Lt. Jerry John Rawlings in which part of the cause was attributed to deterioration of electrical cables and fittings. Besides, the poor nature of our country's (Ghana) economy, citizens that cannot afford to purchase brand new electrical/electronic appliances, however, prefer to buy second-hand electrical/electronic appliances which seems to cost less and can meet their pockets.

However, before anyone of these second-hand appliances can be put into use, it needs to go through several tests which includes; visual inspection and electrical test if it is an electrical appliance. Electrical testing of portable electrical appliances involves;

- Earth bond continuity tests
- Insulation resistance testing and
- Functional checks

It is with this view that an insurance company named Halifax Home Insurance in Canada voiced out their concerns over electrical safety due to a survey that showed that one out of four second-hand electrical appliances failed a standard safety check. On average, 2,500 people are being killed or injured every year in electrical fires and Halifax Home Insurance confirmed that one fifth (1/5) of household fire insurance claims are caused by electrical appliances/equipment.

They are therefore calling on anyone buying or selling second-hand electrical items to ensure that the goods meet the required safety standards. Failure to do so could not only leave the sellers open to prosecution but cause damage to the users' home and put lives at risk. Besides, one of the company's senior underwriter, *Vicky Emmott* commented, "We're concerned that the nations renewed appetite of making money out of old items could lead to a slide in electrical safety standards".

Halifax Home insurance, therefore, recommends the following advice relating to purchasing second-hand electrical items. These include; a proof from the seller that the item meets legal safety requirements, Certified Electrical mark, the British Electrotechnical Approvals Board mark, the British Standard safety mark or British standard number when you buy electrical equipment. Distributors and retailers including second-hand dealers and auctioneers must only sell appliances that are correctly fitted with an approved plug with sleeved pins and the correct fuse. A seller should provide clear wiring instructions for the plug if it is of the rewirable kind.

Besides, the citizens of Ghana especially the people living in Wa Municipality in the Upper West Region, lack the knowledge of the effects of the usage of second-hand electrical/electronic appliances thereby the need to carry out a research on the effects of second-hand electrical/electronic appliances on the society by the researchers in order to ascertain the effects of using second-hand electrical/electronic appliances on the people within the Wa Municipality and also to identify the reasons for using second-hand electrical appliances, health implications on the users and the mode of disposal of these electrical/electronic appliances after they have finished serving their purposes.

It was therefore deemed it necessary for the researchers to carry out a research study in the Wa Municipality, Upper West Region on the issue to find out a lasting solution to the problem.

OBJECTIVES OF THE STUDY

The objectives of the study were

- To identify the reasons for using second-hand electrical appliances.
- To find out whether the use of second-hand electrical/electronic appliances has health implication on the users.
- To find out the mode of disposal of these electrical/electronic appliances after they have finished serving their purposes.

METHODS

Population: The participants of the study were the users, dealers, and repairers of second-hand electrical/electronic appliances in the Wa Municipal District of the Upper West Region in Ghana. The Wa Municipal District as of 2000 has a total population size of 567,583. (Ghana Statistical Service, 2000).

Sampling Procedure and Sample Size: For the purpose of the study, both men and women were used. These comprise users, dealers, and repairers of second-hand electrical/electronic appliances in the Wa Municipality. These groups of people were chosen because they deal in second-hand electrical/electronic appliances and more to the point they were the group the researchers could easily reach and source for information about the study. The dealers and the repairers of second-hand electrical/electronic appliances were one hundred and fifty (150) among the population, therefore, all were considered for the study. The users who were the majority of the population size totaled up to about 283,792. The researchers deemed it wise to use a simple random sampling technique in choosing the sample size for the study. With this, equal chances were given to each member to be included in the sample. In the process of sampling two hundred (200) were chosen for the study. Therefore, the total size of the study was three hundred and fifty (350) comprising fifty (50) repairers, one hundred (100) dealers and two hundred (200) users of electrical/electronic appliances.

Data Collection Techniques: During the data collection stage, the researchers designed three different well-structured closed-ended questionnaires for the various categories of the sample size (users, dealers, and repairers of electrical/electronic appliances) to respond. The questionnaires were sent out to the respondents personally by the researchers with the help of research assistants who were students of the University of Development Studies - Wa campus. On the first day, questionnaires were given out to the literate respondents with some little explanations as to how to respond to the questions.

Responded questionnaires were taken back from the respondents after three days. Also, with the respondents who cannot read and understand the questions were guided individually to respond to the questionnaire. It took the researchers two weeks to finish administering the questionnaire. Fifty (50) questionnaires were given to the repairers and out of which forty-two (42) copies were retrieved. Also, one hundred questionnaires were given to the dealers and ninety-nine copies were retrieved. Besides, two hundred questionnaires were given to the users and out of that one hundred and eighty (180) copies were retrieved.

Data Analysis Materials: The Statistical Package for Social Science (SPSS) was applied in processing information gathered from the questionnaires. All of the information gathered during the administration of the questionnaire was entered into the computer package. Once entry was completed, frequency distributions and their percentages for all variables were generated to enable basic understanding and analysis. Further groupings and analyzing of

variables was also done using the same package. Besides that, various charts were also used in analyzing the data for further clarifications.

RESULTS AND DISCUSSIONS

This section discusses the questionnaire results that were received from the users, dealers, and repairers of second-hand electrical/electronic appliances.

Profile of the Respondents

The researchers used 350 respondents as the sample population for the study. 100 were electrical or electronic appliance dealers, 50 were electrical appliance repairers, whereas 200 of them were users of electrical/electronic appliances as shown in Figure 1.

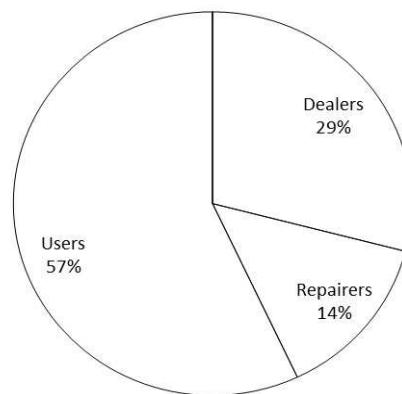


Figure 1: Respondents

Characteristics of Respondents

Table 1 shows the characteristics of the various groups used for the study.

Table 1: Characteristics of Respondents

Characteristics	Dealers (%)	Repairers (%)	Users (%)
Gender			
Male	68.7	92.9	57.8
Female	31.3	7.1	42.2
Total	100.0	100.0	100.0

Benefits Associated with the Use of Second-Hand Electrical/Electronic Appliances

In order to know the benefits associated with the use of second-hand electrical appliances, we asked questions regarding the week sales by dealers and the cost of electricity bill at the month end. The responses to these questions are summarized in Tables 2 and 3 respectively.

Table 2: Week Sales by Dealers

Responses	Frequency	Percent (%)
Below GH¢ 200	39	39.4
GH¢ 200 - GH¢ 250	53	53.5
GH¢ 251 - GH¢ 300	6	6.1
Above GH¢ 600	1	1.0
Total	99	100.0

Table 3: Cost of Electricity Bill at the End of the Month

Responses	Frequency	Percent (%)
Very high	39	21.7
High	89	49.4
Moderate	44	24.4
Low	6	3.3
Missing	2	1.1
Total	180	100.0

The responses of the questionnaire on the benefits of using second-hand electrical/electronic appliances revealed that 53.5% of the dealers of electrical/electronic appliances earn between GH¢200 – 250 within a week sales as shown in Table 2. Eighty-nine (89) respondents representing 49.4% indicated that their electricity bill at the end of the month was high as shown in Table 3.

People’s Perception of Second-Hand Electrical/Electronic Appliances

Repairers and dealers were asked to indicate whether they would encourage people to buy second-hand electrical appliances. The results are shown in Tables 4 and 5 respectively.

Table 4: Encouragement of People to Buy Second-hand Electrical/Electronic Appliances by Repairers

Responses	Frequency	Percent (%)
Yes	20	47.6
No	22	52.4
Total	42	100.0

Table 5: Encouraging the Purchase and Usage of Electrical/Electronic Appliances by Dealers

Responses	Frequency	Percent (%)
Yes	99	100.0
No	0	0
Total	99	100

The responses of the questionnaires that were intended to know the people’s perception about second-hand electrical/electronic appliances also revealed that 100% of the dealers will encourage the people to purchase these appliances while 47% of the repairers will encourage the purchase and usage of second-hand electrical/electronic appliances which are of a higher percentage.

The Most Patronized Second-Hand Electrical/Electronic Appliances

Dealers in the sale of second-hand electrical appliances were asked to point out which electrical/electronic appliances they sell. The result of this question is shown in Figure 2.

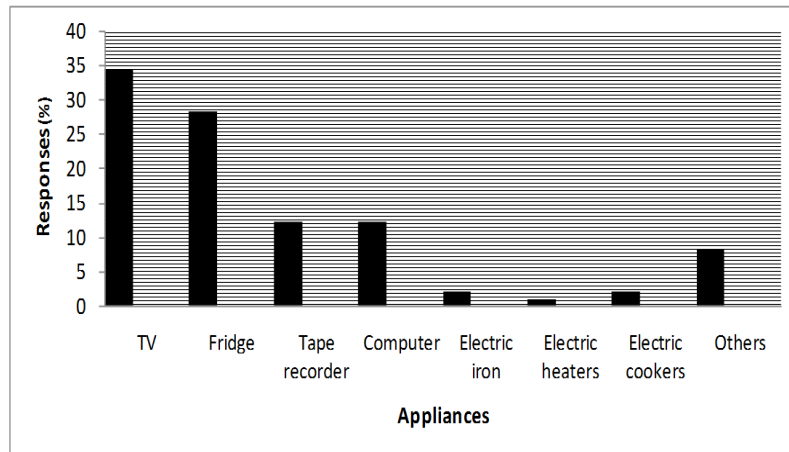


Figure 2: Types of Electrical Appliances Mostly Sold by Dealers

Figure 2 clearly shows that, 34 respondents out of 99 sell TV, followed by the fridge (28 respondents), tape recorder and computer (12 respondents) and the lowest being electric heaters (1 respondent).

Factors Contributing to the Usage of Second-Hand Electrical/Electronic Appliances

The results regarding the respondents’ age, gender, level of education, occupation and one’s income earned per month against the type of appliances people used were analyzed. The analysis is as shown in Table 6.

Table 6: Factors Influencing the Use of Second-Hand Electrical Appliances

		Age	Gender	Highest Level of Education	Users Occupation	Income Earned Per Month by Users
Appliances used by respondents	Pearson Correlation	-.040	.125*	.006	.025	.213**
	Sig. (1-tailed)	.300	.048	.468	.375	.003
	N	176	179	176	169	171

** . Correlation is significant at the 0.01 level (1-tailed).
 * . Correlation is significant at the 0.05 level (1-tailed).

Table 6 portrays that a negative Pearson’s correlation of -0.040 at a 0.300 one-tailed significant level indicated that there was no relationship between age and the choice to use second-hand electrical appliances, however, it must be stated that a positive Pearson’s correlation value of (0.125, 0.006, 0.25 and 0.213) for gender, highest level of education, occupation, and income earned per month variables respectively suggests that at a confidence level of 95% this is statistically significant (p <.001).

Safety Measures to be Observed in Dealing with Second-Hand Electrical/Electronic Appliances

We wanted to know the kind of testing dealers conduct on second-hand appliances before selling to people. We also wanted to know if their businesses were registered. The results are summarized in Tables 7 and 8.

Table 7: Safety Checks on Appliances

Responses	Frequency	Percent (%)
Earth bond continuity tests	0	0
Insulation resistance testing	0	0
Functional checks	99	100.0
Total	99	100.0

Table 8: Number of Registered Businesses

Responses	Frequency	Percent (%)
Yes	84	84.8
No	15	15.2
Total	99	100.0

The results in Table 7 indicate that none of the dealers perform earth bond continuity tests and insulation resistance test on their appliances before selling, rather all of them (100%) perform functional checks before selling their appliances to the users. 84.8% of businesses were registered while 15.2% of business was not registered as indicated in Table 8.

Implications on the Usage of Second-Hand Electrical/Electronic Appliances

Users were asked to indicate what they do to their appliances whenever they develop a fault. We were curious to find out whether the usage of second-hand appliances has any health implications associated with users. Tables 9 and 10 show the analyzed results of these questions.

Table 9: What Users do with Appliances when they Develop Fault

Responses	Frequency	Percent (%)
Discarded	11	6.1
Repaired	154	85.6
Sell to scrap dealers	11	6.1
Total	180	100.0

Table 10: How Often Users Fall Sick

Responses	Frequency	Percent (%)
Very often	21	11.7
Often	111	61.7
Not at all	46	25.6
Total	180	100.0

Majority of the users always repair their appliances whenever it developed faults as compared to those who either discard or sell to scrap dealers for recycling purpose, (85.6%) and (6.1%) respectively as shown in Table 9. 61.7% of the users often fall sick while 25% responded that, they do not fall sick at all when using second-hand electrical/electronic appliances as indicated in Table 10.

CONCLUSIONS

Second-hand electrical/electronic appliances usage, trading and recycling as the spotlight of the citizens of Ghana especially the people of Wa Municipality in the Upper West Region is due to the following reasons which were revealed in the responses of the questionnaire designed for the study:

Some of the responses show that repairers, dealers, and users do not have enough knowledge into how second-hand electrical/electronic appliances can affect their lives both positively and negatively. Energy consumption of these appliances was very high and most of the users could not afford to pay their electricity bills even though the initial costs of these appliances were low. Users of these appliances after realizing the effects of them are saying they will not encourage people who are not using them to go in for them.

The following suggestions are made to the dealers, repairers, and users of second-hand electrical/electronic appliances:

- Users of second-hand electrical/electronic appliances should try to avoid using them and rather use brand new electrical/electronic appliances to avoid higher electricity bills and risk of them causing fire outbreaks and injuries to human life.
- Dealers of these appliances should always perform safety checks to ensure their proper performance before selling them to their customers.

ACKNOWLEDGEMENTS

We wish to acknowledge the contribution of all who helped in diverse ways to make this work a success. Our sincere thanks to Dr. Albert Awopone for his advice, editing sections of the work and his constructive criticisms.

REFERENCES

1. ABS Alanskan (2008). Average Power Consumption of Household Appliances. Retrieved March, 2010, from <http://www.absak.com/library/power-consumption-table>.
2. Greenpeace International (2008). Poisoning the Poor-Electronic Waste in Ghana. Retrieved March, 2009, from <http://www.greenpeace.org/international/news/poisoning-the-poor-Electronic>.
3. Ghana Statistical Service. Census. Retrieved September, 2000, from <http://www.statsghana.gov.gh>.
4. G. M. Herrmann (1991). Women's Exchange in the American Garage Sale: Giving Gifts and Creating Community in Gender and Consumer Behavior. pp 23-243.
5. B. K. Briden, I. Labunska, D. Santillo and P. Johnston. (2008). Chemical Contamination at E-waste Recycling and Disposal Sites in Accra and Koforidua, Ghana.
6. J.C. Courless (1982), "Clothing and Textiles: Supplies, Prices and Outlook for 1982", Family Economics Review, Spring. Vol.:4, No.:112, pp. 3-9.
7. N. Darnton and K. Springen (1991), "I Can get it for you Resale", Newsweek. Vol.:22, No.:117, pp. 59.
8. P.A. Dreyfus (1980), "First-Class Secondhand Clothes", Money Magazine. Vol.:9, pp. 63-65.
9. S. P. Hutchens and J. M. Hawes (1982), "The Salience of Low Price in the Marketing of Remanufactured Consumer Durable Goods", Development in Marketing Science. Vol.:5, pp. 79-81.