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SOFTLIFTING INTENTION OF STUDENTS IN ACADEMIA: A NORMATIVE MODEL

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ABSTRACT

Softlifting refers to the practice of sharing software with friends, co-workers, and others. It is a form of software piracy that is widely practised in academia. Past studies on software piracy were primarily undertaken in the western world. These studies had focused on the 'self-reported software piracy behaviour'. Students may not reveal their actual piracy behaviour due to social bias. This study was conducted in Brunei Darussalam to examine the softlifting intention of students. A normative model was developed, which was validated using 432 responses. Three interesting findings have emerged. Firstly, the factors affecting students' softlifting intention vary depending on the nature of task. Secondly, students' software piracy attitude, gender and PC ownership, were found to be significantly related with their softlifting intention. Thirdly, students' software piracy attitude had more impact on their softlifting intention. The implications of these findings are discussed.

Keywords: Softlifting, Software piracy, Student attitude, Academic institution

1.0 INTRODUCTION

Softlifting refers to the practice of purchasing a single licensed copy of software and loading it on several computers, contrary to the license [1]. This includes sharing software with friends, co-workers, and others. Softlifting is one of the most pervasive forms of software piracy, faced by many software publishers [2]. Software piracy which occurs in various forms has caused a revenue loss of over US$11.4 billions world-wide in 1997 [3]. It is believed that the majority of this lost revenue is due to softlifting [4]. The bottom line impact of such a wide spread software piracy is that software publishers may raise prices of their products in order to recoup some of these lost revenues [5]. More importantly, software piracy has an effect on a person's appreciation of the need for ethical behaviour. Taking the property of another without offering compensation is stealing [6]. If software piracy is not condemned at academia, such an attitude may lead to the feeling that other forms of stealing are acceptable as well. This may cause a disruption of social values. Thus, software piracy is not only a serious threat to the software publishers that also poses a social problem.

To address these problems, a number of studies attempted to identify those factors that motivate students to commit software piracy. A vast majority of these studies had focussed on the software piracy behaviour of students. Kowalski and Kowalski [6], Solomon and O'Brien [7], Wong et al [8], Eining and Christensen [9], Im and Van Epps [10], and Ang and Lo [11] reported an overwhelming use of pirated software by university students. Most of these studies were conducted in the West. It remains unclear how the students in Asian countries establish softlifting intention, and how such intention differs depending on the type of situation at hand. Set against this backdrop, a study was conducted to examine the softlifting intention of students in Brunei Darussalam, a small sultanate located near Singapore and Malaysia. The study was also aimed at identifying the factors that are likely to affect students' softlifting intention.

2.0 PAST STUDIES: A SUMMARY

Much of the initial research into software piracy consists of surveys measuring the practices of pirated software by university students. Solomon and O'Brien [7], Eining and Christensen [9], Im and Van Epps [10], and Sims et al [12] reported the wide prevalence of software piracy among US university students. This trend has also been observed in similar studies conducted in other parts of the world. For instance, Kowalski and Kowalski [6] compared the use of pirated software by the data processing students of a Canadian university against that of a Swedish university. They reported that both Canadian and Swedish students used pirated software, but more Canadian students used pirated software in contrast to Swedish students. In Hong Kong, Wong et al [8] found that only 10% of the students had never used pirated software.

Besides determining the extent of software piracy, the studies also identified demographic factors that were related to software piracy among students. A weakness of many of these studies is that detailed justification for including demographic factors was often not provided. Another weakness is that some studies over-emphasised the importance of demographic factors, and failed to take into consideration the influence of other factors such as institutional parameters and computer exposure of students. In recent years, a number of authors [13-15] expended considerable efforts to explain software piracy behaviour of students based on some theoretical models. These models posit that students' attitude towards software piracy, not their demographic factors, influence their use of pirated software. All these researchers have relied on students' self-reported use of pirated software. It is, however, argued that students might have deliberately under-reported their actual use of pirated software due to social bias. One way to avoid this problem, is to base the studies on the students' intention to commit software piracy.

3.0 RESEARCH MODEL

A one-stage normative model was developed that tied together eight independent variables with the dependent variable. Detail justification for inclusion of each independent variable is provided below. Additionally, the hypotheses were also postulated based on the developed model.

Softlifting Intention: Intention is defined as an individual's subjective probability that he or she will engage in a behaviour [16]. The stronger the intent to perform a behaviour, the greater is the likelihood that an individual will engage in that behaviour. In other words, intention indicates how hard a person is willing to try, and how much of an effort he or she plans to exert, in order to perform a behaviour [17]. Fishbein and Ajzen [16] further postulated that an individual would behave in accordance with his/her intention. In the context of softlifting, if a student intends to pirate a software, he or she is likely to carry out the actual pirating behaviour unless something intervenes.

Software Piracy Attitude: It refers to the degree of a student's general feeling of favourableness or unfavourableness about performing a behaviour Attitude towards a behaviour actually stems from a set of salient beliefs (known as *behavioural beliefs*), that performing the behaviour will lead to certain consequences [18]. Therefore, the more positive the perceived consequences of a behaviour, the more favourable is the attitude toward the behaviour. In context to softlifting, a student may believe that the outcomes of software piracy may lead to monetary savings, increased knowledge, and competitive edge among others. In other words, if a student thinks that there is more to be gained than lost by pirating a software, he or she is more likely to pirate a software. Studies by Eining and Christensen [9] and Christensen and Eining [15], reported that positive piracy attitudes of students are indicative of the propensity to use copies of illegal software. Furthermore, Peace and Galletta [13] found students' piracy attitudes to be significantly correlated with their actual software piracy behaviour. Thus, based on this rationale, the first hypothesis is drawn.

H1: *There is a relationship between students' software piracy attitude and their softlifting intention.*

Gender: Researchers are still indecisive about the impact of gender on softlifting. Solomon and O'Brien [7], Simpson et al [19], and Wong [20] identified gender as a significant variable to affect the propensity to pirate software, while some authors [5, 8] reported little effect of gender on software piracy. In this study, it is argued that male students are more enthusiastic about computers, and spend more time with computers than their female counterparts, because 'computer use' is generally viewed as a masculine activity [21]. Hence, the increased use of computer by male students is likely to enhance their need to use a variety of software packages - some of which may not be available on campus. As such, male students would be keener to seek and use software from other sources - some of which are pirated. Furthermore, Pereria and Kanekar [22] revealed that males in general exhibit less ethical sensitivity than females. Consequently, male students are likely to use pirated software more frequently than female students. Based on this realisation, the following hypothesis is postulated:

H2: *There is a relationship between gender of students and their softlifting intention.*

Major: It is argued that students from the computing stream are less likely to participate in software piracy, as opposed to students coming from other disciplines. The underlying rationale behind this argument is that computing students by virtue of their knowledge, can better understand the efforts involved in the development of a quality software product. Thus, they can appreciate the value of a software product. Conversely, non-computing students are less familiar with how a software product is developed, and fail to understand how painful is the process of producing a quality software product. Thus, they may have little appreciation of the work spent in developing a software product. This difference leads to the following hypothesis:

H3: *There is a relationship between students' majors of study and their softlifting intention.*

Family Income: Even though prior literature [7,8] found no relationship between economic background of a student and software piracy, it is likely that the higher-up the socio-economic status of the parents of students, the more is the possibility that the students can afford original copies of

software. On the contrary, students coming from the lower income group cannot afford to buy original copies. As such, they may resort to alternative sources to obtain cheap copies of pirated software. Thus, the following hypothesis is drawn:

H4: *There is a relationship between student's family income and their softlifting intention.*

PC Ownership: Students who own personal computers are likely to spend more time with their PC. They are curious to perform more varieties of tasks than students who do not own personal computers. To meet this higher level of curiosity, students owning PCs are likely to obtain software from various sources, some of which are pirated. This notion has been supported by Wong et al [8] who reported that those Hong Kong students, who owned PCs, indeed made increased use of pirated software. It is further argued that the lack of monitoring mechanism on the use of software at home would further encourage students to use pirated software. This leads to the following hypothesis:

H5: *There is a relationship between students' ownership of PCs and their softlifting intention.*

PC Experience: Students with the least PC experience are expected to use computer for completing only those tasks that they are required to perform in their class rooms. They are, however, unlikely to be adventurous to try a wide variety of software packages - other than those that are provided in their educational institutions. On the other hand, the more experience a student has in computers, the higher will be the knowledge and literacy about how to use a software. Therefore, their frequency and duration of software use will increase [23]. The increased interaction is likely to enhance their need to explore a variety of software packages to perform their tasks. Many of these software packages may not be available in their academic places. Hence, experienced students may opt for pirated software. This notion is supported by Wong et al [8], who found greater software piracy among computer-experienced students. Additionally, it is likely that some experienced students would consider the use of pirated software as a challenge to their competence. Thus, the following hypothesis is postulated:

H6: *There is a relationship between PC experience of students and their softlifting intention.*

Staff Attitude: The use of pirated software by the students is expected to be greater when they find the staff of their own educational institutions have liberal attitude towards software piracy. Perhaps, students find that staff use pirated software on a frequent basis. Solomon and O'Brien [7] reported that some academics staff who practised software piracy even encouraged students to emulate their behaviour. It is argued that software piracy among students will be less in those educational institutions - where staff take the issue of piracy seriously, and openly discourage the use of pirated software. Thus, the following hypothesis is drawn:

H7: *There is a relationship between attitudes of staff on software piracy and students' softlifting intention.*

Institutional Monitoring: In recent years, many educational institutions have established policies prohibiting students from using illegal copies of software at their facilities [24]. All too often, efforts to eliminate software piracy among students rarely progress beyond publicising the policy statements. It is thus difficult to curb software piracy among students, if such policies are not actively enforced. In this study, it is suggested that the use of pirated software among students in the campus is likely to be less, when the academic and/or computer centre staff, not only publicise anti-piracy rules, but periodically audit students' systems. Such audits are useful, as sanctions could be imposed on those students who are found to have violated software piracy rules. For example, students who are caught with a pirated software may not be allowed to use the laboratories for a week. Thus, the following hypothesis is drawn:

H8: *There is a relationship between institutional monitoring of pirated software and students' softlifting intention.*

The dependent variable for this study is the intention to pirate software, rather than actual piracy behaviour. In order to minimise the responding student's unease in telling the truth, this study has focused on intent to softlift, which was measured under two different scenarios: (a) softlifting for the sake of community benefits, and (b) softlifting to seek one's entertainment. These two scenarios were selected because consequential ethical theories [25] suggest that a person shall look to the real world outcomes of softlifting behaviour to judge his/her ethicality. For each scenario, softlifting intention was measured with a single item. Nunnally [26] suggested the use of multiple statements (also known as items) to capture a psychological factor such as attitude. As such, attitude was measured through 12 statements. Each student was asked to indicate his/her level of agreement/disagreement with each statement on a five-point Likert scale. An aggregate value of attitude for each student was calculated by averaging his/her responses to each statement. The resulting scale thus had the same unit of measurement.

4.0 RESEARCH APPROACH

A survey research approach was adopted to examine the softlifting intention of students. A questionnaire consisting of three parts was developed. Part A captures background information (e.g. gender, age, income, PC ownership etc.) about the students. Part B presents two softlifting scenarios, and requires the students to indicate how likely they would use the pirated software. Part C contains 12 attitude statements (items) that capture the salient beliefs of students towards software piracy. The questionnaire was reviewed by several academics. Later, the suitability of the questionnaire was tested through a pilot study among selected students studying in two institutions. Based on their suggestions, several minor alterations were incorporated. The revised questionnaires were then distributed to 490 students during the first quarter of 1999.

Brunei Darussalam is a small oil-rich kingdom with only a population of 0.3 million [27]. There are only two trade colleges, a vocational school, a technical institute and a university in Brunei Darussalam. The trade colleges currently offer undergraduate National Diploma (ND), while the technical institute offers undergraduate Higher National Diploma (HND) programmes [28]. All these colleges and institutes are managed by the Ministry of Education. In recent years, however, two private sector organisations have begun to offer undergraduate diplomas in association with some UK based universities. University Brunei Darussalam, the only university in Brunei, offers Bachelor degree in several disciplines including Computer Science [29]. Through telephone contacts, the target population (which includes students from the institutions described above) was estimated to be 5000. Owing to lack of information of software piracy in Brunei Darussalam, a more conservative, 60/40 proportion of the population, was used to arrive at a suitable sample size. Thus, an unadjusted sample size of 368 was selected at 95% confidence level with 5% sampling error [30]. However, in view of the 70% response rate, the sample size was increased by an additional 30%, thus, yielding a sample size of 490. Thus, the revised questionnaires were initially sent to all 490 students studying at all the higher institutions. Unfortunately, due to unanticipated procedural difficulties, the questionnaires could not be administered in the university. Thus, all the 490 questionnaires were distributed to all the higher institutions, except the university. Out of the 490 questionnaires, a total of 432 was returned.

5.0 RESULTS

Out of 432 students, 205 were male (47.5%) and the remaining 227 were female (52.5%). Nearly half (47.5%) of the students were from the computing stream, while the remaining 52.5% came from the business and the engineering disciplines. A majority (81.8%) of students was enrolled in National Diploma and Higher National Diploma programmes. Monthly family income of the students varied widely from below B$1000 to over B$10,000. Nearly three-quarters (74.8%) of the participating students, however, came from families with income of less than B$3000 per month.

Surprisingly, a vast majority (88.4%) of the participating students owned personal computers regardless of their family incomes. The students were also found to have a wide range of working experiences with PCs. One-fifth (21.5%) of the students possessed less than 1 year of PC experience, while nearly two-thirds (61.5%) of the students had below 3 years of PC experience.

Twelve items were initially used to solicit the attitudinal views held by the students. The students were asked to indicate their level of agreement/disagreement with each of 12 items using a five-point Likert scale. Their responses to each item were compiled, and analysed for item purification. Based on the suggestions of Churchill [31], only one item was eliminated, for which 'corrected-item-total' correlation was <30. Furthermore, these items were tested for reliability. Chronbach's Alpha was calculated, which was found to be .865. Thus, the attitude instrument could be regarded as satisfactory [26]. A mean rating for each attitude item was also computed. Additionally, an overall mean for the entire set of attitude items was calculated. The overall mean rating for all 11 items of 432 students is 3.65, which is greater than a 'neutral' position (value is 3.0) on the Likert scale. In addition, the mean rating for each of these 11 attitude items lies above the 'neutral' position. These results together indicate a prevailing attitude of students towards supporting the use of pirated software.

The relationship of students' piracy attitudes, family income, gender, PC experience, PC ownership, major of study, staff remarks, and institutional monitoring of piracy, with the dependent variable (which is how strong is a student's intention to use a copy of a pirated software), was investigated using multiple regression analysis. With regard to the first scenario, the results (as presented in Table 1), explain 17 percent variance in the dependent variable. Out of eight independent variables, only two, gender and students' piracy attitude, were found to have significant standardised regression coefficients, and were related to students' intention to use pirated software. Thus, only two hypotheses (H1 and H2) were supported.

To further ascertain the influence of students' attitude on their intention to use pirated software, a correlation analysis was performed. The results (C = .40, p = .00) confirmed the existence of a moderate relationship between them. Moreover, to investigate the influence of gender on students' intention to use pirated software, t-tests were carried out. The results (t = 2.916, p = .004) reveal that male

students exhibited a greater intention to use pirated software as opposed to their female counterparts.

For the second scenario, the relationship of students' intention to use pirated software with the independent variables, was also investigated using multiple regression analysis. The results (as presented in Table 2), reveal that attitude, once again, has a considerable impact on students softlifting intention. However, unlike the first scenario, gender appeared to have no significance. On the other hand, students' PC ownership was found to be significantly related with their softlifting intention.

To further ascertain the influence of students' attitude on their intention to use pirated software, a correlation analysis was performed. The results (C = .373, p = .00) confirmed the existence of a moderate relationship between them. Moreover, to investigate the influence of PC ownership on students' intention to use pirated software, t-tests were carried out. The results (t = 2.51, p = .012) reveal that those students who possessed a PC at home, exhibited a greater intention to use pirated software as opposed to those who did not have a PC. For further insight, stepwise multiple regression with a cutoff point .05 was performed for each scenario. The proportion of variance in the dependent variable accounted for by each of the significant variable (that was found significant during regression analysis) is shown in Table 3. It can be noted that attitude alone accounted for a greater variance than the other variables.

Table 1: Results of Multiple Regression Analysis (First Scenario)

Variables	B	Beta	t	p-value
Attitude	.695	.380	8.55	.000*
PC experience	.003	.059	-.635	.526
Gender	-.200	.121	-1.65	.049*
Major	.120	.073	1.63	.102
Family income	-.030	-.025	-.518	.584
PC ownership	.266	.203	1.31	.190
Monitoring	.006	.051	1.03	.299
Remarks	-.001	-.010	-.186	.853
R2(adj)= .17	Std. Error	= 1.21	F=12.0	p=.000

Note: * indicates statistical significance at (p<.05)

Table 2: Multiple Regression Analysis (Second Scenario)

Variables	B	Beta	t	P-value
Attitude	.596	.373	8.24	.000*
PC experience	.006	.058	1.21	.225
Gender	-.004	.020	-.444	.658
Major	.002	.021	.421	.674
Family income	.007	-.064	-1.37	.169
PC ownership	-.462	-.127	-2.57	.010*
Monitoring	.002	.027	.535	.593
Remarks	-.001	-.017	-.316	.752
R2(adj)= .145	Std. Error	= 1.07	F=12.1	p=.000

Note: * means statistical significance at (p<.05)

Table 3: Results of Stepwise Regression Analysis

Significant Variables	Variance (R2 Adjusted)	
	Scenario 1	Scenario 2
Software piracy attitude	.152	.137
Gender	.170	-
PC Ownership	-	.150

7.0 DISCUSSIONS

As regards the attitude of students towards software piracy, the overall mean (3.65) of 11 attitude statements, indicates that students, in general, are more inclined to use pirated software. One possible explanation is that, perhaps, students treat software differently from other types of products. It is because when a student copies a software, nothing 'tangible' is actually stolen. Thus, the ill-effects of using pirated software (as advocated in the literature) are not immediately perceived by the students.

The results of the regression analysis for both the scenarios, identified students' attitude for software piracy as a significant factor that affects their intention to use pirated software. Students' piracy attitudes also explain a greater variation in the intention to use pirated software, as opposed to gender and PC ownership. These findings are in line with those reported by Peace and Galletta [13], Schatzberg et al [14], and Christensen and Eining [15].

The implication of the regression results is that efforts to curtail software piracy should be directed at changing the attitudes of students. Several suggestions are offered which could prove to be useful in bringing a change in students' attitudes. Firstly, academics are urged to undertake strong educational efforts to highlight the perils associated with software piracy.

This could be done by introducing computer ethics in the coursework. When the students are educated on the impact of software piracy, they may change their attitude. Secondly, seminars and colloquiums could be arranged and representatives from vendors, computer associations, and even law-enforcement agencies, could be invited to discuss software piracy. This will help to generate awareness among students, and may raise anti-piracy sentiments. Thirdly, academic institutions in Brunei Darussalam, in close collaboration with industry, often organise a 'career dialogue' session, whereby representatives from a wide range of enterprises visit academic institutions, and explain to the students about their possible job prospects and career paths available in their own organisations. The representatives could use this forum as a platform to express their policy as well as their rationale against the use of pirated software in their own organisations. When students find that both prospective employers as well as their own academic institutions (where they study), speak against software piracy and emphasise the shortcomings associated with the use of pirated software, they might tend to develop a positive attitude towards using licensed software.

With regard to the first scenario, for which gender was found to be a significant variable, this could be explained using Lobel's research [32]. Lobel suggested that cheating behaviour might be due, in part, to the sex-appropriateness of the task. In other words, males cheat more on 'masculine' than women do on 'feminine' tasks. Perhaps, 'card playing' was viewed as a 'masculine' task, and thus male students naturally felt more inclined to resort to software piracy than their female counterparts. On the other hand, gender was not found to have any significance in connection to the second scenario. Perhaps this is because students, regardless of gender, look at the consequences of software piracy. They might have placed a higher priority on the societal benefits as compared to depriving software publishers of their small proportion of revenue. PC ownership of students, however, appeared to be a significant factor that affected students' intention to use pirated software, with regard to the second scenario. One possible explanation is that students who have a PC at home, are more likely to install a pirated version of the software in their home PC, and that they are also likely to work extra time at home to complete the project on time.

8.0 CONCLUSIONS

By using vignettes, this study has identified a set of factors that affect students' softlifting intention. The main contribution of this study is to highlight that these factors vary depending on the nature of the task at hand. Both the scenarios, however, indicate that students' piracy attitude was significantly related to their intention to use pirated software. Students' attitude also explained a greater variation in students' intention to use pirated software than the remaining variables combined. The implication of this finding is that efforts to curb software piracy should address how to build a positive attitude in students - so that they can appreciate the efforts spent in developing a software product, and thus begin to respect copyright laws. The model used in this study could, however, be further improved with the inclusion of 'subjective norm', a factor that has been widely researched in the psychology literature. Fishbein and Ajzen [16] had proposed a theory known as Theory of Reasoned Action (TRA) which suggests that attitude and subjective norms together can better explain volitional behaviour. Thus, future studies should apply TRA in order to determine the extent to which such a theory can explain the use of pirated software among students.

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