The Effect of Gender on the Application of Ethics within Information Technology: A Meta-analysis

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Abstract

The goal of this paper is to explore the how the application of ethics is affected by gender in the field of Information Technology. This will be accomplished by performing an analysis of statistical data from a number of studies which all address the issue of gender and ethics, and combining the results into a single meta-analysis. Because the rapidly growing field of Information Technology has created its own unique ethical environment, first we focus on some of the ethical implications involved with the use of computers and other related technology. This paper then presents the findings from a series of studies performed over the past two decades in which participants were asked a number of questions and/or provided scenarios involving the use or misuse of Information Technology and any potential ethical issues that may arise as a result. These results are then compiled into a single meta-analysis to show whether or not gender plays a statistically significant role in ethical reasoning and decision making. Finally, the impact of gender-based ethics on the Information Technology industry will be presented.

Keywords: gender, ethics, information technology, analysis

1. INTRODUCTION

The field of Information Technology has seen tremendous growth over the last few decades. Spanning the entire globe, just about everything is affected by the use of computers. Information Technology has become so important and its utilization so widely accepted that any potential misuse of technology is cause for great ethical concern. One of the biggest problems with Information Technology is that its growth has far outpaced the ethics behind it (Peslak, 2008;

Adam, Ofori-Amanfo, 2000; Dorantes, Hewitt, Goles, 2006). Perhaps more important is the fact that certain ethical dilemmas would not be present if it weren't for technology's massive reach (Zalta, 2008). This results in the Information Technology community having different and often widely varying perceptions on ethics. Compounding the problem is that there is no real standard of ethics within the IT community (Johnson, 2007). While there are several theories in place regarding the best way to create such a standard (Zalta, 2008), the IT community

is so large and diverse that universal agreement to any standard will be difficult at best. However, despite the implementation of any future standardization, the adherence to ethical guidelines remains very much up to the individual.

2. FACTORS INFLUENCING ETHICAL DECISION MAKING

When faced with a particular situation, it must be decided by the individual whether or not that situation is ethical in nature and requires an ethical decision to be made (Leonard, Cronan, 2005; Dorantes, Hewitt, Goles, 2006). This results in the individual going through a unique reasoning process to determine the ethical nature of the situation. This reasoning process is affected by a multitude of factors, some of which the individual has control over while some may be outside of their control. There are also certain factors which directly influence other factors, such as experience within the field and goals for future advancement. Research indicates that there are four basic factors which a person takes into account when defining an ethical situation (Leonard, Cronan, 2005; Dorantes, Hewitt, Goles, 2006).

1) Religious Values and Beliefs

    No matter what religious beliefs a person may have, the modern concepts of ethics and morality take root from the ancient religions. Concepts taken from the Ten Commandments (Christianity), or from the Torah (Judaism), all have relevance in modern times. The wrongness associated with killing another person, taking what does not belong to you, and coveting that which you do not have, are all examples of concepts which have their origins in religion. Many of these concepts have evolved into societal norms and have been translated into law. Even if a person claims to have no religious beliefs, by adhering to society's laws they are still following the tenants established by religion (Leonard, Cronan, 2005; Dorantes, Hewitt, Goles, 2006).

2) Environmental influences

    Environmental influences are the social and cultural values and norms that sway the individual, as well as their own per-

sonal goals. The norms reflected by one's society and culture vary depending on the location and upbringing of the individual. These values and norms have been known to cause conflicts when an individual adheres to them when they are foreign or unwelcome. One's personal goals, however, change based upon what the individual wants to achieve within their life at a given moment. If an individual wants something badly enough, the values and norms of their society and culture may be sacrificed for more important personal goals (Leonard, Cronan, 2005; Pierce, Henry, 1996; Peslak, 2008; Dorantes, Hewitt, Goles, 2006).

3) Moral Obligation

    Moral obligation represents the motivation a person feels to perform or not perform a certain task. Motivating factors vary depending on the individual, and are further influenced by the individual's environment and belief system. What may seem as important to one person can be completely trivial to another. These obligations rely heavily on a person's personal goals, and are directly affected by the intensity that one feels to perform these obligations (Peslak, 2008).

4) Potential Consequences

    The presence of consequences as a result of a particular action is also an important factor in ethical decision making. The lack of consequences may indicate that an action is acceptable, or at the very least, tolerable. Actions that bring about negative consequences present more of a deterrence since the impact of the action and the resulting consequences aren't desired by the individual. With negative consequences, the perception of right and wrong is more clearly defined, though not necessarily by the individual. If the morality of the action is in question, a person can sometimes rely on the consequences of the action to help calibrate their moral compass (Leventhal, Instone, Chilson, 1992; Leonard, Cronan, 2005; Pierce, Henry, 1996; Peslak, 2008).

These four factors combine to form a "moral intensity" that defines the way a person

deals with a particular situation (Dorantes, Hewitt, Goles, 2006). The overall strength of one's moral intensity determines the type of reaction to the situation in question. If an individual determines that a situation they face is ethical in nature and thus requires a moral decision be made, the first step in the ethical decision-making process is complete: Realization that a moral issue exists. There are three additional steps that one must take before the process is complete: Making a moral judgment, establishing moral intent, and engaging in moral behavior (Peslak, 2008). It is during both the formation of moral intensity and the four stages of the decision making process that gender has been shown to have an effect (Peslak, 2008; Dorantes, Hewitt, Goles, 2006).

3. GENDER'S EFFECT ON ETHICS

The effect of gender on ethics within the IT field has been the subject of many studies, articles, and surveys. While still largely a male-dominated field, the presence of women in IT is steadily growing (Johnson, Miller, 2003; Adam, Ofori-Amanfo, 2000), and it is important for the IT industry to have an understanding of how various factors (to include gender) can affect the application of ethics in the workplace (Weckert, 2001; Panteli, Stack, Ramsay, 1999). Ethics in IT is especially important because virtually every modern day business has some dependence upon IT, and any misuse of technology may have ramifications across the entire organization. IT professionals face a variety of unique scenarios which require ethical action. However, despite the uniqueness of any scenario an IT professional might face, they fall into certain ethical categories.

"Friend in Need"

A common ethical dilemma faced by many members of the IT community is the "Friend in Need". Members of the IT community are often asked for assistance with personal computing matters such as help with a personal laptop infected with spyware, or fixing up a hand-me-down desktop computer. Generally, requests like these do not require morality-based decisions. However, there are times when an IT worker is asked to use their position and knowledge of computers to perform an action for a friend that is ethically questionable. It is the effort of trying to balance the desire to help a friend in need

and maintain one's professionalism that has produced some of the most ethically challenging situations faced by IT workers today (Leventhal, Instone, Chilson, 1992).

One example of how the IT community deals with a friend in need is a case study performed by Lori Leonard and Timothy Cronan in 2005 where 388 IT workers were asked if they felt that using company resources to build computer programs for their friends was acceptable behavior. Of the 388 people surveyed, 165 males and 138 females found it to be acceptable, while 38 males and 47 females found the action to be unacceptable (Leonard, Cronan, 2005). Although the majority of those surveyed believed the action was acceptable (most likely a result of the action being seen as harmless in the eyes of the IT worker), the study showed that males were more likely to find such an action acceptable, and females were more likely to find the action unacceptable. In this case, there was a statistically significant difference in the number of males that find the scenario acceptable in comparison to the number of females.

Another interesting example of the "friend in need" is in a study performed by Alison Adam and Jacqueline Ofori-Amanfo in 2000 in which 24 IT professionals were asked if they would hack into a library's network to eliminate a friend's overdue library fines. In this case, 5 women and 3 men said they would hack into the library's system, while 7 women and 9 men said they would not (Adam, Ofori-Amanfo, 2000). What makes this study interesting is that more women than men said they would hack into the system to help a friend. This would be unusual because the hacking community has been shown to have the fewest women of all the many IT communities (Adam, 2004). These results were not statistically significant due to the limited number of participants and the generally small variance in responses.

Additional scenarios presented by Alan Peslak in 2008 in which participants were asked if they would access computers or retrieve information at the request of a friend both yielded results similar to the study performed by Leonard and Cronan in that women were shown to respond more ethically than men. Responses were based on a Likert scale, with 0 being Strongly Agree and 4 being Strongly Disagree. By taking the mean (average) value of the responses from

male and female participants, it was found in both cases that women were more likely to deny the request (Female: 3.79 vs Male: 3.51 in the case of accessing computers, and Female: 3.63 vs Male: 3.38 in the case of retrieving information) (Peslak, 2008). In both these cases, the results were statistically significant.

Misuse of Contracted Services

The primary role of any member of the IT field is to use technology to integrate, improve, and expand an organization's business model. These services are often provided through the use of a contract. Equipment and services are provided to an organization, and the provider of the equipment and services charges a fee. Problems arise when one of the parties engaged in the contract does not hold up their end of the bargain or purposely deceives the other party for financial gain.

In a study performed by Laura M. Leventhal, Keith E. Instone, and David W. Chilson in 1992, computer scientists were presented with a scenario involving an IT organization deliberately overcharging the government for software. To document any changes in the participants' feelings regarding the morality of the scenario, they were presented with the scenario twice. Their responses were recorded using a Likert scale, which is a scale designed to measure respondent agreement to a particular statement. The average of the two iterations show that women found the scenario to be less ethical than men (Men: 3.86 vs Women: 3.42). In addition, when the results from the two iterations were compared to each other it was found that men became more tolerant of the situation while women experienced a statistically significant drop in their level of tolerance (Men: +0.18 vs Women: -0.67) (Leventhal, Instone, Chilson, 1992). The results of this study reinforces the assertion that not only are women more ethical in comparison to men, but also that when presented with an ethically questionable situation a second time, women are more likely to become less tolerant of it than men.

In another study performed by David Hay, Patricia McCourt Larres, Peter Oyelere, and Andrew Fisher in 2001, 108 college undergraduate students were presented with a series of scenarios and were asked if any of them represented an ethical issue, or were non-ethical in nature. These scenarios were presented multiple times to track the change in opinions of by participants as they became more familiar with the scenario. If the student believed the situation involved an ethical issue, they then had to decide if it was handled in an ethical or an unethical manner (Hay, Larres, Oyelere, Fisher, 2001). Of all the scenarios presented in the study, three of them dealt directly with the misuse of contracted services.

The first scenario involved a Project Leader being tasked to oversee a project in which a billing and credit system was to be built for a client. During the course of the project, the Project Leader informed management that the funds set aside for the project were running low. Management did not take action, and when the funds ran out the Project Leader was forced to finish the project at a lower cost resulting in the omission of capabilities originally promised in the software. As a result, the software was prone to produce errors that the organization using the software was unable to explain to its customers or fix. When the business complained that their customers were suffering personal anguish and increased expense, the Project Leader was blamed. This scenario was presented three times to the participants to gauge their responses over time, with the results found in Appendix Table 1.
The results of all three iterations show that the majority of participants believe the situation is non-ethical in nature. Each time the scenario was presented it was found that more females believed the situation to be unethical when compared to males. In all but the last iteration, more males believed the situation to be a non-ethical issue. Only the results from the second iteration are diverse enough to be statistically significant, although each iteration shows women to be more ethical.

The second scenario presented in this study involved a software developer assigned the task of developing a unique section of the software to control a single unit of a much larger system that required input from other units. While no difficulties were anticipated, the software developer received documentation from another developer which stated that the information from the other units could not be trusted. When the software developer presented the documentation to management, the software developer was told to proceed as originally defined. This

scenario was presented twice to the participants with the results found in Appendix Table 2.

The results of the first iteration show that there is no clear majority in the opinion of the participants as to whether the situation is unethical, ethical, or a non-ethical issue. The results of the second iteration show that the majority of participants believe the situation is unethical in nature. The overall results of the scenario show that more females believe the situation to be unethical in comparison to males. In addition, when the participants were presented the scenario the second time, there was a statistically significant drop in the number of females that believe the situation to be ethical (from 16 in the first iteration to 3) and a rise in both the numbers of male and female participants that believe the situation is unethical.

The third scenario presented in this study deals with one company (Company ABC) developing software for voting machines and another company (Company XYZ) building the machine and convincing several cities to purchase the machines. A software engineer from Company XYZ found a bug in the software which results in one in ten machines being likely to miscount after installation. After informing management, the software engineer is told that it is Company ABC's problem and not to go any further with it. This scenario was presented twice with the results found in Appendix Table 3.

The results of both iterations of the third scenario show that the majority of participants believe the situation is unethical in nature. Only the results from the second iteration are diverse enough to be statistically significant.

The overall results of the study show that more women found the scenario to be unethical. Interestingly, in the first iteration, there were twice as many women as men that found the scenario to be ethical. It was during the second iteration that the numbers of both male and female who found the scenario ethical decreased, with more males believing the situation to be ethical.

Acquisition and Distribution of Software and Data

Thanks to the global reach of the internet, it has become possible for software and other forms of data to be quickly and efficiently distributed around the world. Old-fashioned brick and mortar establishments are seeking sales online where they can provide instantaneous service to a much wider demographic in a bigger marketplace. Physical shopping carts with squeaky wheels have been replaced with online shopping carts capable of holding any good imaginable. Unfortunately, just like the old fashioned brick and mortar establishments, there is a form of shoplifting that exists online that businesses must contend with. Through the use of BitTorrent and other peer-to-peer file sharing protocols, the acquisition and distribution of software and data (such as music and videos) without the need to actually purchase it is on the rise (Villazon, 2004).

When studying the effect gender has on the acquisition and distribution of software and data, it is important to first address how the software and data was originally acquired. For instance, if a tech employee in a company ordered a particular version of software, but a more advanced version of the software was received, what are the ethical implications if the employee decides to keep the more advanced version without having ordered it? This was one of the questions asked in a study performed by Lori Leonard and Timothy Cronan in 2005 (Leonard, Cronan, 2005). When asked whether or not this type of behavior was acceptable, 91 males and 54 females believed it was. 119 males and 133 females believed the behavior was unacceptable. In this case, there is a statistically significant difference in the behavior of the females when compared to the males.

The study performed by Leonard and Cronan goes further and poses the question of whether or not it is acceptable for an employee to use a program without paying any required usage fees as stated in the licensing agreement. In this case, 64 males and 32 females believed it is acceptable to use a program without paying the usage fees, while 130 males and 146 females believed it was unacceptable. In both cases, more males found the unethical behavior acceptable while more females found the behavior unacceptable.

The results from this study are reinforced in a similar study that was performed in 1998 by Jennifer Kreie and Timothy Cronan (Kreie, Cronan, 1998). In this study, the questions were more generalized. One

question asked whether or not it was acceptable to keep something that you didn't purchase. In this case, 55% of the men surveyed and 68% of the women said the behavior was unacceptable. These results are statistically significant. When asked if it was acceptable to use a program without paying for it, 66% of men surveyed and 71% of women found it to be unacceptable. Unlike the previous question, there is no statistical difference in the responses of the participants. Like the study performed in 2005 by Leonard and Cronan, women were found to respond more ethically when compared to men when it comes to the unethical acquisition of software.

In the study performed by Alan Peslak in 2008, participants were asked to rate their level of acceptance of a particular action on a Likert scale rating of 0 through 4 (0 being Strongly Agree, 4 being Strongly Disagree). The study deals with both the acquisition and distribution of software programs, as well as forms of data such as music and video. The results of that study are found in Appendix Table 4 and indicate that females find each action more disagreeable when compared to males. However, the only results that are diverse enough to be statistically significant are those from Scenarios III, IV, and VI.

Improper Utilization of Organizational Resources

Many companies have grown to the point where they require a robust and powerful computer infrastructure to operate. Within that infrastructure are resources typically not available to the average home user. It is not uncommon to have these resources used for personal reasons. Sometimes it is as simple as emailing family and friends from work. Other times company resources are used for an individual's financial gain, or for searching for a new job while on the clock.

The question of whether or not it was acceptable to use company resources for personal projects was asked in the study performed by Jennifer Kreie and Timothy Paul Cronan in 1998 (Kreie, Cronan, 1998). That study found that of the individuals surveyed, 11% of the males and 16% of the females found it to be unacceptable. These results were not statistically significant.

In a study performed by David Hay, Patricia McCourt Larres, Peter Oyelere, and Andrew Fisher in 2001, 108 college undergraduate students were presented a series of scenarios regarding ethical use of technology in computer related situations (Hay, Larres, Oyelere, Fisher, 2001). One scenario involved students being asked to discover vulnerabilities in a network. In this scenario, one student was able to find and exploit a vulnerability within the network. That student informed the IT director, but no action was taken to repair the vulnerability. Afterwards, the student would continue to exploit the vulnerability to play games and attack the system. To measure the changes in participants' responses, this scenario was presented three times to participants, with the results found in Appendix Table 5.

The study shows that fewer men find the actions of the student unethical. In addition, fewer females find the actions of the student to be ethical with the exception of the 1st Iteration where the number of male and female responses were equal. There is no consistency in the responses in which the participants believed it was a non-ethical issue. Only in the third iteration are the results shown to be diverse enough to be statistically significant.

Privacy and Security Concerns

As the world progresses further into the digital age, more and more information is becoming electronic. With entire systems devoted to Enterprise Resource Management (ERP), Electronic Medical Records (EMR), and Customer Relationship Management (CRM), confidential information once kept under lock and key in a filing cabinet is now being stored on servers. These servers must be maintained by members of the IT community who typically have full administrative access to all the data contained on the servers.

One common scenario encountered by IT professionals is monitoring network, email, and internet usage of employees. It is important for every business to provide a professional, clean, and inoffensive workplace in which employees can feel comfortable. As a result, most businesses have policies which prohibit access to websites deemed unprofessional (pornography, gambling, hate groups, etc.) and maintain a strict email policy to prevent the company from being mi-

srepresented through email. A scenario similar to this was presented to a group of undergraduate students in a study performed by David Hay, Patricia McCourt Larres, Peter Oyelere, and Andrew Fisher in 2001 (Hay, Larres, Oyelere, Fisher, 2001). The scenario involved a network administrator monitoring the email system and informing Human Resources of any employees found using company email for personal use. Those employees found using the email system for personal use are subject to disciplinary action. These employees, upset by their punishment, complain that their email is private and should not be subject to monitoring. Participants were asked in three iterations whether the network administrator behaved ethically or unethically, or if the entire scenario was not ethical in nature. The results of that study are found in Appendix Table 6 and show little consistency throughout the iterations. In the first and third iteration, more females find the actions of the network administrator to be unethical in comparison to males. In the first and second iteration, more females find the actions of the network administrator to be ethical in comparison to males. The only consistency that appears in all three iterations is the number of participants that believe the scenario involves a non-ethical issue increases with each iteration. Because of the lack of consistency, the results of this scenario are not statistically significant.

Delving further into the issue of privacy, the study performed by David Hay, Patricia McCourt Larres, Peter Oyelere, and Andrew Fisher presents the scenario in which a software programmer uses publically available information, as well as information acquired by purchase from the Department of Motor Vehicles (DMV), to compile profiles of people. This information was then sold to companies interested in the profiles. Some of the information compiled was incorrect and resulted in people receiving unsolicited junk mail, while the remaining people benefited from the focused advertising (Hay, Larres, Oyelere, Fisher, 2001). Participants were asked if the actions of the programmer were ethical or unethical, with the responses found in Appendix Table 7. In this case, the results show that while an equal number of males and females find the actions of the software programmer to be unethical, more males find the actions ethical in comparison to females. These results are not diverse enough to be statistically significant.

Presenting a similar situation regarding privacy, a study performed by Lori Leonard and Timothy Cronan in 2005 asked participants if the actions of an employee were acceptable or not. The scenario involved an employee using company resources for an approved second job which involved the compilation of confidential statistical information. After the compilation was complete, the company that owns the equipment used by the employee requested a copy of the statistics for the purpose of marketing, which the employee provided. When asked if the actions of the employee were acceptable, 64 males and 52 females believed it was. 137 males and 128 females found the actions of the employee to be unacceptable. This equates to 31.8% of the males and 28% of the females surveyed finding the behavior of the employee acceptable. These results are not diverse enough to be statistically significant.

Taking a broader approach to privacy, in a study performed by Jennifer Kreie and Timothy Cronan in 1998 asked participants a simple question: "I have a copy of the data, can't I use it as I wish?" (Kreie, Cronan, 1998). 51% of the males and 72% of the females participating in the study believed that using the data in this manner was unacceptable (49% of the males and 28% of the females found it to be acceptable). These results were statistically significant in that a considerably higher proportion of females found the behavior unacceptable.

4. REASONS BEHIND GENDER'S EFFECT ON ETHICS WITHIN INFORMATION TECHNOLOGY

Several studies have shown that not only are women shown to behave more ethically than men, but that women are more likely to view a situation as being ethical in nature. There are also studies which have shown no statistically significant differences in the realization or handling of ethical situations between the genders. A brief generalization of the results of the studies mentioned in this paper is located in Appendix Table 8. Despite the inconsistency, it is important to note that in all studies regarding gender's effect on ethics, men have never been shown to behave more ethically than women (Leonard, Cronan, 2005; Peslak, 2008; Adam, Ofori-Amanfo, 2000; Dorantes, Hewitt, Goles, 2006; Hay, Larres, Oyelere, Fisher, 2001). The results of the studies

presented in this meta-analysis support this statement. However, while there are many articles that have been published indicating that women are more ethical than men, there are only a few articles that have attempted to explain why.

One such article was written by Ann Pomeroy in 2005. This article explains that the reason why women are more ethical than men is because historically, women are considered "outsiders" in the workplace. Women are more prone to ask questions and raise concerns since they are less worried about being kicked out of the "Old boys network" (Pomeroy, 2009). One might speculate that since the Information Technology field is male-dominated (Johnson, Miller, 2003), the small percentage of women in IT may feel like more of an outsider and be even more willing to express their ethical beliefs.

Another possible reason as to why women are more ethical than men when it comes to the application of Information Technology comes from an article written by Donald Caputo in 2006. This article says that men feel less intimidated by computers and technology because they are introduced to them at an earlier age and much more often than women are (French, 2002; Caputo, 2006). Since men are more comfortable in the use of computers, it can be speculated that men may also more comfortable with their misuse.

Despite the many studies that have been performed regarding gender's effect on ethics, there is much more work that needs to be done. More studies need to be administered that not only document how men and women respond to various questions and scenarios, but also how they perform in real world ethical situations. While the responses from surveys containing questions and scenarios indicate, for the most part, that women behave more ethically than men (Peslak, 2008; Adam, Ofori-Amanfo, 2000; Dorantes, Hewitt, Goles, 2006; Hay, Larres, Oyelere, Fisher, 2001; Adam, 2000; Kreie, Cronan, 1998), only by documenting and analyzing the actions of participants in actual situations can the gender difference in the application of ethics be accurately shown.

5. RESPONSE TO GENDER-BASED ETHICS

It is important to realize that gender is just one of many possible factors that come into play when dealing with an ethical situation (Leonard, Cronan, 2005; Peslak, 2008; Dorantes, Hewitt, Goles, 2006). For instance, age and experience have been shown to be a factor in the application of ethics (Dorantes, Hewitt, Goles, 2006; Akbulut, Uysal, Odabasi, Kuzu, 2007). However, since gender has been shown to affect the application of ethics within the field of Information Technology, the next question that should be asked is how the concept of gender-based ethics should be addressed. Unfortunately, there is no easy way to approach this area.

It is clear that IT is still a male-dominated field, despite the slow increase in the presence of women (Johnson, Miller, 2003; Adam, 2000). It's that very same male dominance that is a cause for ethical concern. Because many of the first computer programmers were women (the reasoning behind this being that programming was originally considered an administrative task that women were better suited for (French, 2002)), the lack of women in IT now indicates that a significant shift in the perception of IT has occurred. While the belief that programming is a task better suited for women had once been the norm, that line of thinking may still exist today. A study performed in the United Kingdom in 1999 by Androniki Panteli, Janet Stack, and Harvie Ramsay has shown that the presence of women in IT decreases significantly as you move up the hierarchy. Women in IT are still shown to hold positions mostly related to support and administrative functions (Panteli, Stack, Ramsay, 1999). One possible reason behind this trend is the social customs and restraints in which women are portrayed as the weaker sex have resulted in women having fewer opportunities to enter the IT field or climb its ranks (French, 2002). If a significant portion of the studies regarding gender's effect on ethics indicate that women behave more ethically than men (Peslak, 2008; Johnson, Miller, 2003; Dorantes, Hewitt, Goles, 2006), why is it that women do not have a greater presence within the IT hierarchy?

Regardless of the reason, the lack of women in IT results in its own set of problems. From a research standpoint, in order for any study regarding gender within IT to be more

conclusive and provide data that is statistically significant, there must be a more balanced gender presence throughout the IT field. From a business standpoint, by allowing more diversity into a particular field, it can only open up more opportunities and spawn the creation of new ideas. This can only improve the overall quality of IT services. From a business perspective, it only makes sense to encourage the presence of women in a field that, for the most part, lack it. The problem with making the IT field more attractive to women is that the current lack of women in the IT field makes it difficult for women to relate to the field. There is a significant shortage of female IT role models to provide inspiration for those interested in the IT field. There is also the image that Information Technology is "geeky", and thus is more unappealing to women (French, 2002).

Suffice it to say, there are still many obstacles which are preventing more gender diversity within Information Technology. Current trends indicate that IT will remain a male-dominated field well into the future (French, 2002; Putnik, Ivanovic, Budimac, 2008). In order to spawn more diversity within IT, the concept of technology being gender-neutral needs to be taken more seriously. Long held stereotypes and misconceptions about the role of IT need to be set aside. Only with a fresh influx of ideas derived from an increase in diversity can Information Technology rise to meet the needs of the entire world.

6. REFERENCES

Adam, A.E. (2004) "Hacking into Hacking: Gender and the Hacker Phenomenon". Computers and Society.

Adam, Alison and Jacqueline Ofori-Amanfo (2000) "Does Gender Matter in Computer Ethics?". Ethics and Information Technology.

Adam, Alison (2000) "Gender and Computer Ethics". Computers and Society.

Akbulut, Yavuz et al. (2007) "Influence of Gender, Program of Study, and PC Experience on Unethical Computer Using Behaviors of Turkish Undergraduate Students". Computers and Education.

Caputo, Donald J. (2006) "The Digital Divide: Gender Issues, Initiatives, and Emerging Trends in the Corporate and Academic Spheres". Issues in Information Systems.

Dorantes, Carlos Alberto et al. (2006) "Ethical Decision-Making in an IT Context: The roles of Personal Moral Philosophies and Moral Intensity". 39th Hawaii International Conference on System Sciences.

French, Sheila (2002) "Gender Equity and the use of Information Communication Technologies in the Knowledge Economy: Taking a Feminist Poststructuralist Approach."

Haines, Russell and Lori N.K. Leonard (2007) "Individual Characteristics and Ethical Decision-Making in an IT Context". Industrial Management and Data Systems.

Hay, David et al. (2001) "The Ethical Perception of Undergraduate Students in Computer-Related Situations: An Analysis of the Effects of Culture, Gender, and Prior Education". Teaching Business Ethics.

Johnson, Deborah G. (2007) "Computer Professional Ethics in Theory and in Practice". 29th International Conference on Software Engineering

Johnson, Deborah G. and Keith W. Miller (2002) "Is Diversity in Computing a Moral Matter?". SIGCSE Bulletin.

Khazanchi, Deepak (1995) "Unethical Behavior in Information Systems: The Gender Factor". Journal of Business Ethics.

Kreie, Jennifer and Timothy Paul Cronan (1998) "How Men and Women View Ethics". Communications of the ACM.

Leonard, Lori and Timothy Cronan (2005) "Attitude Toward Ethical Behavior in Computer Use: A Shifting Model". Industrial Management + Data Systems.

Leventhal, Laura et al. (1992) "Another View of Computer Science Ethics: Patterns of Responses Among Computer Sciences". J. Systems Software.

Panteli, Androniki et al. (1999) "Gender and Professional Ethics in the IT Industry". Journal of Business Ethics.

Peslak, Alan R (2008) "Current Information Technology Issues and Moral Intensity Influences". The Journal of Computer Information Systems.

Pierce, Margaret Anne and John W. Henry (1996) "Computer Ethics and Social Issues: An Implementation Model".

Pomeroy, Ann (2009) "Are women more ethical than men?". HR Magazine.

Putnik, Z. et al. (2008) "Gender Related Issues Associated to Computer Science Students."

Villazon, Cira H. (2004) "Software Piracy: A Study of Formative Factors". Journal of Applied Management and Entrepreneurship.

Weckert, John (2001) "Computer Ethics: Future Directions". Ethics and Information Technology.

Zalta , Edward N., ed. (2008) Computer and Information Ethics. Stanford Encyclopedia of Philosophy.

Appendix Table 1

Gender	Iteration	Unethical	Ethical	Non-Ethical Issue
Male	1	13	11	27
	2	35	7	9
	3	38	6	7
Female	1	22	10	25
	2	46	6	5
	3	43	5	9

Appendix Table 2

Gender	Iteration	Unethical	Ethical	Non-Ethical Issue
Male	1	14	12	25
	2	30	10	11
Female	1	24	16	17
	2	37	3	17

Appendix Table 3

Gender	Iteration	Unethical	Ethical	Non-Ethical Issue
Male	1	23	9	19
	2	37	6	8
Female	1	26	18	13
	2	50	3	4

Appendix Table 4

Scenario I: I may copy someone else's software for my own personal use	
Female	2.76
Male	2.58
Scenario II: I may distribute copies of someone else's software	
Female	3.44
Male	3.06
Scenario III: I may download unauthorized music from the Internet for my own personal use	
Female	2.74
Male	2.24
Scenario IV: I may distribute copies of unauthorized downloaded music	
Female	3.41
Male	2.88
Scenario V: I may download unauthorized video from the Internet for my own personal use	
Female	2.94
Male	2.57

Scenario VI: I may distribute copies of unauthorized downloaded video	
Female	3.51
Male	2.91

Appendix Table 5

Gender	Iteration	Unethical	Ethical	Non-Ethical Issue
Male	1	30	10	11
	2	19	14	18
	3	28	3	20
Female	1	32	10	15
	2	29	10	18
	3	42	2	13

Appendix Table 6

Gender	Iteration	Unethical	Ethical	Non-Ethical Issue
Male	1	33	14	4
	2	13	25	13
	3	20	10	21
Female	1	35	18	4
	2	7	37	13
	3	23	8	26

Appendix Table 7

Gender	Unethical	Ethical	Non-Ethical Issue
Male	29	13	9
Female	29	6	22

Appendix Table 8

Summary of Findings

Another View of Computer Science Ethics:
Patterns of Responses Among Computer Sciences
By: Laura Leventhal, Keith Instone, David Chilson

Issue Studied	Findings	Significance
Overcharging Government for software installation	Both iterations of the study found women to be less tolerant than men in the overcharging of the government	Scenarios yielded statistically significant results

How Men and Women View Ethics
By: Jennifer Kreie and Timothy Paul Cronan

Issue Studied	Findings	Significance
Improper utilization of data and software	In all scenarios, a larger percentage of women found the actions to be unacceptable	Scenarios yielded statistically significant results

The Ethical Perception of Undergraduate Students in Computer-Related Situations:
An Analysis of the Effects of Culture, Gender, and Prior Education
By: David Hay, Patricia McCourt Larres, Peter Oyelere, and Andrew Fisher

Issue Studied	Findings	Significance
Maintaining data integrity/confidentiality and providing quality services to customers	Study found women behaved more ethically than men in all scenarios except monitoring of employee email use. No consistency in responses between males and females regarding email monitoring	Scenarios yielded some statistically significant results

Does Gender Matter in Computer Ethics?
By: Alison Adam and Jacqueline Ofori-Amanfo

Issue Studied	Findings	Significance
Hacking into a network to help a friend	Women were found to be more willing to hack into a network to help a friend	Scenarios did not yield statistically significant results

Attitude Toward Ethical Behavior in Computer Use: A Shifting Model
By: Lori Leonard and Timothy Cronan

Issue Studied	Findings	Significance
Improper use of company resources	Women were found to be less willing to misuse company resources for personal gain	Scenarios yielded statistically significant results

Current Information Technology Issues and Moral Intensity Influences
By: Dr. Alan Peslak

Issue Studied	Findings	Significance
Accessing and distributing software	Women found to respond more ethically than men in every scenario	Scenarios yielded statistically significant results