"The intention to use pirated software: a study of undergraduate students in a public institution of higher learning in Malaysia"

| AUTHORS | Mastura Jaafar
T. Ramayah
Tee Wan Teng |

NUMBER OF REFERENCES	NUMBER OF FIGURES	NUMBER OF TABLES
0	0	0

SECTION 1. Macroeconomic processes and regional economies management

Mastura Jaafar (Malaysia), Thurasamy Ramayah (Malaysia), Tee Wan Teng (Malaysia)

The intention to use pirated software: a study of undergraduate students in a public institution of higher learning in Malaysia

Abstract

Software piracy refers to the illegal copying of software. This act has been seen as one of the ethical issues in cyberspace. In this research, a theoretical model is developed to test the factors that would affect piracy intention of undergraduates. The Theory of Reasoned Action Model (TRA) and Theory of Planned Behavior (TPB) have been used as the basis for developing a model. A survey was conducted on 150 students at Universiti Sains Malaysia (USM), Penang, to examine the underlying factors that influence the undergraduates' piracy act. From the regression analysis, the results indicate that moral beliefs and perceived consequences have a significant impact on the piracy behavior. Implications of these findings are further discussed.

Keywords: intention, pirated software, and undergraduate students.
JEL Classification: O3, O32.

Introduction

Software piracy occurs when an individual illegally copies commercially available software in order to avoid fees, or when an individual makes unauthorized copies of an organization's internally developed software for personal use or distribution (Straub & Nance, 1990). The risk of using pirated software in business is high. Business cannot afford to lose data as data availability is critical in today's fast-paced competitive world. Pirated software may affect system capability in organizations where it may fail to deliver intended features, options and performance. In addition, users will not be able to access updated enhancements, security features and new innovations. This again can disrupt the business function and potentially mean losing out to competitors. The software would not be supported by the vendor or distributor if it is not properly licensed. Therefore, users lose out in the warranty of the product delivering its intended capability. On a personal level, software piracy can lead to embarrassment, loss of reputation and credibility and the most importantly it may bring you a potential jail sentence. Furthermore, software piracy has also been known to be linked to organized crime.

The "pirate culture" in Malaysia should no longer be left alone. Piracy in Malaysia is a social and economy problem that affects all level of society. Malaysia's software piracy rate was at 61% in 2004, according to the Second Annual BSA and IDC Global Software Piracy study. The latest PC software piracy statistics for year 2006 indicate that Malaysia's software piracy rate is 60%. Whereas significant drop in software piracy software will give a very positive impact on the economy. According to the 2005 IDC Economic Impact Study, a mere 10-point drop in piracy levels in Malaysia from 61% to 51% over four years would add another 5,451 jobs, more than RM1.2bil in contribution to GDP, more than RM240mil in taxes and RM908mil in revenues to local vendors. Consequently, the 10% drop would also help the IT industry to grow 91% bigger in 2009 than it was in 2004, compared to 78% if the piracy rate remains the same. Obviously, a decrease in piracy would boost a country's economy and create more jobs.

Technology has made software piracy as simple as connecting to the Internet, downloading the application and burning the application to CD. Advancement of technology has worsened the pirate culture in Malaysia. This harmful practice will only hinder the further development of the IT industry in Malaysia. In these days, Malaysia has become a new haven for piracy software due to the inefficiency of law, increasing demands and Malaysian's acceptance of piracy software.

Since 1990s, research attention has been focused on identifying the determinants of software piracy. For example studies by Eining & Christensen (1991), Logsdon et al. (1994) and Rahim et al. (2000) looked into positive attitudes for those who associate with peers engaging in pirating software toward software piracy. Solomon & O'Brien (1990), Glass and Wood (1996), and Taylor and Shim (1993) explored about beliefs where they postulate that individuals who did not believe software piracy is a moral misbehavior are likely to pirate software.

Although these studies are useful in verifying the actual problem of software piracy, they are not useful in contributing to the understanding of the behavior using criminological theory. In order to have a comprehensive understanding of software piracy,

the application of criminological theory is essential as it will provide criminologists, professionals, and practitioners with important theoretical frameworks for developing effective interventions. Criminological theories can isolate the important measures to expand the behavior.

Thus, the objective of this research is to identify the factors that influence undergraduates' piracy act in USM. Both self-control theory and social learning theory have been applied in this study to predict the behavioral intention to use pirated software.

1. Literature review

This study used TRA and TPB as the theoretical basis, and incorporated theories on related subject i.e., Technology Acceptance Model (TAM) to develop a model especially well-suited for modeling piracy behaviors.

1.1. TRA Model (Theory of Reasoned Action). Fishbein and Ajzen's (1975) Theory of Reasoned Action (TRA) suggests that a person's decision to act ethically or unethically is determined by his/her intentions. Scholars refer to it as the "behavioral intention model" (Swanson, 1982). As behavioral intention models have been verified by many empirical research, they have been recommended by scholars in IS filed as the skeletal theory to explore the behaviors of individual IS employees (Davis et al., 1989).

TRA model consists of attitudinal, social influence, and intention variable to predict behavior. The theory emphasizes that intention to perform a behavior is determined by the individual's attitude towards performing the behavior and the subjective norm held by the individual. TRA postulates that individual behavior is driven by behavioral intentions where behavioral intentions are a function of an individual's attitude toward the behavior and subjective norms surrounding the performance of the behavior.

Intention is the best predictor of behavior and attitude and subjective norms influence the intention. Fishbein and Ajzen (1975, 1980) have claimed that variables not explicitly included in TRA (e.g., demographic variables, attitudes toward target and personality traits) can affect intention and behavior only if they influence the attitudinal or normative considerations or their relative weights.
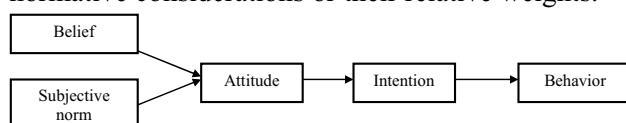

Fig. 1. TRA Model (Theory of Reasoned Action)

However, the model has some limitations including a significant risk of confusing between attitudes and norms since attitudes can often be expressed as norms and vice versa. A second limitation is the assumption that when someone forms an intention to act, he/she will be free to act without limitation. In practice, constraints such as limited ability, time, environmental or organizational limits, and unconscious habits will limit the freedom to act. Thus, the Theory of Planned Behavior (TPB) attempts to resolve this limitation.

1.2. TPB Model (Theory of Planned Behavior). Many researchers have suggested the intention models from social psychology can explain the behavior as well as behavioral intention of individuals. Ajzen's (1985, 1991) Theory of Planned Behavior (TPB) is an especially well-researched intention model that has been proven successful in predicting and explaining behavior across a wide variety of domains (Lin et al., 1999). A number of previous studies concerning traditional software piracy have used the TPB as conceptual model to explain the behavioral intention of individuals.

The concept in TPB is based on the idea that behavior achievement depends together on motivation (intention) and ability (behavioral control) (Ajzen, 1985 and 1989). TPB suggests that intention toward behavior influences actual behavior. Moreover, intention to perform a behavior is determined by one's attitude, subjective norm, and perceived behavioral control (Kwong & Lee, 2002). According to Fishbein and Ajzen (1975), intention refers to the subjective probability of one's engagement in any behavior. The stronger the behavioral intention is, the more likely the execution (Lin et al., 1999). For instance, if an individual has a strong intention to pirate software, there is a big possibility that the individual will commit the act.
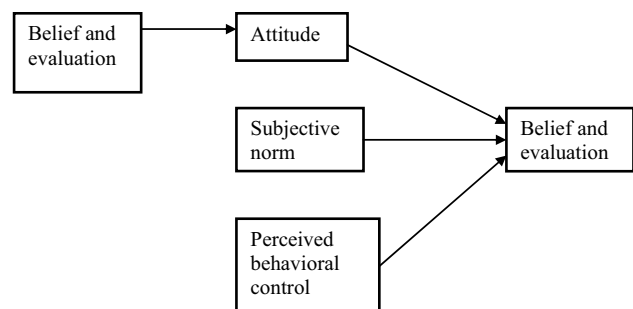

Fig. 2. TPB Model (Theory of Planned Behavior)

1.3. TAM Model (Technology Acceptance Model). In the last two decades, a number of studies have provided some theoretical frameworks for research in the acceptance of information technology and information system (IT/IS) (i.e. Ajzen, 1985; Davis, 1989; Davis et al., 1989; Mathieson, 1991; Taylor & Todd, 1995). Among them, the technology acceptance model (TAM) is believed most robust, parsimonious, and influential in explaining IT/IS

adoption behavior (Davis, 1989; Davis et al., 1989; Igbaria et al., 1995; Mathieson, 1991).

The Technology Acceptance Model (TAM) was developed by Davis (1989), to explain computer-usage behavior. The theoretical basis of the model was Fishbein and Ajzen's Theory of Reasoned Action (TRA). The goal of TAM is to provide an explanation of the determinants of computer acceptance that is general, capable of explaining user behavior across a broad range of end-user computing technologies and user populations, while at the same time being both economical and theoretically justified.
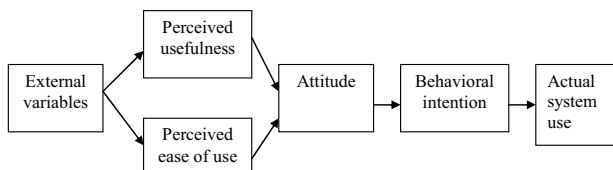
Source: June Lu et al. (2003).

Fig. 3. Technology Acceptance Model (TAM)

Throughout the years, TAM has received extensive empirical support through validations, applications, and replications for its power to predict use of information systems (i.e. Davis, 1989; Davis et al., 1989; Mathieson, 1991; Taylor & Todd, 1995; Venkatesh & Davis, 2000). On the other hand, researchers have also recognized that the generality of TAM fails to supply more meaningful information on users' opinions about a specific system. There is the need for TAM to include additional factors or incorporate with other IT acceptance models for improvement of its specificity and explanatory utility (i.e. Agarwal & Prasad, 1998; Hu et al., 1999; Mathieson, 1991).

Theory of Planned Behavior (TPB) was proposed that in addition to attitudes toward use, subjective norms, and perceived behavioral control such as skills, opportunities, and resources need to use the system, also influence behavior. Taylor and Todd (1995) further extended and integrated TAM and TPB by establishing a decomposed TPB. This model incorporates additional factors that are not present in TAM, but have been shown to be important determinants of behavior. TPB includes the possible influence of perceived behavioral control on behavioral intention and actual behavior. The decomposed TPB is seen as implementing TAM and providing a more complete understanding of usage (Taylor & Todd, 1995).

2. Proposed framework

The proposed research model is presented in Figure 4.
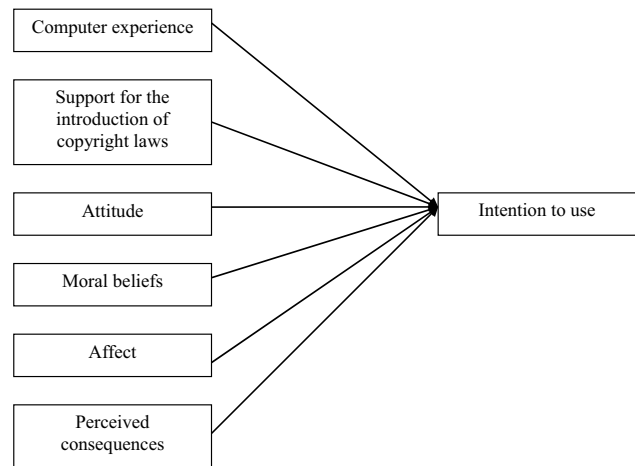
Fig. 4. Research model

Demographic (in terms of computer experience) does play an important role for undergraduates. Those undergraduates are young generations who will experience the fast changing pace of technology world and become the heart in the development of technology information. The more computer experience an undergraduate has, the more likely he/she will opt for pirated software (Wong et al., 1990). On the other hand, the more experience an undergraduate has, the higher will be his/her knowledge and literacy about the way of using software. Therefore, the frequency and duration of software use will increase (Loch & Conger, 1996). The increased interaction is likely to increase their need to explore a variety of software packages to perform more varieties of tasks. Hence, experienced undergraduates may opt for pirated software. This notion is supported by Wong et al. (1990) who found greater software piracy among experienced computer students. Moreover, it is argued that some of the experienced undergraduates may view pirated software as a challenge to their competence. Thus, the following hypothesis is proposed:

H1:   There is a positive relationship between computer experience of undergraduates and their intention to use pirated software.

Undergraduates who appreciate the need for intellectual property and copyright laws are more likely to discontinue using pirated software (Ho, 1996). The deeper the individual's perception of piracy issue is, the more possible the individual's concerns for the piracy behavior are (Jones, 1991). The introduction of copyright laws is considered an important tool to discourage people to commit software piracy. Software piracy laws have been authorized in most western countries for quite some time, but are new in Asia, where the protection of intellectual property is viewed as a western concept, and thus the laws have little place in the society (Ho, 1996). Thus, undergraduates who cherish the view that copyright

law is a western concept meant to exploit poor Asians, are less likely to support the introduction of copyright law, and would continue to use pirated software. In contrast, those who appreciate the need for new copyright laws and believe that software piracy is harmful for the potential growth of the software industry, are more likely to support the introduction of copyright laws. They will also stop using pirated software (Ho, 1996). Thus, the following hypothesis is drawn:

H2:   There is a negative relationship between undergraduates' support for the introduction of copyright laws and their intention to use pirated software.

Attitude has a direct relationship with software piracy (Rahim et al., 2000). Each individual has different attitude toward pirated software (Fishbein & Ajzen, 1975; Karahanna et al., 1999). Vitell and Davis (1990) felt that software piracy was so prevalent that it had become socially acceptable. Many undergraduates viewed copying as victimless crime, and an easy way to lower their technology spending. Rahim et al. (2000) reported a significant relationship between attitude and use of pirated software. The present study therefore proposes the following hypothesis:

H3:   Attitude has a positive impact on the intention of using pirated software.

Undergraduate who has a stronger belief that software piracy is wrong is more unlikely to commit that act (Swinyard et al., 1990; Bachman et al., 1992). According to Triandis (1980), affect refers to an individual's feelings of joy, elation, pleasure, depression, distaste, discontentment, or hatred with respect to a particular behavior. This study followed the work of Swinyard et al. (1990) and Bachman et al. (1992) who found that moral beliefs do have impact on undergraduates' behavior of using pirated software. Similarly, Al-Jabri and Abdul-Gader (1997) found that individual attitudes have a significant effect on ethical intention to pirate software. The following hypothesis is drawn:

H4:   There is a negative relationship between moral beliefs and the intention to use pirated software.

There is a relationship between affect and piracy behavior (Bergeron et al., 1995). According to Triandis (1980), affect refers to an individual's feelings of joy, elation, pleasure, depression, distaste, discontentment, or hatred with respect to a particular behavior. Triandis (1980) argues that literature shows a profound and substantial relationship between affect and behavior. Bergeron et al. (1995) observed that there was a positive relationship between affect and senior management's use of executive information systems. In an ethical context, indi-

viduals are unlikely to intend to pirate a software if they feel that pirating software is wrong (Loch & Conger, 1996). Logsdon et al. (1994) found that a high level of tolerance toward software piracy leads to this behavior. Similarly, Al-Jabri and Abdul-Gader (1997) found that individual attitudes have a significant effect on ethical intention to pirate software. Consistent with the theoretical model presented by Hunt and Vitell (1986), Thong and Yap (1998) found that moral intention to pirate software is primarily influenced by the ethical judgement. Finally, Banerjee et al. (1998) hypothesized that moral judgement and attitude toward ethical behavior influence intention to behave ethically or unethically. The following hypothesis is formed:

H5:   There is a positive relationship between individuals' affect towards software piracy and their intention to use pirated software.

Perceived consequences/beliefs also have linkage with the intention to pirate software (Hunt & Vitell, 1986; Thong & Yap, 1998). According to Triandis (1980), each act or behavior is perceived as having a potential outcome that can be either positive or negative. An individual's choice of behavior is based on the probability that an action will provoke a specific consequence. Similarly, a person's intention to pirate a software is influenced by the potential outcomes (Hunt & Vitell, 1986; Thong & Yap, 1998). For example, Simpson et al. (1994) found that the benefits that individuals associate with software piracy are improved acquisition time, financial gain, and the challenge of copying. Similarly, Cheng et al. (1997) found that the following reasons were evoked by individuals as factors leading to piracy: software too expensive, want to try out software, and cannot afford the software. Finally, Banerjee et al. (1998) suggest that the degree to which an individual perceives that a reward follows from his/her behavior affects the intention to behave ethically or unethically. Therefore, the following hypothesis is formed:

H6:   There is a negative relationship between perceived consequences and intention to use pirated software.

3. Methodology

3.1. Variables, measures and measurement scales. There are 6 independent variables in this study which are computer experience, support for the introduction of copyright laws, attitude, moral beliefs, affect, and perceived consequences which were adapted from previous studies, measured on a 7 point Likert scale which ranged between "strongly disagree" and "strongly agree" and coded 1 to 7, respectively.

Table 1. Variables and measures

Variables	No of questions	Source
Computer experience	3	Wong et al. (1990)
Support for the introduction of copyright laws	3	Ho (1996)
Attitude	4	Davis (1989)
Moral beliefs	8	Swinyard et al. (1990)
Affect	7	Loch & Conger (1996)
Perceived consequences	9	Thong & Yap (1998)
Intention to use	3	Ajzen (1989)

3.2. Sampling frame. The study population consists of undergraduates in Universiti Sains Malaysia (USM), Pulau Pinang. Three schools have been identified, which are Management School, Computer Science School, and Education School. These schools were chosen because of their students' frequent interaction with the computer. In this study, convenience sample (non-probability sampling) has been used.

4. Results

The respondents' profile is summarized in Table 2. They mainly consist of male (52%) aged between 22 to 23 (63.3%) years old. Most of them are Chinese (54.7%) and are taking arts stream courses (83.3%). In addition, most of the respondents live outside the campus (58.7%).

Table 2. Profile of respondents

Variables	Categories	Frequency	Percentage
Gender	1. Female	63	48.0
	2. Male	87	52.0
Age	1. < 20	15	10.0
	2. 20 - 21	40	26.7
	3. 22 - 23	95	63.3
Race	1. Malay	52	34.7
	2. Indian	16	10.7
	3. Chinese	82	54.7
Stream of study	1. Arts	125	83.3
	2. Science	25	16.7
Place of living	1. In campus	62	41.3
	2. Outside campus	88	58.7

Most of the respondents' computer experience is less than 4 years which contribute to 60% (90 respondents). About 36 respondents have computer experience between 4 to 7 years which represents 24% and only 24 respondents (16%) have more than 7 years of computer experience. A total of 60 respondents (40%) spend less than 2 hours per day in using computer. 36 respondents

(24%) spend 2 to 4 hours per day in using computer and 24 (16%) respondents spend 4 to 6 hours per day facing the computer. Only 4 respondents (2.7%) spend 6 to 8 hours per day in using computer. 9 respondents (6%) spend 8 to 10 hours in using computer. Lastly, 17 respondents (11.3%) spend more than 10 hours in a day in using computer. Majority of the respondents have access to computer at home which contribute to 98 people (65.3%), whereas 45 respondents (30%) use computer at school, and the remaining 7 respondents (4.7%) use computer at other places such as cyber café or friend's house.

Table 3. Computer usage level

		Frequency	Percentage
Computer experience	1. Less than 4 years	90	60.0
	2. Between 4 to 7 years	36	24.0
	3. Over 7 years	24	16.0
Time spent daily	1. Less than 2 hours	60	40.0
	2. 2 to 4 hours	36	24.0
	3. 4 to 6 hours	24	16.0
	4. 6 to 8 hours	4	2.7
	5. 8 to 10 hours	9	6.0
	6. More than 10 hours	17	11.3
Place of computer use	1. Home	98	65.3
	2. School	45	30.0
	3. Others	7	4.7

Table 4 presents the summary of reliability analysis of variables in this study. Nunnally (1978) argued that at the early stage of research, reliabilities of 0.50 to 0.60 would suffice.

Table 4. Reliability test

Variable	Number of items	Items dropped	Reliability (Cronbach's Alpha)
Attitude	4	1	0.863
Support	3	-	0.981
Moral beliefs	7	3	0.853
Intention to use	3	-	0.977
Affect	7	-	0.942
Perceived consequences	9	3	0.708
Computer experience	3	1	0.809

Table regression analysis shows that all the six independent variables can be used to explain the variance in the dependent variable (Intention to use the Pirated software). The regression analysis showed that 15.9% of the variance (R^2) in the intention to use the pirated software can be explained by the six independent variables.

Table 5. Regression analysis

Variable	Intention to use pirated software
	Std. Beta
Attitude	0.132
Support	0.132
Moral beliefs	- 0.303**
Affect	0.255
Perceived consequences	- 0.136**
Computer experience	- 0.046
R^2	0.159
F value	4.498**
Durbin-Watson	2.165

Note: *$p < 0.05$, ** $p < 0.01$.

According to regression analysis, H4 and H6 which are moral beliefs and perceived consequences have negative relationship with the intention to use pirated software among undergraduates of USM, thus H4 and H6 are fully supported. H1, H2, H3, and H5 which are computer experience, attitude, support for the introduction of copyright laws, and affect have no significant relationship with the intention to use the pirated software among undergraduates of USM, thus H1, H2, H3 and H5 are not supported.

5. Discussion

There is no relationship between computer experience and the intention of using the pirated software among USM undergraduates. This result is not consistent with Wong et al.'s (1990) finding who found greater software piracy among computer experienced students. Even easy access and readily availability of pirated software in the market were considered as a major reason that pressed undergraduates resort to use the pirated software, but not having enough experience of using computer could be a possible answer. It could be supported by data in Table 3 which shows that only 90% of respondents have less than 4-year computer experience and 60% use less than 2 hours per day. Furthermore 83.3% of them are in art stream which support that they are only using computers for doing assignment only. This explanation could support the non-significance.

In this study, support for the introduction of copyright laws does not influence the dependent variable (Intention to use). In other words, support for the introduction of copyright laws has positive relationship with Intention to use the pirated software. This result is inconsistent with Ho's (1996) finding who found greater software piracy among academics who did not appreciate the introduction of copyright laws by government. The insignificant impact of support for the introduction of copyright laws suggests that, even though undergraduates support for the Government to introduce more copyright laws to protect the intellectual property, they might still intend or expect to pirate software. Undergraduates possibly viewed that an introduction of copyright laws would only protect the interests of the vendors who are charging a high price. Furthermore, undergraduates of USM were more influenced by the benefits of their actions (i.e. piracy), than by the legality of piracy. Lack of understanding of copyright laws by undergraduates is also the major cause of software piracy in the university. Undergraduates tended to using pirated software because they did not understand the legal definition of piracy and the consequences of noncompliance.

As for relationship between "Attitude" and "Intention to use" in this study, it infers that attitude will not influence the intention to use the pirated software among the undergraduates of USM. This suggests that even through undergraduates of USM feel that using pirated software is wrong, they may still want to continue to use pirated software. Attitude has long been identified as a cause of intention. This finding is not consistent with Loch and Conger's (1996) finding who said that individuals are unlikely to intend to pirate software if they feel that pirating software is wrong. This result could be a good reason to support a high percentage of 60% software piracy rates in Malaysia. Their guilty feeling could also support that they use pirated software. In addition, some undergraduates could be reluctant to answer such sensitive questions. Moreover, some undergraduates may think that software piracy is a sensitive issue and afraid of troubles that may bring to them after they have admitted commit the act; they choose to remain silent and neutral in answering the questionnaires.

This study shows that moral beliefs toward software piracy have an important link to software piracy as there is a negative relationship between them. This finding is consistent with the literature on moral beliefs towards software piracy (see Swinyard et al., 1990; Kini et al., 2003; Glass & Wood, 1996; Thong & Yap, 1998; and Wagner & Sanders, 2001). In addition, this finding is consistent with a large amount of the rational choice literature in criminology that shows moral beliefs to be an inhibitor to criminal behavior (Bachman et al., 1992; Nagin & Paternoster, 1993). The finding of this study shows that undergraduates view software piracy as a moral issue. Importantly, the finding shows that the moral belief in the behavior may inhibit some undergraduates of USM from pirating software. Piracy is an immoral act, some undergraduates may feel shame or "not face" when their peers or friends found out that they are actually using pirated software. The attitude of being afraid laughing or being talk bad by their friend may cause them to stop using pirated software.

This study shows that there is no relationship between undergraduates' affect towards software piracy and their intentions to pirate software. This finding is not consistent with Loch and Conger's (1996) finding who said that individuals are unlikely to intend to pirate software if they feel that pirating software is wrong. The insignificant impact of affect (H5) suggests that, even though undergraduates perceive piracy as wrong and unethical, they might still intend or expect to pirate software. Therefore, any attempt to change attitudes toward piracy to increase the awareness that illegal copying of software is unethical may fail in discouraging piracy. Availability of pirated software, cultural differences regarding intellectual property rights, and the strength of copyright laws may be the factors contributing to software piracy among undergraduates in USM. The benefits brought by pirated software have made undergraduates forget about the rule and their principles. In addition, undergraduates may believe that using pirated software is "victimless". They could have considered that software companies responsible for developing software make so much money that a few pirated copies by them would not hurt the software companies' business.

Perceived consequences were found significantly influencing intentions to pirate software among USM students. This finding is consistent with Hunt & Vitell (1986), and Thong & Yap (1998) finding who said that a person's intention to pirate a software is influenced by the potential outcomes. For example, Sims et al. (1996) found that the following reasons were evoked by individuals as factors leading to piracy: software too expensive, want to try out software, and cannot afford the software and these reasons are confirm our finding. A considerable proportion of the undergraduates regarded high price of original software as a reason that prompted them to use pirated software. Besides that, low risk of being penalized is also become a factor that motivate undergraduates continue to use pirated software. Peers and friends of undergraduates also have significant influence on them using pirated software.

Conclusion and suggestions

Moral beliefs play an important role in determining the intention of using the pirated software. Importantly, the finding shows that the moral belief in the behavior may inhibit some undergraduates from pirating software. Therefore, universities should educate their student bodies and attempt to change their moral beliefs toward piracy to increase the awareness that illegal copying of software is unethical. Awareness campaigns should be set up in the campus to conveying the messages that emphasize the morality of software piracy. While not exhaus-

tive, implementing such a campaign may be helpful in reducing the incidences of software piracy. In addition, convey the messages to the undergraduates that software piracy is unethical in lectures may aid in solving the piracy problem. However, Simpson et al. (1994) argue that just teaching ethical considerations to students in a few lecturers or a training session will not change their behavior. Oz (1990), for instance, found that there were no significant differences in the ethical perceptions of students who took a course on ethics and those who did not. To solve to this problem, such training should be coupled with strong software copying policies clearly stating assignments of penalties and criminal liabilities (Straub and Nance, 1990).

Enhancing educational messages that target the role of peers and attitudes in software piracy need to be available to all the undergraduates in order to educate them to better understand what piracy is. Such messages should emphasize the morality of software piracy. In addition, if universities make an effort to educate their student bodies, they may reduce their liability in software piracy cases. A survey by Robinson and Reithel (1994) indicated that only 64% of the private institutions and 61% of the public institutions had a software piracy designed to discourage software piracy. Thus, universities should educate their students well in order to curb the software piracy problems effectively.

From the result of this research, perceived consequence is the most important factor in determining the intention of using the pirated software among USM undergraduates. The high price of original software plays an important role in motivating students towards using pirated software. The income level of undergraduates is low and most of them have limited fund to survive, so they cannot afford to buy the genuine software. A number of studies (Malhotra, 1994; T. Noyelle, 1990) found that the high price of legitimate software was the main reason that people justified piracy acts. The high price of original copies of software appeared to drive undergraduates to seek alternative means to gain access to such software. Furthermore, the low risk of being caught was also the factor that encouraged undergraduates to continue using the pirated software. Thus, unless copyright laws are strongly enforced, mere existence of such laws appeared to be ineffective to curb software piracy.

Furthermore, the findings presented here suggest several implications for software manufacturers to reduce piracy. Perceived consequences such as saving time in acquiring software influence intentions to pirate software, therefore, manufacturers should revise their distribution strategies. Simpson et al.

(1994) argue that intensive distribution of software packages and reduced prices should provide potential software pirates with availability and ease of purchase of these products and, therefore, significantly reduce the likelihood to pirate software from other convenient sources.

As with many developing countries, software piracy in Malaysia is a serious issue that needs to be addressed. This study confirms the extent of the problem in Malaysia, and supports the findings of Business Software Alliance (BSA, 2005). However, it also provides hope for the future, as a majority of undergraduates clearly indicated that software piracy is unethical. Through this research, we have found out that moral beliefs and perceived consequences have positive relationship with the intention of using pirated software. This study somewhat is not accurate as the independent variables were only able to explain 15.9% variance in the intention to use the pirated software. However, this study has contributed comprehensive understanding towards main factors of committing piracy. Moral beliefs and perceived consequences can be used as a guideline in reducing software piracy among Malaysians.

References

1. Ajzen, I. From Intentions to Action: A Theory of Planned Behaviour' in Action-control: From Cognition to behaviour, Kuhl, J and Bechmann, J (eds). – Springer: Heidelberg, 1985.
2. Ajzen, I. Attitude Structure and Behaviour, in Attitude Structure and Function, Pratkanis, A.R, Breckler, S.J and Greenwald, A.G (eds.). – Hillsdale, NJ: Lawrence Erlbaum Associates, 1989.
3. Ajzen, I. The Theory of Planned Behavior: Some Unresolved Issues // Organizational Behavior and Human Decision Processes, 1991. – №50. – pp. 179-211.
4. Agarwal, R., P. Prasad. A Conceptual and Operational Definition of Personal Innovativeness in the Domain of Information Technology // Information System Research, 1998. – №2 (9). – pp. 204-205.
5. Al-Jabri, I., A. Abdul-Gader. Software Copyright Infringements: An Exploratory Study of the Effects of Individual and Peer Beliefs // Omega, International Journal of Management Science, 1997. – №3 (25). – pp. 335-344.
6. Bachman, R., R. Paternoster, S. Ward. The Rationality of Sexual Offending: Testing a Deterrence/Rational Choice Conception of Sexual Assault // Law and Society Review, 1992. – №26. – pp. 343-372.
7. Banerjee, D., T.P. Cronan, T.W. Jones. Modeling IT Ethics: A Study in Situational // MIS Quarterly, 1998. – pp. 31-60.
8. Bergeron, F., L. Raymond, S. Rivard, S. Gara. Determinants of EIS Use: Testing a Behavioral Model // Decision Support Systems, 1995. – №14. – pp. 131-146.
9. Business Software Alliance, Second Annual BSA and IDC Global Software Piracy Study. Online: http://www.bsa.org/, accessed on 22 February 2007.
10. Cheng, H.K., R.R. Sims, H. Teegen. To Purchase or to Pirate Software: An Empirical Study // Journal of Management Information Systems, 1997. – №4 (13). – pp. 49-60.
11. Davis, F.D. Perceived Usefulnes, Perceived Ease of Use and User Acceptance of Information Technology // MIS quarterly, 1989. – №3 (13). – pp. 319-340.
12. Davis, F.D., R.P. Bagozzi, P.R. Warshaw. User Acceptance of Computer Technology: A Comparison of Two Theoretical Models // Management Science, 1989. – №8 (35). – pp. 982-1003.
13. Eining, S.T., A.L. Christensen (1991). A Psycho-social Model of Software Piracy: The Development and Test of Model in Ethical Issue in Information Systems, Dejoie, R., Flower, G. And Paradice, D (eds). – Bosten, MA: Boyd and Fraser Publishing Company, 1991.
14. Fishbein, M., I. Ajzen. Belief, Attitude, Intenstion, and Behavior: An Introduction to the Theory and Research. – Reading, MA: Addison-Wesley, 1975.
15. Fishbein, M. A Theory of Reasoned Action: Some Application and Implications in H. Howe and M. Page (eds.) – Lincoln, NB: Nebraska Symposium on Motivation, 27, University of Nebraska Press, 1980.
16. Glass, R.S., W.A. Wood. Situational Determinants of Software Piracy: An Equity Theory Perspective // Journal of Business Ethics, 1996. – №15. – pp. 1189-1198.
17. Hu, P.J., P.Y.K. Chau, O.R.L. Sheng, K.Y. Tam. Examining the Technology Acceptance Model Using Physician Acceptance of Telemedicine Technology // Journal of Management Information Systems, 1999. – №2 (16). – pp. 91-112.
18. Ho, K. A Study into the Problem of Software Piracy in Hong Kong and China. – MSc Dissertation: London School of Economics and Political Sciences, London, 1996.
19. Hunt, S.D., S. Vitell. A General Theory of Marketing Ethics // Journal of Macromarketing, 1986. – pp. 5-16.
20. Igbaria, M., T. Guimaraes, G.B. Davis. Testing the Determinants of Microcomputer Usages Via a Structural Equation Model // Journal of Management Information System, 1995. – №4 (11). – pp. 87-114.
21. Jones, T.M. Ethical Decision Making by Individuals in Organizations: An Issues Contingent Model // Academy of Management Review, 1991. – №2 (16). – pp. 366-395.
22. Karahanna, E., D.W. Straub, M.L. Chervany. Information Technology Adoption Across Time: A Cross-Sectional Comparison of Pre-Adoption and Post-Adoption Beliefs // MIS Quarterly, 1999. – №2 (23). – pp. 183-213.
23. Kini, R.B., H.V. Ramakrishana, B.S. Vijayaraman. An Exploratory Study of Moral Intensity Regarding Software Piracy of Students in Thailand // Behavior and Information Technology, 2003. – №22. – pp. 63-70.

24. Kwong, T.C.H., M.K.O. Lee. Behavioral Intention Model for the Exchange Mode Internet Music Piracy // Proceedings of the 35th Hawaii International Conference on System Sciences. IEEE, 2002.

25. Lin, T.C., M.H. Hsu, F.Y. Kuo, P.C. Sun. An Intention Model-Based Study of Software Piracy // Proceedings of the 32nd Hawaii International Conference on System Sciences. IEEE, 1999.

26. Loch, K.D., S. Conger. Evaluating Ethical Decision Making and Computer Use // Communications of the ACM, 1996. – №7 (39). – pp. 74-83.

27. Logsdon, J.M., J.K. Thompson, R.A. Reid. Software Piracy: Is It Related to Level of Moral Judgment? // Journal of Business Ethics, 1994. – №13. – pp. 849-857.

28. Lu, J., C.S. Yu, C. Liu, J.E. Yao. Technology Acceptance Model for Wireless Internet // Internet Research, 2003. – №3 (13). – pp. 206-222.

29. Malhotra, Y. Controlling Copyright Infringements of Intellectual Property: The Case of Computer Software – Part Two // Journal of Systems Management, 1994. – №7 (45). – pp. 12-17.

30. Mathieson, K. Predicting User Intention: Comparing the Technology Acceptance Model with the Theory of Planned Behavior // Information System Research, 1991. – №3 (2). – pp. 173-191.

31. Nagin, D.S., R. Paternoster. Enduring Individual Differences and Rational Choice Theories of Crime // Law and Society Review, 1993. – №27. – pp. 467-496.

32. Nunnally, J. C. Psychometric Theory. – New York: McGraw-Hill, 1978.

33. Noyelle, T. Computer Software and Computer Services in Five Asian Countries // United Nations Conference on Trade and Development/United Nations Development Programme (UN-CTAD/UNDP), Services in Asia and the Pacific: Selected Papers 1, United Nations, New York, 1990.

34. Oz, E. The Attitude of Managers – To-Be Toward Software Piracy // OR/MS Today, 1990. – №4 (17). – pp. 24-26.

35. Rahim, M.M., S.C. Abdullah, A.H. Seyal, M.N. Rahman. Student Attitudes Towards Software Piracy: A Preliminary Study // Jurnal Teknologi Maklumat, 1996. – №1 (8). – pp. 22-31.

36. Rahim, M.M., M.N. Abd Rahman, A.H. Seyal. Softlifting Intention of Students in Academia: A normative Model // Malaysian Journal of Computer Science, 2000. – №1 (13). – pp. 48-55.

37. Robinson, R.K., B.J. Reithel. The Software Piracy Dilemma in Public Administration: A Survey of University Software Policy Enforcement // Public Administration Quarterly, 1994. – №4 (17). – pp. 485-498.

38. Simpson, P.M., D. Banerjee, C.L. Simpson, Jr. Softlifting: A Model of Motivation Factors // Journal of Business Ethics, 1994. – №13. – pp. 431-438.

39. Solomon, S.L., J.A. O'Brien. The Effect of Demographics Factors on Attitude Towards Software Piracy // Journal of Computer Information Systems, 1990. – №3 (30). – pp. 40-46.

40. Straub, D., W. Nance. Discovering and Disciplining Computer Abuse in Organizations: A Field Study // MIS Quarterly, 1990. – №14. – pp. 45-60.

41. Sims, R.R., H.K. Cheng, H. Teegen. Toward a Profile of Students Software Pirates // Journal of Business Ethics, 1996. – №15. – pp. 839-849.

42. Swanson, E.B. Measuring User Attitude in MIS Research: A Review // OMEGA, 1982. – №10. – pp. 157-165.

43. Swinyard, W.R., H. Rinne, A.K. Kou. The Morality of Software Piracy: A Cross-Cultural Analysis // Journal of Business Ethics, 1990. – №9. – pp. 655-664.

44. Taylor, G.S., J.P. Shim. A Comparative Examination of Attitudes Toward Software Piracy Among Business Professors and Executives // Human Relations, 1993. – №4 (46). – pp. 419-433.

45. Taylor, S., P.A. Todd. Understanding Information Technology Usage: A Test of Competing Models // Information System Research, 1995. – №2 (6). – pp. 144-176.

46. Thong, J.Y.L., C.S. Yap. Testing and Ethical Decision-Making Theory: The Case of Softlifting // Journal of Management Information Systems, 1998. – №1 (15). – pp. 213-237.

47. Thong, J.Y., C. Yap. Testing an Ethical Decision-Making Theory: The Case of Softlifting // Journal of Business Ethics, 1998. – №15. – pp. 213-237.

48. Triandis, C.H. Values, Attitudes and Interpersonal Bahavior – Nebraska Symposium on Motivation, 1979: Beliefs, Attitudes and Values. – Lincoln, NE: University of Nebraska Press, 1980. – pp. 159-295.

49. Venkatesh, V., F.D. Davis. A Theoretical Extension of the Technology Acceptance Model: Four Longitudinal Field Studies // Management Science, 2000. – №2 (46). – pp. 186-204.

50. Vitell, S. J., D.L. Davis. Ethical Beliefs of MIS Professionals: The Frequency and Opportunity for Unethical Behavior // Journal of Business Ethics, 1990. – №1 (9). – pp. 3-70.

51. Wagner, S.C., G.L. Sanders. Considerations in Ethical Decision-Making Software Piracy // Journal of Business Ethics, 2001. – №29. – pp. 161-167.

52. Wong, G., A. Kong, S. Ngai. A Study of Unauthorized Software Copying Among Post-Secondary Students in Hong Kong // Australian Computer Journal, 1990. – №22 (4). – pp. 114-122.