



Factors motivating people toward pirated software

Eric Kin-wai Lau

*Faculty of Business, City University of Hong Kong, Hong Kong,
People's Republic of China*

Abstract

Purpose – The costs of software piracy are enormous. According to Business Software Alliance, it was estimated that the software industry lost \$34 billion globally due to software piracy in 2005. The present study was an exploratory attempt to analyze software piracy at individual level, using a qualitative approach.

Design/methodology/approach – A qualitative research study with few, if any, theoretical preconceptions would seem to be justified in the Asian context. An internet online survey and a content analysis of internet newsgroups were conducted. Data were transcribed, coded and interpreted so as to generate main predictors of the reported leniency toward software piracy.

Findings – Using extensive qualitative data from two studies, marketing, individual and situational variables are examined as a set of predictors of respondents' reported leniency towards software piracy. The results of the content analysis suggested that the cost of original software was extremely important in software piracy. Respondents commented that excessive price of original software was the key factor pushing them to commit piracy.

Originality/value – This is the first piece of qualitative research to study software piracy. The results of the content analysis suggested that the cost of original software was extremely important in software piracy. It provides new insights to software companies and government officials who are developing programs to promote the concept of anti-piracy.

Keywords Computer crime, Computer software, Ethics, Qualitative research

Paper type Research paper

Introduction

Software piracy has become a major problem for the software industry. The common research framework is based in the domain of ethical decision-making. However, recent studies suggest that many individuals do not treat software piracy as an ethical matter (Glass and Wood, 1996). In the present research, it gains a descriptive picture of people views about software piracy. Based on the findings from a qualitative study, marketing, individual and situational variables are examined as a set of predictors of respondents' reported leniency towards software piracy. It also provides a new guide for future research on such multifaceted issue.

The problem of software piracy

Software piracy violates existing copyright laws. Software developers protected by laws where unauthorized use and distribution of copies of software without their permission are illegal. However, the development of software copyright law has a relatively short history compared with laws that aim to protect tangible property. With tangible property, ownership is usually obvious. Physical objects must not be used without the consent of the owners (or the possessors) of the objects. There have been several legal cases concerning whether copyright and patent rights apply to computer software.



These include *Whelan Associates, Inc. v. Jaslow Dental Laboratories, Inc.* (1986), *Lotus Development Corp. v. Paperback Software Int'l* (1990), *Plains Cotton Cooperative Assn. v. Goodpasture Computer Service, Inc.* (1987) and *Computer Associates International Inc. v. Altai Inc.* (1992). In all these cases, the courts ruled that software was in fact protected. With the rapid changes in information technology in recent years, violation of software copyright (that is, unauthorised reproduction of computer software) can take many new forms. For example, original software can be compressed and distributed by the internet.

These problems add weight to West's (1995) suggestion that attitudes towards software piracy will not be easily changed by regulation or legislation. Intellectual property protection is expensive and inefficient. It is apparent that the problem of software piracy is not simply a legal problem, and will not be solved by legal means. Nor is it a deficiency in the protection of intellectual property generally. Books and magazines, for example, enjoy much better and more consistent protection than do programs. Software piracy has its own unique characteristics.

Individuals confronted with ethical problems traditionally attempt to resolve them by appealing to moral standards and moral reasoning. Moral standards can be applied at either the organizational or the individual level. At the organizational level, moral standards influence policies and regulations concerning the ethical use of software. Unfortunately, traditional morality cannot characterize the piracy problem with any clarity (Johnson, 1995; Moor, 1985). Much of the ethical debate concerning software piracy is fuelled by the question of what "right" practice should be – ranging from maximizing the good of society to respecting the rights of stakeholders, such as software developers and computer professionals.

Some research efforts have explored the question of how morality affects individual, as opposed to organizational, attitudes towards software piracy. Logsdon *et al.* (1994) applied Kohlberg's theory of moral states to determine if higher levels of morality resulted in less software piracy. They examined a sample of 263 undergraduate and graduate students in the USA, expecting that the graduate students, because of their greater maturity, would be operating at a higher moral level and using less pirated software. This argument turned out not to be the case. In fact, the graduate students used more pirated software than the undergraduates.

In another study that took morality as an independent variable, Lee *et al.* (1994) investigated the effect of traditional Chinese morality on the use of pirated software. Chinese cultural norms emphasize interpersonal interactions and evaluate behaviour according to how well it serves to enhance the hierarchical norms of society (Gabrenya and Hwang, 1996). Therefore, Lee *et al.* (1994) expected that higher levels of moral development would be correlated with less use of pirated software. However, their sample of Chinese graduate and undergraduate students, drawn from Hong Kong, Taiwan and the PRC, revealed no such relationship. They discovered the students were most influenced by the cost of software, and by the strength of their need for software.

Kini *et al.* (2000) also hypothesized that use of pirated software would be influenced by Kohlberg's stage of moral development. Their empirical study of 841 American university students revealed no such thing. They found that computer experience, gender and education level had insignificant effects on moral intensity of software piracy. Instead they found that age had significant effects on moral intensity of software piracy, i.e. younger respondents were found more acceptable to use pirated software.

In earlier, related studies, Peace (1997) and Gopal and Sanders (1997) found that age and gender of respondents influenced their use of pirated software. Both studies found that younger respondents committed more in software piracy. It is highly significant that Cohen and Cornwell (1989) found that software piracy was considered to be acceptable and normative behaviour among college students. Solomon and O'Brien (1990) also found that many individuals do not recognize software piracy as a moral issue. The data Solomon and O'Brien (1990) collected from undergraduate students revealed that 71 percent believed that copying original software was socially and ethically acceptable. In a study of business executives and business professors, Taylor and Shim (1993) found that the professors copied more than the business executives. This was a counterintuitive result, since it was expected that the professors would have more respect for intellectual property, and business executives would have more financial motives to not respect it.

Another research stream investigates software piracy from the standpoint of the ethical decision-making process. Several studies have attempted to apply the general theory of ethical decision-making to the specific instance of software piracy. In the ethical decision-making process, individuals faced with an ethical dilemma must make a behavioural decision. For example, when an individual is given the opportunity to acquire or use pirated software, he or she must decide whether to do so.

Cohen (1989) studied the correlation between software piracy and one simple attitude: whether the subject thought piracy was acceptable. In a study of 309 students in various disciplines and programs, he found that most (69 percent) felt that software piracy is acceptable. He also found a correlation between the attitude and the practice.

The process is affected by several factors. In a study of 209 American business students, Simpson *et al.* (1994) found that some of these factors included gender and religious orientation, plus situational factors such as copyright knowledge, availability of original software and personal benefits to be gained in using pirated software. Sims *et al.* (1996) had similar results. In their study of 340 undergraduate and postgraduate American business students, they found that gender (i.e. male respondents) and age (i.e. older respondents) did correlate with the respondents' use of pirated software. The dependent variable was subjects' self-reports of software use in the previous year. The studies above took actual use as the dependent variable. Other studies examined intention to use pirated software. This was reasonable, since in accordance with Ajzen's theory of reasoned action (Ajzen and Fishbein, 1980), a behavioural intention is the usual antecedent of actual behaviour.

Two scenarios concerning software piracy were presented to 278 graduate and undergraduate students in Saudi Arabia (Al-Jabri and Abdul-Gader, 1997). It was found that individual and peer beliefs toward pirated software were related to respondents' intentions to use pirated software. Similarly, in a study of 243 Singapore undergraduates, Thong and Yap (1998) discovered that respondents' perceptions of software piracy were affected by the deontological and teleological evaluations, i.e. their general beliefs about the ethical acceptability of using pirated software, and its possible consequences. Banerjee *et al.* (1998) developed a model of ethical behaviour in software piracy for corporate users. Using a sample of 139 information systems managers, they found that organizational ethical climates and personal normative beliefs significantly affected respondents' intentions to commit software piracy.

Wagner and Sanders (2001) proposed and tested a behavioural model of software piracy. Their model specified that an individual's intention to commit software piracy was influenced by his or her actual, prior involvement in piracy. This can be viewed as an instance of cognitive dissonance reduction (Festinger, 1954). In the same study, data from 167 undergraduate students supported the proposition that intentions significantly influenced actual software piracy behaviour, a conclusion consistent with the Ajzen-Fishbein model (Ajzen and Fishbein, 1980).

In summary, there are no demonstrated relationships between self-reports of ethical standards and the use of pirated software. It is apparent that there is no moral consensus on the ethics of software piracy. Another research approach for studying software piracy takes situational factors as the independent variables. One highly salient situational factor is price, which leads to considerations of value and fairness. Glass and Wood (1996, p. 1191) state, "Individuals determine the equity or fairness of their relationships or exchanges with others by assessing the ratio of what they receive from the exchange (outcomes) to what they bring the exchange (input)". Glass and Wood (1996) examined the applicability of the equity theory to software piracy in a study of 271 undergraduate business students in the USA. Six factors were tested, included the cost of the software, the social outcomes of lending or giving software to others, the repayment of financial debt by lending software to others, desirable favors obtained in return for lending software to others, the benefit obtained from an altruistic act, and the negative outcomes of software piracy. It was found all these factors had significant effects on respondents' intentions to commit software piracy.

In an attempt to identify factors enabling software piracy, Seale *et al.* (1998) found direct effects for social norms, expertise in software piracy, gender, and computer usage. In their study of 589 American academicians, they concluded that lenient social norms toward software piracy in American universities, the computer expertise required to pirate software, gender, and respondents' computer usage, had direct effects on their self-reported piracy. In particular, men with more computer expertise and more experience using computers were more likely to pirate software.

In a study based on Bandura's social cognitive theory (Bandura, 1982), Kuo and Hsu (2001), using a sample of 243 college students, found that self-efficacy was an important element in software piracy. Subjects with higher levels of self-efficacy were more likely to engage in the activity.

Faced with an opportunity to use pirated software, the decision will be related to the individual's attitudes towards software piracy. Eining and Christensen (1991) assessed how attitudes and normative beliefs related to individuals' decision-making with respect to software piracy. Their proposed model identified computer attitudes, material consequences, norms, socio-legal attitudes, and affective factors as influencing the decision-making process, and forming the intentions that precede the actual copying behaviour. Their study of graduate students found that all of these factors, except for computer attitudes and socio-legal attitudes, had significant effects on respondents' self-reported acts of software piracy.

In a sample of 71 IS professionals and 250 other professionals employed by a US university, Oz (2001) found that the IS professionals were more committed to their organizations than the other professionals, and that IS professionals were, indeed, less ethical with respect to software piracy and hacking. It is not clear that higher organizational commitment is responsible for the higher level of piracy. The technical

expertise of the IS professionals, compared with that of the other subjects, may have facilitated this behaviour.

Inconsistent findings in previous studies

Previous empirical studies in software piracy exhibit several inconsistencies as well. The proponents of legal, moral rights and ethical decision perspectives purport to provide an understanding of software piracy. Unfortunately, these perspectives prove in practice to be less helpful in this regard than their proponents claim. Inconsistent and contradictory empirical results severely limit their predictive power. For example, Shim and Taylor (1989) hypothesized that academics would be more likely than business executives to treat software piracy as an unethical act. However, they found that the business faculty engaged more in software piracy compared to business respondents (Mean score of the frequency with which faculty copied = 2.35, the mean score of the frequency with which managers copied = 2.03). As a further example, several investigators (e.g., Logsdon *et al.*, 1994; Ramakrishna *et al.*, 2001) hypothesized a positive relationship between level of moral judgment and attitudes toward software piracy, but failed to find it. Additionally, Seale *et al.* (1998) found that male respondents had fewer moral scruples against software piracy, but Kini *et al.* (2000) failed to replicate this finding in similar research settings.

In the West, software piracy is commonly defined as legal, moral or ethical problem. Data used in previous research mainly came from student samples in the USA, where software copyright law has long figured very prominently. This influence is especially evident in the generous protection afforded to software developers against software piracy. This is one instance of the general emphasis on protecting individual and personal interests that characterizes Western society. This personalistic, individualistic emphasis may be responsible for Western researchers' attention to "moral-rights" doctrines and ethical decision-making processes when examining software piracy. It is highly questionable whether these approaches are appropriate in Chinese societies, including Hong Kong.

Swinyard *et al.* (1990) suggested that Asians have a more casual attitude toward software piracy than Americans. Asians tend to be more accepting of piracy. They are more likely to copy software, buy illegally copied software, and less likely to criticize those who do so. Should one assume that this more accepting attitude can be attributed to higher or lower levels of the same antecedents that have been examined in the Western context? Given the many, well-documented differences between Western and Eastern cultures (e.g. Hofstede, 1980; Triandis, 1994) such an assumption would seem to be simplistic. Westerners tend to view morality in absolute terms based on principles of right and wrong that are not considered to be highly dependent upon the situation. For the Chinese, "good" and "bad" are the social evaluations, rather than objectively defined cognitive objects. One would be very surprised if the same factors that produce software piracy in the USA operated in the same way, and with the same effect, in Asia. The problem gains importance when one considers that Asia is a "black spot" with respect to piracy, accounting for millions of lost revenue dollars per year (BSA, 2002). A qualitative research study with few, if any, theoretical preconceptions would seem to be justified in the Asian context. It can provide a rich and descriptive analysis of people's perceptions toward software piracy. The key research question that will be addressed by this study is:

RQ1. Why do some people choose to engage in software piracy?

RQ2. How do some people view software piracy?

Study 1: an internet online survey

An open-ended questionnaire in Chinese was hosted on the university's world wide web server. The corresponding web address was posted to the Chinese based internet newsgroup, along with an invitation for volunteers to participate in the study. The survey posed two open-ended questions designed to elicit perceptions from respondents on the subject of software piracy. The study's objectives and an assurance of anonymity appeared on the index page. Schmidt (1997) raised a number of potential problems concerning online surveys. These include incomplete responses from the participants, unacceptable responses due to entry error or fraud, duplicate submissions, and security problems. To help prevent such problems, special common gateway interface (CGI) scripts were prepared to check all the received responses for missing entries, and each sender's internet protocol (IP) address was recorded and used to prevent multiple submissions. From the figures provided by NedStat Statistics (a free internet usage tool), 17 visitors browsed the web page and eight of them submitted responses on the first day after the invitation messages were posted to USENET. By the end of the study, 84 respondents had submitted their responses to the web survey.

Two guiding questions were used to explore reasons for respondents becoming involved in software piracy. First, respondents were asked to share their experiences in using pirated software, such as what kinds of software they have pirated, and the reasons for them to use pirated software. They were then if they knew anyone who worked in the software industry, and if this affected their attitudes. Following the end of the survey, I coded and content analyzed all responses. These were combined with the results of the second qualitative data collection, discussed below.

Study 2: a content analysis of internet newsgroups

To supplement the results of the online survey, a separate content analysis was conducted on a population of 209 Chinese messages concerning software piracy that were posted to the USENET. All Chinese messages posted to "comp.hacker" were unobtrusively downloaded from a news server and screened for references to software piracy. The study was performed according to the guidelines suggested by Berelson (1971) and was consistent with the approach taken in other studies of business ethics. Messages were considered relevant to software piracy if:

- they were indexed in the news group as "software piracy"; and
- if they contained at least one statement either for or against pirated software.

In accordance with the Bar-Ilan and Assouline (1997) typology, I observed that three types of communication took place within the discussion group:

- (1) information transfer;
- (2) requests for information; and
- (3) discussion of issues.

For the purpose of this study, messages belonging to the category “requests for information” were not included in the final analysis. Forwarded message which were identical in content with another message were deleted. Not many of the newsgroup messages were related to the piracy theme; indeed, many of them were sent by computer novices asking for suggestions and advice. These messages were ignored as well. Following deletions, I was left with a total population of 209 Chinese messages.

The main objective of the study was to examine systematically the content of statements offered by Chinese computer users, and to sort them according to whether they supported or opposed the use of pirated software. Once collected and organized according to this dichotomy, the verbatim transcripts of the messages were content analyzed using the software package “Nudist”. Some phrases that appeared frequently in the messages were identified by the computer programme. These phrases were identified as content analysis variables. A group of ten panel members from the software industry were invited to help in the study. They reviewed the content analysis variables and sorted them by common meanings. The contents of selected news group messages were classified according to the attitude of the writer – that is, in favor of pirated software (115 messages, 55 percent of total messages selected), or in favor of original software (94 messages, 45 percent of total messages selected). Analysis of the sample revealed 24 factors, or recurring themes, that appeared in the 50 messages from online survey and 209 news group messages. These are listed in Table I.

Pro-piracy themes, together with frequency of occurrence, are shown in Table II. Anti-piracy themes are shown in Table III. The survey data provide further insights into the rationale for people using pirated software. Market demand (economic factors) was found to be a dominant factor driving people to use pirated software. It was claimed that since people can choose either originals or copies, they probably choose the cheaper option of pirated software. Some attitudinal associations were identified as important reasons for people choosing pirated software – e.g. a feeling of being exploited by software companies.

The reason most often cited for using originals was the desire to support new technology (20.21 percent). Seven of the ten themes that occurred more than 10 percent of the time (in 94 messages favorable for originals) were supportive of new technology development. Other reasons cited in favor of originals were respect for the legal system and intellectual property, availability of other cheaper alternatives, feeling that the pricing of original software is reasonable, protecting the industry, and the poor quality of pirated software. With respect to moral attitudes, only five comments out of 94 messages in support of original software indicated that “using pirated software is wrong”.

Common phenomenon and interpretations

Marketing factors

In the qualitative study reported above, the cost of the original software emerged as the most common reason for respondents preferring to use pirated software. One respondent in the online survey said:

I wonder whether people will still insist on using pirated software if there is a large reduction in prices of original software. Suppose we can buy an original Microsoft Windows at US\$20, Microsoft Office at US\$25, AutoCAD at US\$25, and all other originals are selling at less than US\$20, then I should use original software.

Meaningful variables	Remarks
Affordability	
Need for computer software	
Bad feeling, being exploited, over price	Being exploited because of the over-pricing of original software
Demand and supply	
Social pressure	
Bad feeling, being exploited by software companies, "buggy" software	Being exploited by software companies and the "buggy" software
Selfishness	
Bad feeling, being exploited by Microsoft and GUI	Because people claimed that Microsoft had also stolen the GUI concept from Macintosh
Trial basis	
Convenience	The ease of getting copies than originals
No difference between originals and copies	
Lack of knowledge of intellectual property	
Poor legal enforcement of intellectual property protection	
Habit of using copies	
Support for new technology development	
Respect for the legal system	
Other cheaper alternatives	Other cheaper legal alternatives available in the market
The price of original software is reasonable	
Respect for intellectual property ownership	
"Fair game, no pay no gain"	
Poor quality of those copied version	
Morality	
Technical supports and services provided from originals	
Availability of originals	

Table I.
Content analysis
variables

Reason for pirated software	Frequency of comment	Percentage
Affordability	34	21.12
Need to use computer	29	18.01
Feeling of being exploited (overprice)	20	12.42
Demand and supply	17	10.56
Social pressure	17	10.56
Feeling of being exploited ("buggy originals")	12	7.45
Selfishness	8	4.97
Feeling of being exploited (Microsoft)	7	4.35
Trial basis	5	3.11
Convenience	4	2.48
No difference between originals and copies	3	1.86
Lacking knowledge	2	1.24
Poor legal enforcement	2	1.24
Habit	1	0.62
Total	161	100

Table II.
Reasons for those in favor
of pirated software

Table III.
Reasons for those in favor
of original software

Reason for original software	Frequency of comment	Percentage
Supports new technology	19	20.21
Respect for legal system	13	13.83
Other cheaper alternatives	12	12.77
Reasonable pricing	11	11.70
Respect for intellectual property ownership	10	10.64
“Fair game (no pay, no gain)”	10	10.64
Poor quality (copies)	10	10.64
Moral	5	5.32
Technical supports and services provided from originals	3	3.19
Availability	1	1.06
Total	94	100

Four respondents in the online survey suggested that software companies should have a greater sense of responsibility for the software piracy problem. They argued that most of the original software being pirated was over-priced. They claimed that it was not fair for software industries to exploit the consumer by making them pay an unreasonably high price for computer software, thereby earning huge profits. In the respondents’ minds, this justified choosing pirated versions over originals:

Software companies charge us too much for computer software. Why do we need to pay thousands of dollars on [*sic*] a program when we can get the pirated version at less than 10 percent of the original price? If they (software companies) could sell their products at lower prices, say 50 percent less than now, I am sure that most people would purchase the original version rather than the pirated version.

Software companies always say that if people buy more legal software from them, they will lower the price as a result. But, why don’t they lower the price so as to attract people to buy them, first?

Some marketing practices by software vendors lead the problem to become ever worse, particularly those “Office Suites”. The legal price for these packages is selling at around US\$300. It is a fair amount of money for their development. However, most users only need 20 percent of the features provided by these packages. Why should we pay a huge amount on what we don’t need?

It is very important for software manufacturers or vendors to lower their price levels first.

One respondent in the online survey had a very different perspective on the relationship between software piracy and economic situations:

People use pirated stuff in all economic situations. Some people used economic recession as an excuse for their involvement in pirate activities. It is partly true as they can’t afford to pay a high price for the originals during the recession. However, they will still select pirated stuff even when the economic situation is getting better. For example, a pirated CD-ROM disk costs you less than a hundred dollars, but it contains software worth a hundred thousand dollars. To conclude, it is not a matter of the economic situation. Prices for the pirated stuff are the main reason.

The combination of lower cost and equal product quality created the underground CD-ROM market. Some respondents in the online survey commented that the selling prices of original software available in the market were far from acceptable:

I would prefer to use original copies of computer software provided that they are not expensive. The reality is that I can't use originals because they are very expensive. I don't mind using pirated software as I cannot afford to buy the originals. It is completely a matter of price.

I think many university students have experiences of using pirated software. The reason is simple: they are so cheap. In fact, they and even many adults have no money to buy an expensive original software.

It is not fair to blame people who use pirated software. Sometimes, it is just too difficult for them to pay for the original software. Not all people, especially students, can afford to pay a thousand dollars on an operating software and some other important software, not at all.

One respondent to the online survey made a very good point concerning affordability:

I try my best to discourage my students from purchasing and using such pirated software. However, the attractiveness of such software comes from its price, and it is what people mostly use to argue for the problem. I tell my students that if they can afford the latest hardware, mobile phone, and expensive camera equipment, they also can afford to pay for a legal copy of computer software!

In summary, responses from the online survey showed that the price of original software was the key reason for respondents using pirated software no matter how much money they had. Similarly, the survey analysis showed that monetary benefit was the most important factor in the decision to use pirated software. There were 34 people in the news groups who stated that they could not afford the original software (out of 161 comments in favor of pirated software). A total of 17 comments claimed that software piracy is a result of market mechanisms (that is, consumers tend to choose cheaper alternatives).

A number of comments treated pirated software merely as a cheaper, completely equivalent version of the original version. One person stated that the pirated version was "completely the same as the original version". Those people who favored original software seemed to favor software that was both more available and less expensive than other software (12.77 percent). For example, some comments suggested that people could use Linux instead of Microsoft Windows, or Lotus Smartsuite instead of Microsoft Office. One person suggested that there are some inexpensive software and shareware programs available on the internet (such as Netscape and Linux).

The qualitative data showed that, although high prices for original software were predictive of more piracy, high availability of original software was predictive of less piracy. Unlike most other tangible goods, there are no obvious differences in appearance and function between original and pirated versions of software. As long as the respondents could get what they needed, most of them were not concerned as to whether the program they installed was an original version or not. For the majority of respondents in the online survey, convenience of access to pirated software was one of the key factors influencing their involvement in software piracy. The following responses illustrate this point:

I use pirated software because it is widely available at a very low price . . . More important is that the interests of individual users are varied, and pirated CD-ROM disks are a good source to get what we need.

The distribution of pirated software . . . to acquire a pirated version is much easier for me than to get a legal one.

There are not so many vendors and shops selling registered software. But it is much more convenient to buy the pirated version as they are available everywhere.

Please report if you found any shops selling pirated CD-ROMs. I really need to buy some. I need pirated software, such as a Windows 98 operating system, not the useless shareware. We can't get pirated software, nothing can be done with our computers.

We can still find some shops selling pirated software in small shops, but the contents of the CD-ROM disks are no longer the latest version.

One respondent in the online survey noted that the "golden period" of pirated software had gone. The trend was that more shops were selling pirated video CDs rather than pirated software, because selling video CDs could earn more profit than selling the software. Selling pirated video CDs was also easier than computer software:

People have lost interest in producing pirated CD-ROM disks since last year. Markets for VCDs and audio CDs are much bigger than pirated CD-ROMs. For VCD, after the process of mastering, manufacturers can reproduce the disk immediately and sell them the next day. For those censored VCDs, sellers never need to worry about the problem of copyright. There are always large markets for these kind of VCDs. However, for pirated CD-ROM discs, manufacturers need to employ some professional programmers to select the contents of the disk and try to "hack" the security systems of those programs they put on the disk. The production cost for pirated CD-ROM disks is much higher than for the pirated VCDs.

As Pagell (1990, p. 5) stated the basic idea as follows:

Adherence to copyright may be expected only when the originals are easily available in a timely manner at a reasonable price.

Similarly, a study of 243 undergraduate business students in Hong Kong examined availability of pirated software, censure towards software piracy, and the cost of original software as predictors in the level of self-reported software piracy (Moore and Dhillon, 2000). Greater availability, less perceived censure, and higher costs were correlated with increased piracy.

Situational factors

Respondents to the online survey were very concerned about the supply of pirated software. There was a strong demand for computer software, and some respondents used "need" as an excuse for tolerating software piracy. A total of 34 respondents mentioned "need of computer software" in their replies.

With regard to need, respondents tended to hold positive attitudes towards software piracy. They commonly felt that the use of pirated software was acceptable because it is for the benefit of society as a whole. Five respondents suggested that software piracy is a by-product of rapid information technology development, and argued that piracy was the only means for them to stay abreast of rapid developments:

Anti-piracy measures is equal to [*sic*] discourage our information technology development.

Computer technology keeps changing rapidly. Software packages become outdated in half a year's time from when they are released in the market. PC users have to update their

machines constantly. It is very expensive already. If they need to update their software as well, the overall investment is too much and users are deterred from buying the originals.

If there is no pirated software available, I am sure our computer literacy will drop dramatically.

I am learning to write a program in these (computer programming) languages from pirated CD-ROM disks. If I can't get these disks, I will not be able to learn.

I am now using NT Server. If I can't get its pirated version, I really don't know how to use remote server, SQL server, and train for NE network administration. If I need to practise AutoCAD from the legal version, I think I will never learn it in my life.

One respondent in the online survey argued that it is unfair for the user of the technology to bear most of the research and development costs:

My argument is relatively simple, what is the basis for all these "rapid" software developments? Software companies did the wrong thing and still don't learn from the mistakes they have made. For example, a word processor is no easier to use after its upgrades. Should they (software companies) solve all the "bugs" found in their products before they sell them to the consumer? I wonder what objectives they have in their hearts . . . are they here to help the users, or grab money from their customers?

It was found that respondents to the online survey commonly needed the computer to help them solve their problems and do their work. Therefore, they needed to obtain the software – either from original versions, or pirated versions if necessary.

Likewise, some of those who posted newsgroup comments exhibited a strong link between the need for computer software and leniency towards pirated software. A total of 29 messages stated that the need to use a computer was their reason for using pirated software (18.01 percent of the comments were in favor of pirated software). With regard to this need, 12 people claimed that, as students, they needed to use particular software products to finish their assignments. They said that the only option for them was to use pirated software because they could not afford the originals.

The need is well summarized by Lin (1995, p. 88) who noted:

It's just a matter of necessity. We want the software and we want it now. We need it. But we can't get it any other way: the real stuff is overpriced, and there's zero support.

In an earlier study, Rahim *et al.* (1999) hypothesized that gender, computer ownership, parental income, computer experience and institutional parameters were correlated with the use of pirated software. They conducted their study in Darussalam, a city of Brunei, using a sample of 91 students. In findings similar to those of Seale *et al.* (1998), they found that gender (male respondents), computer ownership, and more computer experience were positively correlated on the use of pirated software.

Individual factors

It was noted that peer attitudes had an effect on respondents' leniency with respect to software piracy (10.56 percent of all messages favored in pirated software had some reference to peer behaviours or peer attitudes). Some newsgroup messages commented very negatively on people who bought original software. The following comment was given by an emotional person who was in favor of pirated software:

We are cheap, but you (a person who supports original software) are stupid to use original software.

Another person then added that:

Don't treat yourself as a judge. You use your original software, we use our pirated software. We love to use pirated software.

Future research directions

Several factors affecting the reported leniency towards software piracy were derived from the qualitative data obtained from the online survey and local internet discussion group. In agreement with previous research, it was found that an individual decides whether to use original or pirated software as a result of social, economic and institutional factors (Harrington, 1989). An overview of above data reveals that software piracy is affected by the key factors of social acceptance, cost of original software, urgency of need for computer software, and availability of original software. Building on prior research, the theoretical model presented here posits the individual as an active agent within the context of his or her social, economic and institutional environment.

There are significant cultural and economical differences between Asian and Western countries that plausibly could result in differences in attitudes towards software piracy. For example, Husted (2000) found that software piracy is significantly correlated to GNP per capita, income inequality and individualism. Marron and Steel (2000) also found that countries with an individualist culture (examples, the USA, UK, and Canada) have lower piracy rates than those countries with a collectivist culture (examples, China, Guatemala, and Thailand). It is therefore inappropriate for Western software developers to continue to think in terms of the American paradigm if they are trying to implement intellectual property protection in the Asian countries. To understand how intellectual property protection strategies might be developed, and how the public can cope effectively with these changes of mindset, future research could investigate the question of cultural differences in relation to these questions.

Internet discussion groups have numerous advantages as sources of data for qualitative studies. However, only a few studies have applied content analysis to data of this type. It would be useful if future research efforts were directed towards the analysis of messages collected from different internet newsgroups.

Concluding remarks

Past empirical studies on software piracy were primarily undertaken in the western world. It remains unclear whether the factors responsible for software piracy generalize across different geographical settings. This paper has described the collection, coding and analysis of qualitative data using the qualitative approach. Using extensive qualitative data, empirical support was obtained for predictors of the reported leniency towards software piracy. The present study was an exploratory attempt to analyze software piracy systematically, using an approach based on empirical factors, rather than ethical factors. The empirical factors studied were:

- marketing factors of original software;
- situational factors; and
- individual factors.

The results of the content analysis suggested that the cost of original software was extremely important. Contributors to the internet newsgroup, whose comments I analyzed, commented that the excessive price of original software was one of the key factors pushing them to commit piracy. The overall findings of this study were consistent with research performed in other parts of the world. Software is expensive to develop but cheap to reproduce due to its digital nature. Software developers are heavily dependent on copyright law to protect them against software piracy. Technologies are available to software developers for control of software piracy, but only at very limited level. Software piracy is still a problem and software developers are still being robbed by people copying their products. This study has presented a model for the reported leniency toward piracy. Changing the views and attitudes on intellectual property of young computer users must begin. They are sometimes slow and costly. They are, however, the only way to solve the problem in the long run.

References

- Ajzen, I. and Fishbein, M. (1980), *Understanding Attitudes and Predicting Social Behavior*, Prentice-Hall, Englewood Cliffs, NJ.
- Al-Jabri, I. and Abdul-Gader, A. (1997), "Software copyright infringements: an exploratory study of the effects of individual and peer beliefs", *Omega*, Vol. 25 No. 3, pp. 335-44.
- Bandura, A. (1982), "Self-efficacy mechanism in human agency", *American Psychologist*, Vol. 37 No. 2, pp. 122-47.
- Banerjee, D., Cronan, T.P. and Jones, T.W. (1998), "Modeling IT ethics: a study in situational ethics", *MIS Quarterly*, Vol. 22 No. 1, pp. 31-60.
- Bar-Ilan, J. and Assouline, B. (1997), "A content analysis of PUBYAC – a preliminary study", *Information Technology and Libraries*, Vol. 16 No. 4, pp. 165-74.
- Berelson, B. (1971), *Analysis of Communication Content*, Hafner, New York, NY.
- BSA (2002), *Seventh Annual BSA Global Software Piracy Study*, Business Software Alliance, Washington, DC.
- Cohen, E. (1989), "College students believe piracy is acceptable", *Journal of Information Systems Education*, Vol. 1 No. 3, available at: <http://gise.org/JISE/Vol1-5/>
- Cohen, E. and Cornwell, L. (1989), "College students believe piracy is acceptable", *CIS Educators Forum Proceedings*, pp. 2-5.
- Computer Associates International, Inc. v. Altai, Inc.* (1992), 23 U.S.P.Q. 2d 1241 (2d Cir. 1992).
- Eining, M.M. and Christensen, A.L. (1991), "A psycho-social model of software piracy: the development and test a model", in DeJorie, R., Fowler, G. and Paradise, D. (Eds), *Ethical Issues in Information Systems*, Boyd & Fraser, Boston, MA.
- Festinger, L. (1954), "A theory of social comparison processes", *Human Relations*, Vol. 7, pp. 117-40.
- Gabrenya, W.K. Jr and Hwang, K.K. (1996), "Chinese social interaction: harmony and hierarchy on the good earth", in Bond, M.H. (Ed.), *The Handbook of Chinese Psychology*, Oxford University Press, Hong Kong, pp. 309-21.
- Glass, S.R. and Wood, A.W. (1996), "Situational determinants of software piracy: an equity theory perspective", *Journal of Business Ethics*, Vol. 15 No. 11, pp. 1189-98.
- Gopal, R.D. and Sanders, L. (1997), "Preventive and deterrent controls for software piracy", *Journal of Management Information Systems*, Vol. 13 No. 4, pp. 29-47.

- Harrington, S. (1989), "Why people copy software and create computer viruses: individual characteristics or situational factors", *Information Resource Management Journal*, Vol. 2 No. 3, pp. 28-37.
- Hofstede, G.H. (1980), *Culture Consequences: International Differences in Work-Related Value*, Sage, London.
- Husted, B.W. (2000), "The impact of national culture on software piracy", *Journal of Business Ethics*, Vol. 26, pp. 197-211.
- Johnson, D.G. (1995), *Computer Ethics*, 2nd ed., Prentice Hall, Englewood Cliffs, NJ.
- Kini, R.B., Rominger, A. and Vijayaraman, B.S. (2000), "An empirical study of software piracy and moral intensity among university students", *Journal of Computer Information Systems*, Vol. 40 No. 3, pp. 62-72.
- Kuo, F.Y. and Hsu, M.H. (2001), "Development and validation of ethical computer self-efficacy measure: the case of soft-lifting", *Journal of Business Ethics*, Vol. 32, pp. 299-315.
- Lee, G.M., Eining, M.M. and Long, C.P. (1994), "Information ethics: a comparative among college students from Mainland China", *Hong Kong and Taiwan, Hong Kong Journal of Business Management*, Vol. 12, pp. 17-35.
- Lin, N.A. (1995), "Information wants to be free: but this is ridiculous", *Wired*, Vol. 3 No. 10, p. 88.
- Logsdon, J.M., Thompson, J.K. and Reid, R.A. (1994), "Software piracy: is it related to level of moral judgment", *Journal of Business Ethics*, Vol. 13, pp. 849-57.
- Lotus Development Corp. v. Paperback Software Int'l* (1990), 740 F. Supp. 37 (D. Mass. 1990).
- Marron, D.B. and Steel, D.G. (2000), "Which countries protect intellectual property? The case of software piracy", *Economic Inquiry*, Vol. 38 No. 2, pp. 159-74.
- Moor, J.H. (1985), "What is computer ethics", *Metaphilosophy*, Vol. 16 No. 4, pp. 266-75.
- Moore, T. and Dhillon, G. (2000), "Software piracy: a view from Hong Kong", *Communications of the ACM*, Vol. 43 No. 12, pp. 88-93.
- Oz, E. (2001), "Organizational commitment and ethical behavior: an empirical study of information system professional", *Journal of Business Ethics*, Vol. 34, pp. 137-42.
- Pagell, A.R. (1990), "International information copyright issues: a personal view", *Database*, Vol. 13 No. 3, pp. 5-9.
- Peace, A.G. (1997), "Software piracy and computer-using professionals: a survey", *Journal of Computer Information Systems*, Vol. 38 No. 1, pp. 94-9.
- Plains Cotton Cooperative Assn. v. Goodpasture Computer Service, Inc.* (1987), 807 F.2d 1256 (5th Cir. 1987), cert. Denied, 484 U.S. 821 (1987).
- Rahim, M.M., Seyal, A.H. and Rahman, M.N.A. (1999), "Software piracy among computing students: a Bruneian scenario", *Computers & Education*, Vol. 32, pp. 301-21.
- Ramakrishna, H.V., Kini, R.B. and Vijayaraman, B.S. (2001), "Shaping of moral intensity regarding software piracy in university students: immediate community effects", *Journal of Computer Information Systems*, Vol. 41 No. 4, pp. 47-51.
- Schmidt, W.C. (1997), "World-wide-web survey research: benefits, potential problems and solutions", *Behavior Research Methods, Instruments and Computer*, Vol. 29 No. 2, pp. 274-9.
- Seale, D.A., Polakowski, M. and Schneider, S. (1998), "It's not really theft!: personal and workplace ethics that enable software piracy", *Behaviour & Information Technology*, Vol. 17 No. 1, pp. 27-40.
- Shim, J.P. and Taylor, G.S. (1989), "Practicing managers' perception/attitudes towards illegal software copying", *OR/MS Today*, Vol. 16 No. 4, pp. 30-3.

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- Simpson, P.M., Banerjee, D. and Simpson, C.L. Jr (1994), "Softlifting: a model of motivating factor", *Journal of Business Ethics*, Vol. 13 No. 6, pp. 431-8.
- Sims, R.R., Cheng, H.K. and Teegen, H. (1996), "Toward a profile of student software pirates", *Journal of Business Ethics*, Vol. 15 No. 8, pp. 839-49.
- Solomon, S.L. and O'Brien, J.A. (1990), "The effect of demographic factors on attitudes toward software piracy", *Journal of Computer Information Systems*, Vol. 30 No. 3, pp. 41-6.
- Swinyard, W.R., Rinne, H. and Kau, A.K. (1990), "The morality of software piracy: a cross-cultural analysis", *Journal of Business Ethics*, Vol. 9, pp. 655-64.
- Taylor, G.S. and Shim, J.P. (1993), "A comparative examination of attitudes toward software piracy among business professors and executives", *Human Relations*, Vol. 46 No. 4, pp. 419-33.
- Thong, Y.L. and Yap, C.S. (1998), "Testing an ethical decision-making theory: the case of softlifting", *Journal of Management Information Systems*, Vol. 15 No. 1, pp. 213-37.
- Triandis, H.C. (1994), *Culture and Social Behaviour*, McGraw-Hill, New York, NY.
- Wagner, S.C. and Sanders, G.L. (2001), "Considerations in ethical decision-making and software piracy", *Journal of Business Ethics*, Vol. 29, pp. 161-7.
- West, J. (1995), "Software right and Japan's shift to an information society", *Asian Survey*, Vol. 35 No. 12, pp. 1118-39.
- Whelan Associates, Inc. v. Jaslow Dental Laboratories, Inc.* (1986), 797 F.2d 1222 (3rd Cir. 1986), cert. Denied, 479 U.S. 1031(1987).

Corresponding author

Eric Kin-wai Lau can be contacted at: mgeric@cityu.edu.hk