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In this issue:

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Ethics and Moral Intensity: An Analysis of Information Technology and General Education Students

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ABSTRACT

There are many current information technology positions that are generally regarded as unethical. This study finds that there are mixed results in the ethical judgments of today's students in addressing these common information technology issues. For all students surveyed, not all unethical information technology statements are opposed. The survey examines differences between information technology students and general education students and finds that overall information technology students do not judge unethical issues differently from general students. Components of moral intensity influencing moral judgments are also studied and complex decision influences are found in many cases. The most important component is found to be consequences of actions. Based on this limited study, information technology ethics needs to be a greater part of the curriculum and needs to address the complex ethical decision making process. Limitations, implications, recommendations, and further study are reviewed.

Keywords: information technology ethics, ethics, moral intensity, IT skill level

1. INTRODUCTION

Ethics is defined by the American Heritage Dictionary as "A set of principles of right conduct". The importance of ethical information technology issues is critical in today's society. Hardly a day goes by without some news of legal or ethical breaches in information systems or the Internet. The importance of information technology is such that these ethical issues may threaten the very fabric of our economy and our society. Today's undergraduate students have literally grown up with technology. It could be expected that these students would well understand the ethical issues arising from common information technology issues. Within this group specifically, information technology students spend considerable time and effort in learning theory and application of computer and information skills. In the educational setting it would be expected that along with the education of the use of these tools, the proper and ethical rules to utilize these technologies would be understood and accepted. This manuscript is a study exploring the ethical issues and judgments that these students are facing in our technological world. Specifically, it reviews both the student population as a whole, as well as those whose major and main focus is the development and study of this technology, to determine if increased technical skills are coupled with technical ethical understanding and responsibility. Also, the reasons behind the moral judgments that are made are explored and preliminarily analyzed. In order to address ethical issues from a pedagogical standpoint, it is important to begin to understand the reasoning behind the decision making process.

2. LITERATURE REVIEW

The overall area of information technology ethics has been studied previously in the literature. Athey (1993) studied experts and technology students in information technol-

ogy ethical situations. Paradice and Dejoie (1991) found that IS students had a more detailed decision making process than non-IS students and that their major did influence their ethical decisions. No conclusions were drawn on whether they are more or less ethical. Caluzzo and Cante (2004) examined ethics in information technology. Other significant studies have been performed by Leonard, Cronan, and Kreie (2004), Limayem and Khalifa (2004), Lin and Ding (2003), Loch and Conger (1998), Oz (2001), Peterson (2002), Winter, Stylianou, and Giacalone (2004), Ellis and Griffith (2001), Mason (1986), Smith (2002), and Malone (1993). Yet despite significant research there remain many unanswered issues. Ethics have not kept pace with technological developments (Marshall, 1999). Thus, even though many studies have already been performed on overall ethics in information technology, there are new technologies and issues that have developed. First, this study is a current review of information technology issues both new and changed to understand how these issues are commonly viewed by today's students. In some ways, it is an update of prior studies. Harris and Weaver (1994-1995) used a similar approach of obtaining student "respondents' attitudes toward various ethical situations". It is intended to provide insight into current state of IT student ethics today. It is hoped that understanding can lead to an informed discussion and improvement in educational efforts to improve IT ethics.

3. HYPOTHESIS DEVELOPMENT

Past studies of students have found that generally, students opposed unethical business situations.

Preble and Reichel (1988) developed a 30 item ethics statement questionnaire (ATBEQ) Attitudes Towards Business Ethics Questionnaire and found students, "contrary to a number of extant research studies" had "high moral standards". In another study, responding to a series of general business unethical situations such as "Employee may lie to another company's representative to protect company", Cole and Smith (1996) found general disagreement with all statements. Therefore we propose in hypothesis one that students will oppose common unethical IT situations.

H1 Overall, students will oppose common unethical information technology statements.

Cole and Smith (1996) found varying degrees of opposition to their business ethics situations. Likewise, Preble and Reichel (1988) found variations in their 30 item questionnaire. Therefore we propose that current information technology unethical situations will have significant variation in levels of opposition. Preble and Reichel (1988) studied 30 items in their questionnaire to determine student's views on a wide variety of unethical situations. Froelich and Kottke (1991) measured individual beliefs about ethics via a series of statements that would be generally viewed as unethical. Our study likewise studies a wide variety of current information technology issues to determine attitudes on a variety of IT issues. Athey (1993) studied experts and technology students in information technology ethical situations. Paradice and Dejoie (1991) found that IS students major did influence their ethical decisions. Hypotheses 2a through l examines each issue between IT and general students..

H2a through l For each ethical IT issue, IT students will exhibit a higher degree of ethics than non IT students.

H2 a) Copy software

H2 b) Distribute software

H2 c) Download music

H2 d) Distribute music

H2 e) Download video

H2 f) Distribute video

H2 g) Access information

H2 h) Distribute information

H2 i) Access computers

H2 j) Take program from work for personal use

H2 k) Take program from work for other work

H2 l) Not correct information

In addition to determining the differences between IT and non-IT students views on a variety of current information technology issues, the study explores the influences that affect students as measured by relative

importance of moral intensity factors. Within ethical decision making theory there is a concept known as moral intensity. Carlson, Kacmar, and Wadsworth (2002) reviewed the influence of moral intensity on ethical decision making. The theoretical foundations for moral intensity are the combined models of Rest (1986) and Jones (1991). Rest proposed a four stage model for ethical decision-making – recognition of a moral issue, making a moral judgment, establishing moral intent, and engaging in moral behavior. This study focuses on the second stage of ethical decision making, making a moral judgment. There have been studies that have measured these four stages of moral decision making. Relationships have been found between ethical judgments and behavioral intentions (Bass, Barnett, and Brown, 1999 and Lin and Ding, 2003). The model of Rest was further developed by Jones (1991) who added characteristics of a moral issue that influence the four stage ethical decision making model. He called these characteristics, moral intensity. There are six components of moral intensity according to Jones. They are:

Magnitude of consequences – how much harm is done to victims as a result of the act

Social consensus – degree that society views the act as good or evil

Probability of effect – sum of probabilities that act will happen and that harm will take place

Temporal Immediacy – length of time between act and consequences

Proximity – feeling of connectedness that actor has with victims

Concentration of effect – inverse relationship with number of people affected

There has been limited research that suggests that moral intensity is a single one dimensional construct (Paolillo and Vitell, 2002). Most other researchers however have found that certain moral intensity factors are more important than others. Marshall and Dewe (1997), Chia and Mee (2000), and Frey (2000) only found magnitude of consequences and social consensus as the important factors in ethical decision making. Barnett and Valentine (2004) found that magnitude of consequences had the highest relationship with ethical issue recognition, judgment, and behavioral intention. This report will review the reasons behind current ethical judgments to determine what factors are influencing current information technology ethical issues. Hypothesis three was formulated to address the influences of moral intensity factors on the second stage of the ethical decision making process.

H3 There will be significant moral intensity factors influencing moral judgments in current IT unethical decisions by IT and non-IT students.

4. METHODOLOGY

An online web-based survey was prepared to study the preceding hypotheses. The survey consisted of a series of twelve issues expressed as statements that are commonly viewed as unethical information technology positions. The survey was sent to several student listservs. All IT respondents were from branches of a large eastern US university. General education students were recruited from a series of Introduction to Psychology classes at a branch of this university. Response rate is estimated at 10-50% for each listserv. The actual number of respondents was 143 students. Ethical issues have been presented by researchers in the past via scenarios or short statements. This survey utilized short statements similar to Froelich and Kottke (1991), Calluzzo and Cante (2002) and Kini, Ramakrishna, and Vijayaraman (2004). Statements were chosen to obtain a larger range of issues. The length of scenarios does not allow for more than a few ethical situations. And the specific content endemic to ethical scenarios limit the generalizations that can be made. According to Rest, Edwards, and Thoma (1997), short statements tend to have less bias than "longer orations". The survey includes twelve statements most similar to Calluzzo and Cante (2002). Their "questionnaire employed 11 statements; that described ubiquitous but most likely unethical (or surely dubious) behaviors in the prevailing business and academic environments;" (Calluzzo and Cante, 2002) Caluzzo and Cante (2002) had statements and asked whether they were ethical or unethical on a 5 point Likert scale.

These statements and a review of the others' noted work were refashioned into the

twelve statement questionnaire. Distinction was made between distribution and downloading and access and distribution since these suggest different levels of wrongdoing. In addition information was explored through viewing, distributing, and correcting to account for each distinct action. Finally, software creation was explored to understand views on personally created intellectual property. Loch, Conger, and Oz (1998) included questions on personally created software in their ethics survey.

The questionnaire was pre-tested and modified to its final form. The questionnaire consisted of 12 statements and 10 moral intensity factors. The statements (Table 1, see Appendix) present the commonly regarded unethical position and respondents are first asked their agreement with the statement. The Likert scale of ranges from 0 (strongly agree) to 4 (strongly disagree). Next, there were checkbox moral intensity factor statements that respondents were asked to check if they influenced their moral judgment. These factor statements are presented in table 2. There are basically positive and negative statements based on the five studied moral intensity factors. Positive statements suggest low adverse impact and negative statements suggest high adverse impact. The respondents could check all that applied. Scoring was 0 or 1 for each moral intensity factor.

The survey statements were prepared after reviewing many prior studies including Oz (2001), Calluzzo and Cante (2004), Peace, Weber, Hartzel, and Nightingale (2002), and Winter, Stylianou, and Giacalone (2004). Loch, Conger, and Oz (1998) used the concept of recognition of an ethical issue in their study of information technology ethics. They also studied the difference between recognition of an issue and whether the issue was ethical and unethical. The study is patterned after work by Kini, Ramakrishna, and Vijayaraman (2004) who examined specific unethical statements and measured levels of agreement. The authors then analyzed moral development impact on levels of support for software piracy. The actual moral intensity factors were actualized based on the work of Paolillo and Vitell (2002) and consisted of the table 2 statements that were offered as support for the moral intent decision. The sixth factor probability of effect was not used similar to other researchers such as Shaw (2003). For each factor a positive and negative statement was offered as support for agreement or disagreement with the moral issue.

This report uses university students similar to Whitman, Hendrickson, Townsend, and Rensvold (1998). These authors saw university students are an appropriate group to represent current attitudes towards information technology ethical issues because "these students will graduate and begin performing various roles as business persons, and can be expected to possess a fundamental understanding not only of their nation's ethical perspectives, but those of potential global partners as well.". Kini, Rominger, and Vijayaraman (2000) also only studied students.

5. RESULTS

Demographics of the two groups

Overall the 145 participants were fairly distributed in both age and gender and total number of participants from both IT and general education. There were 67 females and 77 males (one did not disclose gender) and though the proportion of traditional college age (18-24) students was high at 67%, there were groups of students in all age groups. There were 75 IT students and 70 general students.

H1 Overall, students will oppose common unethical information technology statements.

The results show that students did not consistently oppose all common information technology unethical situations. As described in table 3, for the twelve studied unethical situations, students tended to disagree with 5 (> 2.5), tended to agree with one (< 1.5) and tended to be undecided in six situations (1.51-2.50). Students were either undecided or supported intellectual property issues such as unauthorized downloading and copying software. Opposition was exhibited for intellectual property issues that included distribution. Also opposed were privacy related access and accuracy issues. Overall H1 was rejected. Opposition was inconsistent and sometimes weak.

H2a through l For each ethical IT issue, IT students will exhibit a higher degree of ethics than non IT students.

H2 a) Copy software

H2 b) Distribute software

H2 c) Download music

H2 d) Distribute music

H2 e) Download video

H2 f) Distribute video

H2 g) Access information

H2 h) Distribute information

H2 i) Access computers

H2 j) Take program from work for personal use

H2 k) Take program from work for other work

H2 l) Not correct info

This hypothesis was measured by the strength of support or opposition to the unethical IT issue between IT and non-IT students. Table four illustrates that overall; IT students did not express higher moral judgments for current information technology unethical situations. None showed a significant difference at $p < .05$ except distribution of software and in this case, general students actually showed higher moral judgment with a disagree to the statement versus undecided for the IT students. This would support Kini, Rominger, and Vijayaraman (2000) who did not find a significant difference in morality between students with more computing experience versus those with less. They also found no difference between those who owned versus not owned computers.

H3 There will be significant moral intensity factors influencing moral judgments in current IT unethical decisions by IT and non-IT students.

Table 5 shows the significant variables ($p < .05$) from a multiple regression analysis performed with all students and the moral intensity factors. The dependent variable was degree of agreement/opposition and the independent variables were the moral intensity factors. It should be noted there were two sets of factors, positive and negative. Generally low impact positive factors correlated with higher levels of agreement with the unethical statement. A negative coefficient in the table is a higher level of *agreement*. Negative factors generally correlated with disagreement with the unethical factor. A positive coefficient in the table is a higher level of *disagreement*. Some discussion of these results is presented in the succeeding section. Consequences of action was the only factor influencing all issues and also had the highest average coefficient for the factors influenced. The second most important in terms of number of issues influenced was social but in terms of average effect it was temporal. Hypothesis three was supported. There were significant moral intensity factors influencing moral judgments in current IT unethical decisions by IT and non-IT students.

6. DISCUSSION, LIMITATIONS, AND IMPLICATIONS

Overall, this study had several goals. First, it tried to determine how current unethical information technology issues are viewed by today's students. Unfortunately, not all unethical situations are opposed by current students. Though five situations showed a level of disagreement, half of the issues showed varying levels of uncertainty. There was strong support for privacy related issues but intellectual property was either uncertain or in one case, the unethical situation actually showed agreement- downloading unauthorized music. The state of information technology ethics with students today shows a poor level of support for property but understands and opposes privacy violations. Educators need to incorporate more ethics into the overall IT/IS curricula and particularly emphasize property ethics. This finding also holds important implications for both researchers and practitioners. Researchers can now undertake further exploration and definition of information technology constructs that reflect underlying current student ethical principles. In general, there seems to be a distinction between privacy and information protection that students support and intellectual property that students tend to reject. A subtle distinction seems to be made for a few intellectual property issues. Ethical support is low for most property issues such as copying software and downloading music and video. But distribution seems to cross an ethical barrier

for students. This distinction should be further explored. Practitioners need to understand that today's students and new entrants into the workplace have weak ethical norms related to intellectual property. Proper actions to address this weakness are essential to protect assets and company property. Security measures coupled with education methods may be appropriate to begin to address this moral weakness. The variation in levels of support for each ethical issue also holds important implications for educators, research, and practice. This suggests that the level of morality is determined by the specific ethical issue. Some items hold more opposition than others. Some researchers have noted deontological norms as the basis for moral decision making. This level of variation may suggest otherwise. Practitioners need to understand that morality of their future workers is a varying factor. They need to consider the measures that need to be taken to secure assets and address morality concerns. Educators need to address specific ethics shortcomings.

An important goal was to determine whether and what moral intensity factors influence ethical decision making. It was clear that different moral intensity factors affected decisions with varying degrees of strength. Magnitude of consequences was the most important. This is an important research finding since some past researchers such as Paolillo and Vitell (2002) have viewed moral intensity as a single construct. Practitioners can now focus on addressing the specific factor that can influence a particular behavior. The complete list of the key influences for each issue should prove as a valuable start of an exploration. This list of moral intensity factors can also serve as a guide to understanding the motivations of students. The approach for teaching IT ethics can be tailored to address these motivations.

The moral intensity factors varied with each item. An analysis of the positive and negative influences on each decision provide rich and fascinating insight into the decision making process of the sampled students. As an example, the first issue of copying someone else's software was strongly affected by the consequences of action component. Those who agreed with the unethical statement believe the potential harm was low. Those who disagreed saw high potential harm. But there was a strong influence of proximity in the negative influences. Support for unethical statements was reduced by those who believed that harm would take place to those the individual knew. In all, seven of the ten factors showed significant influence on the level of agreement suggesting software copying is a complex decision process. Addressing this issue from a pedagogical standpoint needs to address this complexity. A similar review can be explored for each factor.

The final goal dealt with the potential for differences between technically savvy individuals as typified by IT students versus lees savvy individuals as noted by general psychology students. The implications for educators and researchers are that generally technical understanding has not improved overall level of morality with technology. Perhaps this is an issue with this sample and this should be further verified by educators and researchers. But the research suggests that there needs to be significant effort to improve ethics regardless of the background, though techniques and appeals may require some modifications depending on the group.

Similar to other studies, there are some limitations that should be noted. The study uses a convenience sample of students in small branches of a northeast US university. Many other researchers such as Whitman, Hendrickson, Townsend, and Renswold (1998) have used a similar group but the results may not be representative of other regions of the US or internationally. Also, the significant sample may not be representative of the population as a whole. Further studies with other groups should be undertaken to verify results. Though its exclusion is supported by prior research, the leaving out of the sixth moral intensity factor may have had an impact on results. The study measures only the moral judgment step in Rest's four stage model. Though others have noted a relationship between moral judgment and intentions and actions, no assumptions can be made about the other steps. Though the survey was carefully written and tested, there may have been some misunderstandings on the wording of the statements. Some researchers such as Paolillo and Vitell (2002) have prepared detailed scenarios to explore ethical intentions. Others such as Caluzzo and Cante (2004) have used short statements. This work used short state-

ments to improve response and attention. The author recognizes there is a trade-off between simplicity and detail and chose to keep the survey simple and understandable. As a result some assumptions made by the respondents could be in error.

7. CONCLUSION

In 1993 Athey (1993) found that IT students had different ethical beliefs than non-IT students. In 2005, this was generally not found to be the case. For many issues the ethical beliefs of IT and general students are statistically identical. Perhaps many students in 1993 were unfamiliar with the nuances and implications of IT. The pervasive nature of technology has conceivably made more students aware of the relevant IT issues. Whatever the reason, a disturbing trend is noted when current unethical IT issues are explored among today's university students. There is limited opposition to many important unethical situations. Students are most affected by the moral intensity factor of magnitude of consequences and it appears that for many issues the consequences are not seen as significant enough to warrant opposition to unethical behavior. Reliance on social norms does not seem to provide sufficient support for opposition as well. Our educational system is providing technical skills but is not coupling this with requisite ethical recognition and appreciation. Clearly ethics should receive more attention in the information technology curriculum. More work is warranted to first verify these findings and then explore more of the background behind these judgments. Efforts should be undertaken to determine how best to address the ethical shortfall that today's university students will be bringing into the workplace.

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APPENDIX

TABLE 1 IT UNETHICAL STATEMENTS

1.	I may copy someone else's software for my own personal use.
2.	I may distribute copies of someone else's software
3.	I may download unauthorized music from the Internet for my own personal use.
4.	I may distribute copies of unauthorized downloaded music
5.	I may download unauthorized video from the Internet for my own personal use.
6.	I may distribute copies of unauthorized downloaded video
7.	I may access private and confidential information without consent
8.	I may distribute private and confidential information without consent
9.	I may access other's computer or telecommunications resources without consent
10.	I may take programs or other work I have done for one employer and keep for personal use
11.	I may take programs or other work I have done for one employer and use at another employer
12.	At work, I do not have to correct inaccurate information I may hold about customers

TABLE 2 MORAL INTENSITY FACTORS STUDIED

Factor	Abbr.	Positive	Negative
Magnitude of consequences	CONSQ	I believe that the potential harm done to others would be minimal	I believe that the potential harm done to others would be high
Social consensus	SOCIAL	I believe that most view this activity as acceptable	I believe that most view this activity as wrong
Proximity	PROX	I believe that any harm that would take place would be to people I do not know	I believe that any harm that would take place would be to people I know
Concentration of effect	CONC	I believe the number of people harmed would be minimal	I believe the number of people harmed would be high
Temporal Immediacy	TEMP	I believe that negative effects of this action would occur a very long time from now	I believe that negative effects of this action would occur very soon

TABLE 3 UNETHICAL SITUATION DESCRIPTIVE STATISTICS (SCALE 0, STRONGLY AGREE, 4 STRONGLY DISAGREE)

	Mean	Std. Deviation
Copy software	2.042	1.1499
Distribute software	2.5944	1.2058
Download music	1.4755	1.3046
Distribute music	2.1469	1.3266
Download video	2.0909	1.2328
Distribute video	2.4857	1.3275
Access info	3.2797	1.1832
Distribute info	3.4406	1.1109
Access computers	3.1197	1.2743
Take program - pers	1.7692	1.2201
Take program - work	2.3028	1.3208
Correct info	2.958	1.1188

Table 4 Descriptive Statistics for IT versus non-IT Students

	IT Students		General Students		
	Mean	Std. Deviation	Mean	Std. Deviation	p sig.
Copy software	2	1.102822	2.085714	1.248104	.661
Distribute software	2.36	1.362033	2.785714	1.034098	.037
Download music	1.413333	1.346601	1.571429	1.291796	.472
Distribute music	2.2	1.335584	2.085714	1.359272	.610
Download video	2.026667	1.283716	2.157143	1.223392	.533
Distribute video	2.319444	1.432288	2.6	1.244117	.215
Access info	3.213333	1.407445	3.185714	1.145791	.898
Distribute info	3.32	1.377032	3.4	1.055009	.697
Access computers	2.945946	1.479466	3.142857	1.219238	.386
Take program – pers	1.613333	1.240023	1.857143	1.254392	.241
Take program – work	2.27027	1.519709	2.2	1.174611	.758
Correct info	2.893333	1.180624	2.871429	1.238529	.913

Table 5 Moral Intensity Factors Multiple Regression Analysis (significant at p < .05)

	CONSQ+	SOCIAL+	PROX+	CONC+	TEMP+	CONSQ-	SOCIAL-	PROX-	CONC-	TEMP-
Copy software	-0.971	-0.039		-0.405	0.555	0.379		0.848	-0.41	
Distribute software	-0.64	0.321			0.359			0.091		
Download music	-0.421	-0.304					0.604	-0.516		
Distribute music	-0.195				-0.476	0.377		0.309		
Download video	-1.053	-0.029						-0.102		
Distribute video	-0.706	-0.049		-0.418		0.812	0.776	-1.424	0.229	
Access info	0.172				0.284		0.834	0.289		0.636
Distribute info	-0.117				0.405		1.025	0.146		0.448
Access computers	-0.074		-0.052		0.436		0.048			
Take pgm - pers	-0.798	-0.715	-0.223							0.57
Take pgm - work	-0.318			-0.042			0.017		-0.031	
Correct info	0.438					0.549	0.414	-0.467	0.309	