

Gender Differences in Computer Ethics among Business Administration Students*

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Abstract

Because of the various benefits and advantages that computers and the Internet offer, these technologies have become an essential part of our daily life. The dependence on these technologies has been continuously and rapidly increasing. Computers and the Internet use also has become an important part for instructional purposes in academic environments. Even though the pervasive use of computers and the Internet has many benefits for almost everyone, but it has also increased the use of these technologies for illegal purposes or unethical activities such as spamming, making illegal copies of software, violations of privacy, hacking and computer viruses. The main purpose of this study is to explore gender differences in computer ethics among Business Administration students and examine their attitudes towards ethical use of computers. Results from 248 students in the Department of Business Administration at a public university in Turkey reveal that significant differences exist between male and female students' attitudes towards ethical use of computers.

Keywords: computer ethics, gender differences, business administration

JEL Code: Z00, M14, L2

1. Introduction

The effects of computers and the Internet on personal lives and societies have been many and profound. Computers and the Internet have changed the way we live, the way we get education, the way we communicate, the way we make business. These technologies have become an integral part of modern society. Today, many businesses depend on computers and the Internet for day to day operations. These technologies have increasingly become important necessity in education and industry as well as in daily life. There is no doubt that these technologies have had considerable impact on our lives. However, the tradeoff between the benefits and the dangers for a person or a society is controversial. The widespread use of computers and the Internet has various benefits and advantages to many people, however, also has increased the use of computers for illegal purposes or unethical activities such as piracy, violations of privacy, spamming, making illegal copies of software, hacking, computer viruses, unauthorized access and use of computer systems (Banerjee et al., 1998; Mason, 1986; Lee and Chan, 2008; Masrom et al., 2008). Information technology-related ethical issues are many and various. Mason (1986) was summarized ethical issues related to information technology usage by means of an acronym - PAPA (Privacy, Accuracy, Property, and Accessibility).

Technological changes penetrate societies faster than new attitudes are formed for them or legal and ethical codes are adopted (Bercu, 1991). Technological developments create new opportunities

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for action and new sets of choices that are ultimately of a moral nature (Mullen and Horner, 2004). As living in the information age, we constantly faced with important technological changes and the need to create new attitudes towards new situations arose from the computer technology (Masrom et al., 2008). As the use of computers and the Internet has become widespread, misuses of these technologies have also increased dramatically (Banerjee et al., 1998). The easy of reaching, storing, changing and transmitting information provided by computers and the Internet has made many types of illegal and unethical behaviors much easier to commit, particularly among students in the academic environments (Abdul Karim, Zamzuri and Nor, 2009). Students enter universities from different backgrounds with different experiences and many students are unaware of ethical issues of computer usage such as software piracy (Cohen and Cornwell, 1989). According to Calluzzo and Cante (2004) students had misconceptions about what represented ethical and unethical behaviors in the use of software and information technology and systems.

There are some important studies about computer ethics awareness and attitudes among university students in the developed countries. These studies investigated the effects of various independent variables (such as gender, age, study majors, PC ownership and PC experience) on students' attitudes towards ethical use of computer ethics. However, related studies about computer ethics awareness and attitudes among university students in the developing countries are limited.

Gender is one of the most heavily researched variables in the literature of ethics. There are many studies that have investigated the role of gender in ethical decision making, beliefs, perceptions and attitudes. However, there is a debate about whether females are more ethical than males in the literature. Some studies found that females are more concerned about ethical issues than males. On the other hand, some researchers claim that gender has no significant effect on ethical judgements. (Glover et al., 2002) Although research on "gender and ethics" and "gender and information technologies usage" has increased, a few of the studies are available about gender issues in computer ethics.

Given these issues, the main purpose of this study is to investigate the role of gender in ethical use of computers among Business Administration students. The study was conducted among undergraduate students in the Department of Business Administration at a public university in Turkey.

2. Students and Ethics

The word "ethics" comes from the Greek word "ethos" meaning "character" or "custom" (Zopiatis and Krambia-Kapardis, 2008). As a philosophical subject, ethics is a field of study about decision making and actions of free individuals. Ethics helps people to make the correct decision when faced with alternative courses of action or alternative goals to pursue (Laudon, 1995). The American Heritage Dictionary defines the term "ethics" as "The rules or standards as governing the conduct of a person or the members of a profession". Ethics awareness and ethical attitudes among undergraduate students in different fields of study have been the subject of several studies. A considerable amount of studies has been made for the purpose of obtaining undergraduate students' views and attitudes on acceptable ethical behaviors. These studies reveal that there is a relationship between ethical attitudes of students and some of their demographic characteristics such as gender, age, education, major, family income, culture, religion, father's occupation, and university type etc. There are some conflicting results in the literature about the effects of demographic characteristics on attitudes towards ethical behaviors.

3. Gender and Ethics

There are various influential factors that affect ethical decision making, depending on the particular scenario, or ethical issue, involved (Kreie and Cronan, 1998). One of these factors is individual characteristics such as gender, age and religiosity. According to Khazanichi (1995) individual factors could be the most powerful determinants of personal ethical standards. Gender

is one of the most researched demographic variables in the literature of ethics in evaluating ethical perceptions and judgments (Roxas and Stoneback, 2004).

Research on gender and ethics relations has focused on two areas: willingness to behave unethically and perceptions and judgments about an ethical situation (Roxas and Stoneback, 2004). Investigations of gender differences in ethical perceptions among students have given conflicting results: some studies found that females are more ethical than males, others found no effect. Therefore the gender issue in ethical research is still a matter of controversy. (Eaton and Giacomino, 2001; Becker and Ulstad, 2007; Atakan et al., 2008)

McNichols and Zimmerer (1985) found that there was no significant difference in the ethical beliefs of male and female students from survey of an 1178 undergraduate students. Tsalikis and Ortiz-Buonafina (1990) obtained that males and females have similar ethical beliefs, and they process ethical information similarly from a survey study of 175 business students.

Ruegger and King (1992) surveyed a large sample of 2,196 students enrolled in business courses and found that gender was a significant factor in determination of ethical conduct. They concluded that females are more ethical than males in their perception of business ethical situations.

Ford and Richardson (1994) reviewed the empirical literature in order to assess which variables are postulated as influencing ethical beliefs and decision making. They found that gender was reported in more empirical studies than any other single variable. They reported that seven of fourteen studies reveal that females are likely to act more ethically than males; at least in some situations. However, seven other studies found that gender had no impact on ethical beliefs (Ford and Richardson, 1994).

Based on the meta-analysis of empirical studies from 1985 through 1994, Borkowski and Ugras (1998) reported that female students exhibit stronger ethical attitudes than male students.

Albaum and Peterson (2006) surveyed 2942 undergraduate business students from 58 universities and colleges in 32 states in the US and found that females are significantly more ethically inclined than male participants.

Becker and Ulstad, (2007) found that female students find the cheating behaviors to be much less acceptable than do male students in their study.

Atakan et al. (2008) investigated the ethical perceptions of the Turkish university students and their study revealed that female students have more ethical perceptions about the Turkish business climate, behavior of employees, and the ethicalness of the behavior of the employees in comparison with their male counterparts. Aydemir and Demirci (2008) surveyed 701 students in Turkish public universities and found that female students are more ethical than male students.

There are different theoretical explanations why males and females exhibit different ethical behaviors. According to gender socialization approach, males and females have distinctive different values and traits due to gender creating different moral orientations and resulting in different decisions and practices (Roxas and Stoneback, 2004). The gender socialization approach suggests that the gender brings different values and traits to their work roles. The gender socialization approach assumes differences in willingness to be unethical will exist among men and women in the same occupation (Betz, O'Connell, and Shepard, 1989). Many ethics studies that investigate gender differences find females to be more caring, more concerned with relationships, more likely to define themselves through relationships, and more prone to behaviors that support relationships which are likely to gain approval by others (McCabe et al., 2006). Females may be conditioned to reject less ethical actions to obtain desired outcomes because they have been conditioned to take actions which gain the approval of others. On the other hand, males may be

conditioned to accept less ethical actions to obtain desired outcomes because they have been conditioned to be more aggressive and competitive (Becker and Ulstad, 2007).

According to Gilligan (1977), whose research was an extension of gender socialization theory (Dawson, 1995), males and females have had very different moral orientations, with males being more "justice" oriented and females being more "cause" oriented (Albaum and Peterson, 2006). Although males conceptualize moral questions as problems of rights and obligations, females conceptualize them as problems of care involving empathy and compassion (Betz, O'Connell and Shepard, 1989).

Theory of cognitive moral development by Kohlberg (1969) suggests that the moral reasoning of males and females is based on justice considerations (Albaum and Peterson, 2006). According to the theory of cognitive moral development, any individual, irrespective of gender, progresses through six stages in their development of moral reasoning (Robin and Babin, 1997).

4. Gender and Computer Ethics

Computer ethics is a branch of applied philosophy which deals with how computer users should make decisions regarding professional and social conduct.

Moor (1985) gave a broad and influential definition of computer ethics as "computer ethics is the analysis of the nature and social impact of computer technology and the corresponding formulation and justification of policies for the ethical use of such technology". Bynum (2001) has carefully documented and explored the history of computer ethics. Even though he didn't use the term "computer ethics", computer ethics was created as a field of scholarly research by Norbert Wiener in 1940s (Bynum, 2001). In the 1970s Walter Maner first used the term "Computer Ethics" to refer to "ethical problems aggravated, transformed or created by computer technology" (Kallman, 1991; Bynum, 2001) After since, interest in this area as an important field of research has been growing (Kallman, 1991).

The Computer Ethics Institute has defined the ten commandments of computer ethics as follows;

1. Thou shalt not use a computer to harm other people.
2. Thou shalt not interfere with other people's computer work.
3. Thou shalt not snoop around in other people's computer files.
4. Thou shalt not use a computer to steal.
5. Thou shalt not use a computer to bear false witness.
6. Thou shalt not copy or use proprietary software for which you have not paid.
7. Thou shalt not use other people's computer resources without authorization or proper compensation.
8. Thou shalt not appropriate other people's intellectual output.
9. Thou shalt think about the social consequences of the program you are writing or the system you are designing.
10. Thou shalt always use a computer in ways that ensure consideration and respect for your fellow humans.

There are various studies related to ethical issues in the use of computer technology. However, the topic of gender has received relatively little attention in these studies (Adam, 2008, 589). Most of these gender-related computer ethics studies found that females are more ethical than males in issues of computer ethics.

Khazanchi (1995) investigated whether gender differences had an influence on recognizing unethical computer usage behaviors during in the use and development of information technology. His study results show that females are better able to recognize unethical actions described in seven information systems scenarios involving disclosure, social responsibility, integrity, conflict of interest, accountability, protection of privacy, personal conduct than males.

Sims, Cheng and Teegen (1996) surveyed undergraduate and graduate students to develop a profile of those who illegally copy software. They found significant differences between males and females. In their study, males were found to pirate software more frequently than females.

Adam (2001) has addressed the subject in terms of feminist ethics as an issue of equality. Feminist ethics argues that traditional ethics is manly and fails women. Therefore, aim of the feminist ethics is to create a gender-equal ethics. Adam argues that feminist ethics can help us to understand gender issues in computer ethics.

McCarthy, et al. (2005) surveyed undergraduate and graduate computer information systems (CIS) students in the USA and concluded that significant differences existed between male and female CIS students in their ethical beliefs regarding information technology usage.

Masrom, et al. (2008) surveyed 159 undergraduate computer science students at two public Malaysian universities and found that there was a significant difference between male and female undergraduate students regarding ethical awareness of computer use.

Akbulut, et al. (2008) surveyed a sample of 559 Turkish undergraduate students to study whether gender, program of study and PC experience have an influence on unethical computer using behaviors of undergraduate students in a faculty of education, in Turkey. They found significant differences between males and females, males outperforming females in terms of unethical judgments. Akbulut, et al. (2008) also found that females tend to judge unethical behaviors consistently across different departments while males' ethical judgments differed based on the department.

Beycioğlu (2009) surveyed students in a faculty of education, in Turkey. He found that the participating female candidate teachers' ethical judgments on computer use were significantly different than male candidate teachers'. It is found by this study that prospective female teachers were more concerned about ethical issues than male counterparts.

Hay, et al. (2001) questioned 108 UK/Irish and Malaysian background undergraduate students and observed minimal differences between genders, in terms of ethical perceptions in computer-related situations. They concluded that gender doesn't appear to significantly affect perceptions of ethical behavior in computer-related situations.

Calluzzo and Cante (2004) surveyed 169 graduate and undergraduate students with a questionnaire consisting of 11 statements and found that there is no significant difference between ethical behavior of males and females regarding information technology and software use.

Siponen and Vartiainen (2005) explored the attitudes to and factors affecting the unauthorized copying of computer software of Finnish university students. They surveyed 249 students in two different faculties which are the faculty of natural sciences and the faculty of technology in Finland. Their study results show that 72.5% of their respondents reported copying unauthorized computer software. Even though Siponen and Vartiainen (2005) did not find gender differences in attitudes towards the unauthorized copying of software, they found that gender and committing the act of copying unauthorized software are dependent. In their study, it is found that 80.8% of men and 37.2% of women reported copying unauthorized computer software.

5. Research Methodology

5.1. Participants

A convenience sampling technique was used to obtain the data needed for the study. This study was conducted in the spring semester of 2009. A total of 307 full time students of the Department of Business Administration were asked to respond to the questionnaire. The total number of questionnaires used after the exclusion of missing values was 248. Sample characteristics are provided in Table 1.

Table 1: Characteristics of participants

	Frequency	%
Gender		
Male	92	37,1
Female	156	62,9
Age		
17-20	130	52,4
20-24	118	47,6
Academic Level		
Freshman	110	44,4
Sophomore	48	19,4
Junior	52	21,0
Senior	38	15,3
Duration of Computer Usage in a Week		
1-6 hours	112	45,2
> 6 hours	136	54,8
Internet Experience		
1-4 years	110	44,4
> 4 years	138	55,6
E-Mail Users		
Yes	233	94,0
No	15	6,0
Internet shopping		
Yes	52	21,0
No	196	79,0

5.2. Hypothesis

The main purpose of this study is to examine whether gender differences influence attitudes of Business Administration students on issues of computer ethics and the following hypothesis is proposed.

H₀: Female and male Business Administration students have the same attitude towards ethical use of computers.

5.3. Instrument

The questionnaire used in this study is comprised of two parts. The first part was developed to collect demographic information. The second part consists of 28 items measuring computer ethics awareness. 10 items in the second part of the questionnaire are adapted from "Ten Commandments of Computer Ethics". Remaining 18 items are adapted from "unethical computer using behavior scale (UECUBS)" developed by Namlu and Odabaşı, 2009. Respondents answered each item in the second part of the questionnaire on a five-point scale ranging from 1 (Strongly Disagree), 2 (Disagree), 3 (Neutral), 4 (Agree) to 5 (Strongly Agree).

5.4. Analysis

Data first were entered to MS excel and was later transferred to SPSS 17.0. All questionnaires that contain missing values were excluded from the analysis. The total number of questionnaires used for analysis after the exclusion of missing values was 248. The data were analyzed in SPSS 17.0 by using descriptive statistics and t-test.

5.5. Results and Discussions

As can be seen from the Table 2, mean score of male students is greater than mean score of female students for every item. Results of two sample t-test comparing the attitudes of males and females regarding various issues of computer ethics reveal that there was a significant difference in 20 of the 28 items between male and female students' responses (18 of these differences at the 5% level

and 2 of them at the 10% level). These results show that female students are more sensitive than male students regarding to unethical use of computers. The result of this study is consistent with the previous studies in direction: the female behavior was seen as more acceptable than the male in information technology usage. Descriptive statistics about male and female students' ethical attitudes towards computer usage and t-test results are presented in Table 2.

The lowest mean score of males was 1.18 corresponding to "Use a computer to steal." and "Sending one's personal information to a web page without permission." Female students' mean scores for these items were 1.04 and 1.12 respectively. The highest mean scores of males were 2.79 and 2.65 corresponding to "Copying licensed CDs, DVDs" and "Copy or use proprietary software for which you have not paid." items respectively. The item having the highest mean scores were the same for male and female students. Female students' mean scores of these items were 2.3 and 1.88 respectively. The highest difference between male and female mean scores was 0.77 corresponding to "Copy or use proprietary software for which you have not paid.". The lowest difference between male and female students' mean scores was 0.06 corresponding to "Sending one's personal information to a web page without permission."

Table 2: Descriptive Statistics and Comparison of Computer Ethics Awareness by Gender

	Male		Female		p
	Mean	S.D.	Mean	S.D.	
Use a computer to harm other people.	1.34	0.63	1.12	0.43	0.004*
Interfere with other people's computer work.	1.57	0.88	1.44	0.70	0.231
Snoop around in other people's computer files.	1.42	0.74	1.26	0.69	0.093**
Use a computer to steal.	1.18	0.51	1.04	0.19	0.010*
Use a computer to bear false witness.	1.22	0.49	1.14	0.42	0.211
Copy or use proprietary software for which you have not paid.	2.65	1.36	1.88	1.13	0.000*
Use other people's computer resources without authorization or proper compensation.	1.65	0.87	1.42	0.72	0.030*
Appropriate other people's intellectual output.	1.54	0.91	1.38	0.73	0.155
Using crack programs.	2.35	1.38	1.59	0.94	0.000*
Copying licensed CDs, DVDs.	2.79	1.42	2.30	1.17	0.006*
Selling licensed CDs, DVDs which are reproduced against regulations.	1.98	1.19	1.45	0.76	0.000*
Using materials like pictures, animations, etc. without the consent of the owner.	2.21	1.22	1.81	1.02	0.010*
Do not think about the social consequences of the program you are writing or the system you are designing.	1.62	0.81	1.35	0.66	0.007*
Do not use a computer in ways that ensure consideration and respect for your fellow humans.	1.36	0.66	1.16	0.39	0.009*
Disturbing people by using the advantage of virtual environment.	1.54	0.76	1.19	0.43	0.000*
Carrying propaganda in the Internet that threatens social peace.	1.27	0.52	1.18	0.42	0.147
Allowing children to play computer games of violence.	1.82	0.99	1.26	0.71	0.000*
Permitting children to enter inappropriate sites on the Internet in Internet Cafes.	1.45	0.91	1.19	0.63	0.019*
Web masters' delivering the personal information of members to other people.	1.23	0.45	1.13	0.45	0.091**
Deliberately damaging the hardware of computers designed for public use.	1.20	0.43	1.12	0.34	0.125
Copying the data in a computer without the consent of the owner.	1.38	0.64	1.24	0.48	0.066**

	Male		Female		p
	Mean	S.D.	Mean	S.D.	
Sending a private mail to others without the consent of the sender.	1.60	0.85	1.46	0.88	0.235
Sending pornographic mail to people without request.	1.27	0.73	1.10	0.44	0.045*
Deliberately sending a virus by e-mail.	1.23	0.54	1.08	0.40	0.020*
Using others' personal information without permission.	1.27	0.59	1.19	0.53	0.255
Sending one's personal information to a web page without permission.	1.18	0.42	1.12	0.41	0.251
Using the network of an individual or institution to access the Internet without permission.	2.13	1.26	1.66	1.10	0.003*
Hacking through the Internet.	1.85	1.19	1.25	0.67	0.000*

S.D. = Standard deviation, * indicates significant at the 0.05 level, ** indicates significant at the 0.10 level

6. Conclusions

The main purpose of this study was to explore gender differences in computer ethics among Business Administration students. Data was collected through a questionnaire which was administered to students in the Department of Business Administration at a public university in Turkey. Students were asked to respond to 28 questions related to computer use.

This research revealed that there is a significant difference in 20 of the 28 questionnaire items between male and female students regarding their attitudes towards issues of computer ethics. It is found that mean score of male students was greater than female students for all 28 questionnaire items. Female students display a higher level of ethical judgment regarding computer use than their male counterparts. These results suggest that female students are more likely to make ethical choices related to computer use than male students.

The findings from this study supported the results of earlier studies; female students are more apt to make ethical decisions in computer use than male students. Although male and female participants of this study were preparing for similar careers, they have differences in computer-related attitudes. Academicians and practitioners need to understand that females' ethical attitudes regarding computer use are differs from males'. This difference should be taken into consideration in preparing corporate ethics policies, professional codes of conduct, and rewards/punishment systems for computer related unethical conduct (Khazanchi, 1995). The more that is understood about the relationship between gender and ethics, the better chance of education and training programs will be designed to improve ethical awareness and sensitivity (Roxas and Stoneback, 2004).

There are two noteworthy limitations of this study. First limitation is that study was administered in a public university in Turkey. The inclusion of students from different universities provides opportunities to better understand gender issues in computer ethics among undergraduate students. Second, the use of single-item measures may also be viewed as a limitation. Besides these limitations, this study provides valuable information to both academicians and practitioners regarding the issues of computer ethics.

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