A Study on Awareness About Green Computing Among Women Graduates – An Emipirical Study

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ABSTRACT *Green Computing is the emerging computing technology. It is mainly used to save and protect environment as well as optimize energy consumption and try to keep green environment. It also refers to environmentally sustainable computing. Saving energy or reduction of carbon track is main aspects of Green Computing. It focuses on ways in reducing overall environmental impact. Its main purpose is to find and promote new ways of reducing pollution, discovering alternative technologies, and creating more recyclable products. This research is mainly focusing on checking awareness and usage of green computing among women graduates. A questionnaire was prepared to check the level of awareness and usage of green computing.*

Introduction

Green computing becomes an innovative way on how technology is utilized in every stage start from design to manufacturing, to use of equipment and then safely disposing off computers, related devices, and networking and communication equipments efficiently and effectively with negligible or no impact on the environment. It saves energy, resources, money and reducing the use of environmentally hazardous materials, promoting the use of recyclable materials, minimizing use of non-biodegradable components and encourages the use of sustainable resources.

Statement of the problem

Now infrastructure is becoming the bottleneck in IT environment and the reason for this is due to growing computing needs, energy cost and global warming. Information technological devices are upgraded rapidly due to the need for speed, flexibility, simplicity and cost effectiveness, thus outstanding the previous technology. Hence we need to implement energy efficient CPU's, servers and peripherals with reduced resource consumption and proper disposal of e-waste. With this background, this paper studies consumer's awareness and usage of green computing among women graduates.

Objectives of the study

1. To know the awareness of green computing among women graduates.
2. To understand the usage of green computing among women graduates.

Review of literature

P. Kiruthiga and **T. Vinoth kumar (2014)**[1] in their study on **"Green Computing – An Eco friendly Approach for Energy Efficiency and minimizing E-Waste"** have examined green computing need, challenges and practices. They concluded that appropriate regulations, user education and awareness and recycling are the solutions to reduce power consumption and minimize environmental waste.

Tariq Rhim Soomro and Muhammad Sarwar (2012)[2] have made a study on **"Green Computing : From Current to Future Trends"** and explored the current trends in green computing like energy consumption , e-waste recycling, data centre consolidation and optimization, virtualization and IT products and eco-labeling and challenges. And

also future trends in green computing as cloud computing, power management tools, data compression and applications. They suggested Government regulations are pushing vendors to act green, behave green, do green, go green, think green and reduce energy consumptions.

P. Kiruthiga and T. Vinoth kumar (2014)[1] "Green Computing – An Eco friendly Approach for Energy Efficiency and minimizing E-Waste" International Journal of Advanced research in Computer and Communication Engineering, Vol.3, Issue 4, April 2014.

Tariq Rhim Soomro and Muhammad Sarwar (2012)[2] "Green Computing: From Current to Future Trends" World Academy of Science, Engineering and Technology, Vol.6, 2022-03-20.

Methodology

This study is based on Primary data collected from 50 respondents by means of a structured questionnaire. Random sampling technique was applied and statistical tools like Percentage Analysis and Chi-Square were carried out to analyze the data and draw interpretation.

Analysis and Interpretation

Table 1: Age of the respondents

	No.	Percentage
20 – 25 years	10	20.0
26 – 30 years	24	48.0
30 years and above	16	32.0
Total	50	100.0

Majority (48%) of the respondents belong to the age group of 26 to 30 and 32% of them are 30 years and above and 20% of them are to 20 to 25 years of age. **Hence majority of the respondents belong to the age group of 26 to 30 years.**

Table 2: Monthly income of the family

	No.	Percentage
Less than Rs. 20,000	17	34.0
Rs. 20,001 – Rs. 30,000	21	42.0
Rs. 30,001 – Rs. 40,000	9	18.0
More than Rs. 40,000	3	6.0
Total	50	100.0

42% of the respondents have a family monthly income of Rs. 20001 to Rs. 30000 and for 34% their family monthly income is less than Rs. 20000, 18% of the respondents have a monthly income of Rs. 30,001 to Rs. 40,000 and 6% of them have a monthly income of more than Rs. 40,000. **Majority of the respondents have a family income of Rs. 20001 to Rs. 30000 per month.**

Table 4: Usage of computing device

	No.	Percentage
Laptop	11	22.0
Desktop	22	44.0
Mobile	15	30.0
Net book	2	4.0
Total	50	100.0

44% of the respondents use desk tops, 30% of the respondents use mobile phones, 22% of them use laptop and 4% of them use net book. Hence, majority of the respondents use desktop.

Table 5: More than one computer

	No.	Percentage
yes	4	8.0
no	46	92.0
Total	50	100.0

92% of the respondents have one computer and 8% of them are having more than one computer. **Majority of the respondents have one computer only.**

Table 6: Familiarity with the operating system

	No.	Percentage
yes	45	90.0
no	5	10.0
Total	50	100.0

90% of the respondents are familiar with the operating system and 10% of the respondents are not familiar with the operating system. **Hence the majority of the respondents are familiar with the operating system.**

Table 7: Type of operating system used

	No.	Percentage
Windows	42	84.0
Dos	3	6.0
Total	45	90.0

Among 45 of the respondents, 42 respondents use windows operating system and 3 of them are using Dos operating system. **Hence, majority of the respondents are using windows operating system.**

Table 8: Usage of printer

	No.	Percentage
yes	38	76.0
no	12	24.0
Total	50	100.0

Majority of the respondents use printer and 24% of them do not use printers. **Hence, majority of the respondents use printer.**

Table 9: Types of printer

	No.	Percentage
Inkjet	12	24.0
Desk jet	5	10.0
Laser jet	21	42.0

Among 38 of the respondents, 21 of them use laser jet, 12 of them use inkjet and 5 of them are using desk jet. **Hence, majority of the respondents are using laser jet printer.**

Table 10: Awareness of green computing

	No.	Percentage
yes	17	34.0
no	33	66.0
Total	50	100.0

66% of the respondents are not aware about green computing and 34% of them are aware about green computing. **Majority of the respondents are not aware about green computing.**

Table 11: Level of awareness about green computing

	No.	Percentage
Familiar with the term green computing	4	8.0
Environmentally sustainable computing	10	20.0
To reduce the hazardous material	3	6.0
Total	17	34.0

Among 17 of the respondents 10 of them are aware about green computing as environmentally sustainable computing, 4 of them are just familiar with the term green computing and 3 of them are aware that the goal of green computing is to reduce the hazardous material. **Hence, majority of the respondents are aware about green computing as environmentally sustainable computing.**

Table 12: Awareness about toxic chemicals used in computer

	No.	Percentage
yes	36	72.0
no	14	28.0
Total	50	100.0

Majority (72%) of the respondents know that toxic chemicals are used in manufacturing computer and 28% of them do not know about it. **Hence, majority of the respondents know that toxic chemicals are used in manufacturing computer.**

Table 13: Knowledge about biodegradability of parts of the computer

	No.	Percentage
Yes	50	100.0
no	0	0

All the respondents know that the parts of the computer are not biodegradable.

Table 14: Recycling and disposing

		Yes	No
a.	Familiar with recycling of computing devices	17	33
b.	Informal disposing is harmful to our environment	50	-
c.	Formal disposing is costly but sustainable to environment	50	-

100% of the respondents know informal disposing of computing devices is harmful to the environment and formal disposing is costly but sustainable. 33 respondents are not familiar with recycling of computing devices. **Hence majority of the respondents know informal disposing of computing devices is harmful to the environment and formal disposing is costly but sustainable.**

Table 15: Awareness and usage of Green Computing

		Yes	No.
a.	Are you using computer more than 5 hour per day?	44	6
b.	Do you turn off your computer when it is not in use?	50	-
c.	When you purchase new electronic device do you consider energy star logo?	50	-
d.	Have you any product with energy star logo?	23	27
e.	Are you taking efforts to saving energy at home?	50	-
f.	Do you always consider about cost while purchasing computer?	45	5
g.	Have you seen or heard about any campaign about Green Computing	2	48
h.	Have you ever disposed of any computing device?	13	37
i.	Do you use screen savers on your computer?	50	-
j.	Does screen saver save energy when computer is idle?	37	13
k.	Are you printing more than 20 pages daily	12	38
l.	Is cartridge refilling greener than replacing it?	50	-

All the respondents opined that they turnoff the computer when it is not in use, they consider energy star logo while purchasing new electronic device and take efforts to save energy at home by using screen savers on their computer and they said cartridge refilling is greener than replacing it. 45 of them consider cost while purchasing computer, 44 of them use computer more than 5hours per day and 37 respondents have said that screen savers save energy when computer is idle. 23 respondents have products with energy star logo. **Hence, majority of the respondents turnoff the computer when it is not in use, consider energy star logo while purchasing computer, take efforts to save energy at home, use screen savers on their** computer and have opined that cartridge refilling is greener than replacing it.

Chi-Square Test

χ^2 is used to study the relationship between the age of the respondents with awareness about green computing, knowledge about toxic chemicals used in manufacturing computer, knowledge about parts of the computers are not biodegradable, familiarity with recycling of computing devices and familiarity with formal and informal disposing.

Null Hypothesis

There is no significant relationship between age of the respondents and the study factors.

Age of the respondents Vs Study factors

Study factors	χ^2 Value	df	Sig
Awareness of Green Computing	27.904	2	Significant
Known about toxic chemicals used in manufacturing computer	35.119	2	Significant
Known about parts of the computers are not biodegradable	23.214	2	Significant
Familiarity with recycling of computing devices	27.904	2	Significant
Familiar with formal and informal disposing	8.818	2	Not Significant

The calculated χ^2 value has been higher (27.904, 35.119, 23.214, 27.904) than the table value (9.210) at 1% level of significance. It is inferred that there is significant relationship between the age of the respondents and awareness of green computing, known about toxic chemicals used in manufacturing computer, known about parts of the computers are not biodegradable and familiarity with recycling of computing devices. **Hence the null hypothesis is rejected.** The calculated χ^2 value (8.818) has been less than the table value (9.210) at 1% level of significance as leading to the inference that there is no significant relationship between the age of the respondents and familiarity with formal and informal disposing. **Hence the hypothesis is accepted.**

Conclusion

The study on **"AWARENESS AND USAGE OF GREEN COMPUTING AMONG WOMEN GRADUATES"** in Coimbatore helped in identifying their knowledge about green computing, the source of information and their opinion about green computing. IT industry is putting efforts in all its sectors to achieve Green computing. Government regulations pushing vendors to act green, behave green, do green; think green, use green to reduce energy consumptions and e-waste. So there is need for more research in this discipline.

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