

CATEGORIES OF ETHICAL ISSUES IN THE USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES

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Abstract

Given the importance of information technology ethics in the knowledge society, this study represents a review of the previous work done by researchers in this field, and the subsequent ethical issues in this domain. At the basis of the study is the PAPA theoretical model based on four ethical issues, such as privacy, accuracy, property and accessibility aspects. The aim of the research is identifying, in current studies, the main categories of ethical issues in the use of information and communication technologies. There were analyzed the studies achieved in 30 published papers starting with the year 2000, in order to observe whether there are any changes in research topics or methodology related to the ethics attitude and awareness of technologies users. The categories of ethical issues in the use of information and communication technologies are the following: general ethical issues, software piracy, plagiarism and cheating phenomena, computer security.

Key words: ethical issues, information and communication technologies, review

1. Introduction

Computer ethics has become an important subject in the field of Information and Communication Technology (ICT) because of the every-day use of technology that provides us with goods, services, entertainment and, last but not least, education. Besides all these benefits, “the other side of the coin”, in which technology offers the possibility for abuse, scam, fraud and even crime, also unfortunately exists. It is the attitude and awareness of every computer and Internet user that makes the difference between the benefits that technology can bring in our lives and the side effects that it may have. Computer ethics represents rules or regulations that ensure an adequate

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use of technology. Every individual is responsible for his own attitude regarding the use of technology. Our perception toward a specific behavior can be subjective due to our background, level of education or simple lack of information and therefore to be considered unethical by others even if we thought we behaved ethically. For that, we need clear regulations or methods to increase awareness among computer users about the problems and dangers they can create in relation to unethical behavior. But, to be able to identify which type of behavior is ethical or not, or the misuse of technology means, a code of ethics with clear principles must be developed for every possible computer and Internet user to follow. These principles or regulations must be permanently adapted because dynamics of technology implies dynamics of problems. For this reason, research studies must be made to address recent problems related to ethical issues regarding ICT related activities. In this way the academic community and all the parties involved in raising awareness toward ethical behavior in technology use are involved in promoting these principles. The aim of this paper is to analyze the main categories of ethical issues in the use of information and communication technologies.

2. Studies based on investigating ethical issues in the use of Information and Communication Technology

2.1. Theoretical models based on the ethical issues of ICT use

One of the oldest theoretical models is represented by PAPA (Mason, 1986), which is based on four main ethical issues. Basically, these four issues concern: privacy – information systems should not invade someone’s private space; accuracy – information must be accurate; property – information systems should protect the intellectual property and the flow of information; accessibility – information systems should be accessible to all. This model was used very often by studies on ethical computer use. Alakurt et al. (2012) investigated the judgments and justifications of student teachers in four scenarios involving four ICT ethical issues: privacy, accuracy, property and accessibility. The study also intended to establish if gender and prior education in ethics have any effect on participants’ attitude. The results obtained have shown that gender do not make a difference in ethical judgment and justification or if the student took a previous course in ICT ethics. The same four ethical issues were studied by Kuzu (2009) aiming to determine the problems regarding computer use ethics in privacy, accuracy, property and accessibility area, to identify the origins of these problems and to suggest possible solutions with the help of ICT experts. Participants in the study were interviewed and interpretation of their answer revealed that they described the concept of ICT ethics through unethical behaviour examples without giving a

definition for it and regarded computer ethics as a component of Internet ethics. In other studies (Liu, 2012; Tahat et al., 2014) the research followed two directions, one regarding attitudes toward information technology ethics in privacy, accuracy, property and access. The other intended to explore cross-cultural differences between groups of participants from different countries with different backgrounds. The participants were represented by two groups of Americans and Chinese business students (Liu, 2012). There was observed the correlation between ethical evaluation and morality judgment of any individual within that ethical issue. The results showed that Chinese students are more ethical about the privacy and access ethical issues while the Americans are more ethical about the property issue. The female students, regardless of their nationality, were more ethical in general than male students. Morality judgment was an important impact on students' ethical evaluation. In the study achieved by Tahat et al. (2014), the participants were represented by IT professionals from Middle East and United States. They were considering gender, characteristics of profession and academic level as factors that can influence their attitude and awareness. The results demonstrated that indeed gender and academic level are influential factors at the individual level and the difference between the two groups was from the intellectual property point of view. These types of researches can have an impact on multinational organizations.

2.2. The importance of studies centred on exploring attitudes towards the ethical use of information technology

In recent years, there has been an increase in researchers' interest in investigating attitudes to the ethical aspects of using information technologies. Almseidein (2014) evaluated the attitudes of undergraduate students from management of information systems study program: maintaining the rights of others, maintaining the intellectual property rights and ethical codes of information system specialists were analysed. The results of the study have shown that students' attitude was high in the field of ethics of information system specialist and average in the remaining two fields. In another study that analysed the attitude and awareness regarding ethical computer use (Özer & Beycioglu, 2011) two sets of questionnaires were applied to a group of teachers from elementary school. The first questionnaire analysed their attitude and awareness of cyber ethics referred as belief and the second, teaching practices of cyber ethics referred as behaviours. The results of the study revealed that the participants were aware of the ethical problems and that there is a significant difference of opinion among female and male teachers in behaviour but not in beliefs. The study conducted by Jamil et al. (2013) represents a survey about teachers' perception for the ethical use of computer and information technology. The research was based on

a question about what demographic factors reveal the teachers' awareness about ethical use of IT&C. The results of the study showed that teachers had different perception about the ethical use of IT&C for demographic factors like designation, subjects, work place, computer use experience and prior knowledge of computer ethics and were able to make a difference between the ethical and unethical use of IT&C. There is no perceptible difference in term of gender of participants.

Investigations of attitudes toward the ethical use of Internet was discussed in several studies (Acilar & Aydemir, 2009; Jakovljević, 2011; Al Otaibi, 2012). The goal of the study conducted by Acilar and Aydemir (2009) was to explore freshman students' attitudes toward computer ethics and Internet use in relation to age, gender and duration of computer use during a week. The conclusions were that age is an important factor for student's awareness of ethics (older students are more aware of ethical issues), the perception about ethical beliefs differ by gender and a longer use of computer per week gives less ethical attitudes for computer use. In another study (Jakovljević, 2011) there was investigated the Internet users' attitudes toward online privacy that can be high, moderate and low, and the types on information users are protecting. The results showed a lack of control over personal online data, lack of privacy rights, a dislike of government regulation or any other privacy concerns. An interesting analysis about Internet use (Al Otaibi, 2012) inquired the relationship between the attitude towards the use of the Internet and its cognitive, emotional and behavioural components. The outcome has shown that the participants have a positive attitude toward the use of the Internet for educational, cultural, entertainment or shopping purposes.

Some studies concentrated on the environment and attitude within an enterprise or company (Phukan & Dhillon, 2000; Stylianou & Winter & Niu & Giacalone & Campbell, 2012). The results suggested that there is a lack of awareness of basic ethical issues inside the enterprise (Phukan & Dhillon, 2000) and that gender and computer expertise interact with Machiavellianism to influence intention of reporting unethical behaviour (Stylianou & Winter & Niu & Giacalone & Campbell, 2012). A proper education regarding ethical use of computer is a necessity and this is reflected by Vartiainen and Siponen (2003) where the authors study what computer ethics education should contain in order to better reflect the computer users' perception about computer-related moral problems.

2.3. Ethical issues of using information and communication technologies

Attitude, behaviour and perception of ethical/ unethical technology use are analysed in different studies (Chiang & Lee, 2011; Freestone & Mitchell, 2004; Gecer & Tosun, 2015; McCarthy & Halawi & Aronson, 2005; Leonard & Cronan, 2005). The attitudes, behaviours and perceptions of

students about ethical computer use were analysed, such as freedom of expression, freedom of association, equal access to information, confidentiality, security and protection of intellectual property; the results have shown that their perception of ethics was influenced by their attitude (egoism) or by friends or colleagues (Leonard & Cronan, 2005). Questionable activities, such as hacking, human Internet trade and downloading (Freestone & Mitchell, 2004) where participants did not see them as wrong, which seems to happen because the Internet offers a shield where anyone can hide their identity and protect themselves from law and society, were also analysed. Aspects related to sexual content, computer piracy and disturbance, homework plagiarism, copyright infringement, Internet addiction, games with violent content and cyber honesty (Gecer & Tosun, 2015) where results showed that gender and school curricula (McCarthy & Halawi & Aronson, 2005) influence negatively their ethical attitude towards Internet use are presented.

Software piracy is an unethical behaviour that creates serious economic, social and financial damages. This behaviour has been analysed (Acilar, 2010) to identify if there is any relationship between demographic characteristics of freshman students and their attitudes toward software piracy. The results showed that respondents had a neutral position which indicates the fact that students do not consider software piracy very bad or very good. The same behaviour toward software piracy is observed in other studies (Bouhni & Deshen, 2013; Rekha & Pillai, 2014; Siegfried, 2004; Whitman & Zafar, 2014). Downloading music from the Internet (Bouhni & Deshen, 2013) or software (Siegfried, 2004) or any copyrighted content (Rekha & Pillai, 2014) is common for teenagers and young people because of their perception of social acceptance and difficulty of getting caught.

Another common unethical behaviour especially among students is plagiarism and cheating. Cilliers (2017) investigated the attitudes of young adults from a higher education institution regarding software piracy, plagiarism and cheating while making use of computer technologies. Etter et al. (2006) were interested in the attitude and perception of participants in cutting and pasting texts from Web sites without attribution or referencing the sources. In other study, there is investigated the attitudes of cheating and plagiarism among female students in the King Saud University (Manar & Shameem, 2014). The three studies have shown the same results, which indicated that plagiarism and cheating represent a problem among students, even if they understand what it is. They do not think it is something wrong. In an interesting study on plagiarism (Quah et al., 2012), the students' orientation to plagiarism from three types of attitudes such as ethical idealism, ethical relativism and Machiavellianism was examined. The study also takes into consideration the religious aspect for attitude toward plagiarism. In this case the results

show that ethical relativism and Machiavellianism had a positive relationship with students' attitude toward plagiarism, yet ethical idealism had a negative relationship. Religious orientation had no moderating effect for attitude toward plagiarism.

Another important issue regarding the use of information and communication technologies is represented by computer security. Aliyu et al. (2010) examined the level of ethical and security awareness among IT and education students. There are satisfactory levels of awareness among the students especially among IT students and from the gender perspective, the male students have a higher level of computer security and ethics violations. An interesting approach to computer ethics education is offered by Kert et al. (2012) through the creation of ethical dilemma scenarios on the topic of information security or computer ethics. North et al. (2010) compared the levels of information security and ethics awareness of students in diverse university environments, such as liberal arts and technology. The result of this comparative study shows that students who attended a technological university tended to be more aware of security and ethics in information systems than those who attend the liberal arts university.

3. Methodology

3.1. Method

A literature review represents the starting point for a valid and successful research because it describes and classifies the related studies. Nakano and Muniz Jr. (2018) highlight that the literature review section of a paper must be concerned with three goals: "setting its theoretical background, identifying gaps in the literature, and defining the key concepts that will be used in the paper". The literature review process involves the following stages (Cronin et al., 2007): selecting a review topic, searching the literature, gathering, reading and analysing the literature, writing the review, references.

Hart (1998, p. 2) considers that a good literature review balances "appropriate breadth and depth, rigor and consistency, clarity and brevity". A good literature review offers information about a specific subject from many sources. Analysis of literature on ethical issues related to the use of information technology should lead to a concise systematization of current studies, but also to the need to carry out future research.

3.2. Research procedure

The papers were selected through manual search using keywords about attitude, awareness or perception of ethical computer use or about ethical/unethical behaviour use of technology. We have searched the digital databases ACM Digital Library, Elsevier, IEEEExplore Digital Library, Google Scholar and also Google search engine to find relevant studies. Another way to search for papers was to look at the references of our already selected studies.

4. Results

There were identified four categories of ethical issues in the use of ICT: general ethical issues, software piracy, plagiarism and cheating and computer security.

4.1. General ethical issues

This category includes a larger area of investigations that are done to cover ethical issues like property rights, freedom of expression, freedom of association, equal access to information, confidentiality, intellectual property, hacking, downloading, questionable activities. When many different topics are studied, this means that the research does not have a specific issue to focus on, the study is more general.

4.2. Software piracy

Software piracy means downloading (in general) or stealing copyright protected software. Software piracy happens when software that is protected by copyright law is copied, modified, or sold forward. In this category is included also the download of music and movies from the Internet. Besides the unethical meaning of software piracy, it also has important economic implications.

4.3. Plagiarism and cheating

Plagiarism is another example of unethical behaviour that has become even more popular and frequent because of the Internet and the easy access to any information a click away from the user. Among students, plagiarism is very popular, there are websites that sell term papers or offer them for free. Plagiarism, which has become associated with cheating, has also increased because it was discovered through studies that students think that what is “out there” public on the Internet is also free. Another possible explanation of this common behaviour is considered to be the high price of the software.

4.4. Computer security

From our collected studies we observed that this ethical issue is less discussed. Security should provide for anyone the sense of certainty and protection from danger or abuse.

Table 1. Categories of ethical issues in the use of ICT

Categories of ethical issues		Studies
General ethical issues	<ul style="list-style-type: none"> - property rights; - freedom of expression; - freedom of association; - equal access to information; - confidentiality; - intellectual property; - hacking; - downloading; - questionable activities; - privacy, accuracy, property and accessibility 	<ul style="list-style-type: none"> - Phukan & Dhillon (2000); - Freestone & Mitchell (2004); - Acilar & Aydemir (2009); - Chiang & Lee (2011); - Jakovljević (2011); - Özer et al. (2011); - Stylianou et al. (2012); - Jamil et al. (2013); - Almseidein (2014); - Gecer & Tosun (2015); - Alakurt et al. (2012); - Kuzu (2009); - Leonard et al. (2005); - Liu (2012); - McCarthy et al. (2005); - Vartiainen et al. (2003); - Tahat et al. (2014); - Khaled (2012)
Software piracy	<ul style="list-style-type: none"> - downloading or stealing of copyright protected software 	<ul style="list-style-type: none"> - Siegfried (2004); - Acilar (2010); - Bouhni & Deshen (2013); - Rekha & Pillai (2014); - Whitman & Zafar (2014)
Plagiarism and cheating	<ul style="list-style-type: none"> - cutting and pasting texts without acknowledging the source; - paraphrasing the words of someone else without citing the source - using ideas or theories of another person without giving credit to that person - buying a paper or assignment online - chat to other students during a test using mobile phones - claiming to have attached an assignment to an email when one did not 	<ul style="list-style-type: none"> - Etter et al. (2006); - Manar & Shameem (2014); - Quah et al. (2012); - Cilliers (2017)
Computer security	<ul style="list-style-type: none"> - protection of personal data or of an organization 	<ul style="list-style-type: none"> - Aliyu et al. (2010); - North et al. (2010); - Kert et al. (2012)

5. Conclusions

For each paper we identified the topic of study in computer ethics issues and we realized that some of the issues are repeating and that papers can be grouped into categories. In the end, there were identified four main categories: general ethical issues, software piracy, plagiarism and cheating, computer security. In most studies, there are used mixed topics between security, hacking, piracy and other ethics issues like access to information, intellectual property, illegal behaviour, rights of others, making the research topic very general, so we considered to include such papers in the general ethical issues category because they did not address a specific topic to consider. Some papers had a specific topic, for example, plagiarism and/or cheating among students. Because it addressed a very specific issue, we considered to make it a special category and not to include those research articles in the category of general ethical issues or software piracy, although plagiarism is considered a type of piracy behaviour.

A conclusion that derives from the analysis of studies is that of the 30 research articles on attitude and awareness of ethical computer use, we observed an increase on the number of published papers starting with 2010 until 2014. After that year, the number of the articles has decreased. Another fact that was observed during our survey was the lack of studies on ethical attitude of Romanian computer and Internet users. This is a relevant conclusion that underlines the importance of our present and future research. We consider that this field of research is at the beginning of its potential and we also need more literature review type of publications on ethic computer and information use.

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