

ATTITUDES REGARDING GREEN COMPUTING: A STEP TOWARDS E-WASTE REDUCTION

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Computers today are an essential part of individuals' lives all around the world; however, these tools are extremely toxic to the environment given the materials used, limited battery life and technological obsolescence. Although computer manufacturers are working to build "green" computers, a large part of limiting such hazardous wastes rests with consumers when purchasing them. Hence, the purpose of the study was to determine if information presented to consumers would influence their attitudes regarding green computing and purchases. Given that two-thirds of Americans are not practicing sustainable behaviors, the amount of e-waste in the form of computers, tablets, and mobile phones will continue to increase.

Purpose

The purpose of the study was to determine if information presented to consumers would influence their attitudes when purchasing computers. Specifically, the objectives of the study were to:

1. Determine consumers' attitudes towards green computing habits,
2. Determine consumers' demographic characteristics, and
3. Determine changes in consumers' attitudes regarding green computing habits when presented with information.

A self-administered questionnaire was developed to determine consumers' attitudes toward green computing, e-waste disposal and demographic characteristics. A convenience sample of students enrolled in a southwestern university was surveyed.

Results

Two hundred and fifty-seven respondents completed the survey. Regarding gender the majority were female (64.2%), single (50.2%) with an annual income of less than \$20,000 (27.6%). The remaining majority (53.3%) reported annual incomes between \$20,000 and under \$100,000. Regarding ethnicity, over half (52.1%) were White, followed by Hispanic (21.4%) and Asian (10.2%).

Regarding attitudes toward green computing and purchases most respondents agreed and strongly agreed with statements regarding putting their computer into sleep mode (68.9%), wished their computer was recyclable (79.8%), turned their computer off when not in use

(76.3%), desire computers with recyclable parts (86%), wanted organizations to have a policy to dispose of computers properly (87.9%), desired reduced packaging for computers (77.4%), looked for power saving features when buying a computer (70.8%), and thought that companies should provide free e-waste disposal and recycle programs (84.4%). Regarding computers toxicity to the environment, approximately 34 percent were neutral while 38 percent agreed with this statement. Regarding whether a computer's carbon footprint was important when shopping for one, most respondents were either neutral (34.6%) or agreed (35.4%) to this. The response was similar for upgrading computers to become greener (34.6% neutral; 31.9% agreed) and for the statement regarding looking for computers that use less energy when shopping (26.5% neutral; 40.1% agreed). Regarding battery use, 51 percent were neutral regarding the use of eco-friendly batteries. Reliability testing resulted in a Cronbach Alpha coefficient of .92

Regarding attitudes towards disposing of e-waste most respondents felt the best option was to take the item to a recycling center (47.1%). Most respondents (30.4%) thought that computers end up in landfills; however, approximately 23 percent thought that the metals were extracted. Almost half (49.8%) noted that it was important to keep e-waste out of landfills because hazardous substances leach into waterways while (31.5%) felt it was dangerous to human and animal health.

Hypothesis Testing

It was hypothesized that consumers' attitudes toward green computing would be more positive after reading the information on computer toxicity. To test the hypothesis, paired T-tests were conducted on each of the statements in the scale regarding attitudes toward green computing before and after reading the informational brief on computer toxicity. Results showed significant differences at the $p < .05$ level for 12 of the 16 statements. In all, respondents were more in agreement with the statements after reading the informational brief. Means increased for all the statements following the informational brief with the majority increasing significantly. Means did not change significantly for statements regarding turning off the computer when not in use, having computers made with recycled parts, the importance of power saving features and companies providing free e-waste disposal.

Implications

Most importantly, consumers need to be educated regarding the toxicity of computers and the problems of e-waste. This education would best be carried out by public policy holders, educational institutions and various non-profit agencies such as the Green Electronics Council. Additionally, manufacturers that subscribe to EPEAT should develop labeling and symbols that are incorporated into packaging and product design to further communicate their support of green computing initiatives. Further, these manufacturers should communicate this distinction as a point of brand differentiation when developing advertising messages. Additionally, product strategies should include educational seminars provided to resellers in the form of employee training so that they are better able to communicate features and benefits of "green" computer brands and models to consumers. Information should be provided by manufacturers of recommended repair facilities in computer product packaging materials. Manufacturers should work to extending the life of computers by allowing upgrades so that a five year old computer can still be repaired rather than replaced.