SOFTWARE PIRACY IN BANGLADESH: THE STUDENT PERCEPTIONS STUDY ON TWO SELECTED PUBLIC UNIVERSITIES IN DHAKA CITY

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ABSTRACT

Software piracy, the unauthorized copying or distribution of software, has been emerged a growing criminal behavioural problem in Bangladesh. The piracy rate of 92 percent Bangladesh has placed in the top of the Asia-Pacific. Many previous researches concluded that software piracy is pervasive among students, and that preventive and deterrent techniques were not effective in combating the piracy problem. Therefore, there is a great urgency to identify the factors that lead to software piracy. This paper is an attempt to meet this need for Bangladesh. The study aims to explore the student views one software piracy in Bangladesh. A sample survey was conducted on a convenience sample of 120 students chosen from two purposively selected public universities in Dhaka City. The study found out that high price of software, low income, value consciousness, perceptions, and weak law enforcement are the factors which have significant relationship with intention to use them. It is also revealed that gender and age were not so strong factors that influence the intention to use pirated software in Bangladesh. Based on the factors identified and student views examined by the study, effective strategies can be undertaken to address the rising piracy problem in Bangladesh.

Keywards: Software Piracy, Perception, Student, Bangladesh.

1. INTRODUCTION

Software piracy means unauthorized copying of software. It is one of the most prevalent computer crimes in the world. Criminals have exploited weaknesses in technology, legislation and lack of public awareness that is created by the global reach of the Internet and its rapid expansion, to

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develop new crimes, and to facilitate traditional crimes in a new way. The creative use of personal computers has built a demand for intellectual property. Unfortunately, as the use of computers has grown up, software piracy has also been increased. The software industry lose a lot of money due to pirated software and no matter whatever legal manoeuvres they adhere to it seems that the software pirates are always one step ahead of them.

Pirated software includes operating systems, systems software like databases and security packages and application software like office packages, finance and tax packages and PC computer games and so on. When the end users purchase the software they do not become the owner of the product, however they have the rights to use the software under the terms and conditions as suggested by the copyright owner of the software. According to Microsoft (2001), there are 5 basic types of piracy. 1. End user copying: Here individuals or organizations copy and distribute unlicensed copies of the software or purchase a licensed copy and use beyond the allowed limits; 2. Hard disk loading: this is practiced by computer manufacturers who use a legal copy of a software to install as many PC they want and sold to end users who are not aware of the wrong doing; 3. Counterfeiting: software and its packaging are illegally produced in a large scale; 4. Online: Online piracy occurs when the end user download the software from an online source without the permission of the copyright owner; and 5. License misuse: software distributed with a discount rates for the high-volume customers, computer manufactures, and academic institutions that then redistribute these software to others who are not qualified for the software.

Software piracy is one of the worst problems facing the software industry in many countries including Bangladesh. According to the Business Software Alliance (BSA) 2001 Report on Global Software Piracy, business software applications accounted for global revenues of US $21.6 billion in 2000. During that same year, BSA estimated global revenue losses for the business software application market of US $11.75 billion due to piracy. The software industry alone lost more than US$ 5.3 billion due to piracy in 2008 (The BSA Report 2008).

The piracy rate around the world is rising. The BSA piracy report 2008 shows that Georgia had the highest in the globe (95 percent) followed by 92 percent (Bangladesh, Armenia, Zimbabwe) followed by 90 percent (Sri Lanka, Azerbaijan, Moldova), 89 percent (Yemen). Among countries with lower piracy rates, the USA had (20 percent), 21 percent (Japan, Luxemburg), 22 percent (New Zealand), and 25 percent (Belgium, Denmark, Sweden and Switzerland). The piracy rate of New Zealand (22 percent) is lower than that of Australia (26 percent). In China, the average piracy rate dropped to 80 percent in 2008 from 82 percent in 2007. According to a newspaper article, Bangladesh topped the Asia-Pacific in 2008 with a piracy rate of 92 percent, followed by Sri Lanka at 90 percent and Pakistan at 86 percent (The Daily Star, May 15, 2009).

According to the BSA piracy report 2008 and the review of Data Soft Systems Bangladesh Limited (2007), Bangladesh is the second country of the world in software piracy. The unauthorized duplication of software or illegal transfer of data from one storage medium to another is common in our country. Researchers have found that colleges and universities are breeding grounds for piracy. Bangladesh has more than 100 universities, and higher education colleges are numerous. We can simply get copy of unlicensed software from our friends and use it in our PC. It is a very strange

for outside world that in Bangladesh, there is no need to go to an underground market in search for pirated software because they are virtually found far and wide. Starting from small shops in alleys to big shopping malls in front of the main roads, the country has a surplus of pirated software. We can compare software piracy with traditional theft because it is also a modern stealing of other's intellectual property without his consent.

Being a third world country, Bangladesh would require a lot of effort to raise their economy and keep up the competitive trend with other countries in the worldwide information technology (IT) market. The present technological advances occurring all around the world, it is very much important that we have the necessary property to compete in the IT market. However, if pirated software continues to dominate the IT markets within the country, the local programmers and developers do not will have a chance to show their potential. Bangladesh has a lot of talent in the software development sector and the recent results in programming competition such as the ACM Programming Competition are evidences of that. These programmers have all the skills to produce similar software such as Microsoft Word, Excel, Adobe Photoshop, etc. As a matter of fact, they have the skills to produce even better software. But due to pirated software these developers are not getting the chance to expose their talents.

There are various legal instruments to ensure legal protection towards software piracy in Bangladesh. They include: The Copyright Act, 2000 (herein referred to as the 2000 Act); The Copyright Rules, 2006; The Berne Convention for the Protection of Literary and Artistic Works, 1886 as revised up to 1971 since May 4, 1999; and The Agreement on Trade-Related Aspects of intellectual Property Rights (herein referred to as TRIPS Agreement), 1994 since January 1995. The law ensures punishment of pirating software in Sec: 84 of Copyright Act, 2000, that includes: (a) If anybody creates copy illegally and distribute, sells them illegally will be punished under the act of maximum 4 years imprisonment and not less than 6 months. He will have to give fine a maximum taka 400,000 and not less than taka 100,000; (b) If anybody uses pirated copy of software then he will be punished 3 years of imprisonment and minimum 1 year and fine maximum 300,000 taka and not less than 100,000 taka; and (c) If the court satisfied with reasonable ground that this copy is not used in business purpose then the punishment is not more than 3 years imprisonment and fine not more than 25,000 taka.

1.1. Objectives of the Study

Most of the computers in the world are online for one or other activity. Individuals are now reliant on internet particularly in case of students. Computers will perpetually be online and therefore server-side verification will help in combating the menace. There is hardly any scientific study on the student perceptions towards software piracy in Bangladesh. The main aim of the paper is to investigate the factors or variables that influence the use of pirated software among university students in Bangladesh. The specific objectives of the study are:

I.   To investigate the nature and condition of piracy software uses among the students.
II.   To identify the student views one software piracy.
III. To suggest effective solutions to reduce the software piracy.

1.2. Literature Review

Software piracy is a concept that can be understood as behaviour (Limayem et al., 2004). A number of researchers have attempted to identify individuals' intentions, attitudes and moral propensity toward piracy and factors that might impact their decision to be involved in such illegal activity. Liang & Yan (2005) provides the most comprehensive review of software piracy among college students in the last 30 years suggesting the technical, legal and educational strategies that deal with college students' software piracy. The study conducted by Ang Yang Ang and Bruce W N Lo explored some of the issues perceived by tertiary students and examined the relationship between attitude to software piracy and age, gender, computer ownership, study area of concentration, and history of software copying to attitude. Gopal & Sanders (1998) found that gender, age, ethical predisposition and ethical propensity were related to software piracy behaviour.

An empirical analysis of the relationship between software protection and national piracy rates across 23 European countries over a period of three years (1994, 1997, and 2000) indicates that copyright software protection and income are the most determinant factors of software piracy (Antonio Rodríguez Andrés, Department of Economics, University of Southern Denmark). The model predicts an inverted U relationship between piracy and per capita income. Gopal and Sanders (1997) used deterrence theory to examine factors that may reduce software piracy and increase profits. They observed that certainty would increase the perception of costs and increase industry profits. Cheng, Sims &Teegen (1997) identified two factors: software price and household income as significant. They suggested that a higher software price might cause potential buyers to buy pirated copies. Also, by pricing software according to buyers' household income a further reduction in their piracy intention might be expected. Situational factors such as cost of purchasing legal software become impossible for students in certain situations. According to a study by Moores and Dhillon (2000), results reveal that cost of purchasing legal software in Hong Kong becomes expensive for students. Furthermore, two more additional factors was investigated in their study, low punishment levels and high availability of pirated software along with the cost factor leads to the trend of piracy.

The Theory of Planned Behaviour and Reasoned Action by Ajzen and Fishbein (1980) also influenced several researches (Lin, Hsu, Kuo, and Sun, 1999). A study carried out by Lin et al. 1999looked at the factors that may affect the piracy intention. They showed that that IS professional's piracy acts are straightly influenced by their attitudes, subjective norms, and perceived de-individuation. It is also argued that the attitude and subjective norms are influenced by their ethical perception of piracy issues and organizational ethical climates (Lin et. al. 1999). Peace and Galletta (1996) developed a predictive model of software piracy behaviour based on the theory of planned behaviour, expected utility theory and deterrence theory confirming that the first theory was a good fit to data. Gupta, Gould & Pola (2004) found that ethics as a factor is embedded in a set of factors (attitudes, legal aspects, social support, perception of economic loss and age) which have impact on software piracy. Limayem, Khalifaand Chin (2004) used the Triandis' cultural model as a conceptual framework to measure factors that have an impact on software piracy intention and actual behaviour. They found that social factors and perceived consequences

were influential while affect did not have a significant influence on intention to pirate software.The effect of cost structure on buyer purchase intention was studied by Nunes, Hseeand Weber (2004). They found that buyers are less willing to pay for information products with relatively low variable cost and high fixed cost.

The influence of various psychological variables was studied by some researchers (Lian& Yan 2005; Peace &Galletta (1996; Glass & Wood,1996). Liand and Yan (2005) identified what factors (e.g. demographic variables) influence software piracy behaviour or how the factors influence a person's behaviour through the use of various models e.g. Peace and Galletta (1996) and Glass and Wood (1996). Peace and Galletta's model (1996) is very comprehensive since it integrates a psychological, economic and criminal aspect software piracy through the integration of three theories: the planned behaviour theory, the expected utility theory and the deterrence theory respectively.Bandura's Social Cognitive Theory (1984) argues that the SCT is cross culturally applicable because it has the ability to predict and explain human behaviour in various contexts. It utilised in some software piracy studies (e.g. Kuo & Hsu, 2001). Kohlberg (1969) developed the theory of moral development, which consists of 3 level of moral development and each level contains 2 stages. The concept behind the moral development stages is that, an individual mature morally when they mature intellectually.

2. METHODOLOGY OF THE STUDY

This paper is exploratory by nature. The study used quantitative approach for gathering data. Field survey was the main technique. A pretested questionnaire was developed and used for the survey. The survey instrument was constructed with questions to understand students' intentions and attitudes toward piracy behavior. The field level survey was the key in this study.

Two universities located in Dhaka City – the capital of Bangladesh were considered as the study area. Two top public universities - Dhaka University and Bangladesh University of Engineering and Technology were selected for conducting the survey.

Students were the subjects of the study. Due to time and resource issue, the sampling frame was not made possible. Hence non-probability sampling method was used to obtain a convenience sample. Since there is a limited number of people who have knowledge about the software piracy problem, to get expected outcome and real information of the state of software lifting, data were collected from graduate, undergraduate and post graduate students of these two universities. In selecting respondents, two computer related disciplines - ICT and CSE, and the students who have the access to or are knowledgeable about computer and internet and who were willing to participate in the study were considered.

For the survey, 120 students were in the sample. Among 120 respondents of the study, 93 were male and 27 were female. Out of 120 respondents, 76 respondents were 20 years and above and 44 were below 20 years. The sample included 23 percent CSE students, 15 percent ICT students, 19 percent engineers, 28 percent graduate, 10 percent postgraduate and 5 percent is undergraduate of other disciplines.

3.   ANALYSIS AND FINDINGS

Among the respondents, 89 respondents owned their personal computers and 31 did not have their own. Regarding the perceptions of respondents towards technology, 78 percent of the respondents reported that they had used computer for over a year and the rest had minimum experience (Table 1). Among the respondents, 90 percent students used computer for class purpose and 79 percent used for recreation purposes. Among the users, 47 percent respondents used computer at their work place. Most of them used it for their university work, almost half used it on the job and many of them used computer for recreation as well. Table 1 shows clearly that most of the students were fairly familiar with computer usage, though an overwhelmingly majority also used computer for non-educational purpose.

An overwhelming majority (80 percent) personally copied software illegally, 54 percent of the respondents allowed another person to use his or her copy, and 90 percent of the respondents used pirated software for educational purpose (Table 2).

The study revealed that 54 percent students used commercial pirated software instead of buying (Table 3). An overwhelming majority of respondents viewed this for students and general people (78 percent and 68 percent respectively) and around one-third respondents perceived professors and administrators use pirated software (39 percent and 36 percent respectively) (Table 3). Table 4 showed that the percentage of respondents agreeing with the statement did not differ by more than 10 percent, most cases the difference was within 5 percent. This implies that not only students, but also professors, administrators and general people do not buy but use pirated software in Bangladesh.

The study showed that majority of undergraduate students (over 80 percent) used pirated software for graphics comparing with applications, multimedia and system (below 45 percent), and they used less (around 30 percent) for applications (Chart 1). Graduate students used pirated software mostly for multimedia, graphics and applications (above 45 percent) while they used less for graphics (below 40 percent). Postgraduate students use mostly graphics and system software comparing with application and multimedia (below 45 percent).

Among the respondents, majority (74 percent) of the respondents supported educational use followed by 66 percent (commercial software at free cost) and 54 percent (commercial software for trial purpose). Table 3 indicates student attitudes on copying software under different circumstances. More than half of the respondents agreed that use of pirated software for educational purpose, for trial and for use at no cost were ethical (Table 4). Among the respondents, majority (74 percent) supported educational use followed by 66 percent (commercial software at free cost) and 54 percent (commercial software for trial purpose). In all but one case, the percentage of students agreeing with the statement differed by 2 percent or less while in the case of copying software for educational purposes, the difference was 15 percent with other purposes (Table 4).

The majority of respondents (about 22 percent) mentioned weak law enforcement, and the lack income as the reason for increasing piracy followed by about 19 percent (poverty, moral degradation, and the lack of awareness of law breaking) (Table 5).The obvious question is why students believe that there is no potential ethical problem with making copies of software. Although

the survey did not ask students to explain the reasons for their opinions, informal discussions with students suggest that there are a few misconceptions that help promulgate the belief that the duplication of copyrighted materials is permissible.

4. CONCLUSION & RECOMMENDATIONS

Software piracy is a criminal behaviour and it is rising at alarming rates in Bangladesh. Internet users are increasing many folds in today's Bangladesh and the rate of piracy is likely to be increased in the country. It degrades our country reputation. It represents the weak condition of law and order situation of our country. It is a crime committed by educated people; the person must have to know the application of computer. Piracy demands also advanced knowledge on Internet use. We can treat it as the dark side of modern technological advancement. With the raise of computer use in our country the piracy rate of software is also increaseing.

The study identified the variables - high price of software, low income, value consciousness, attitude, and weak law enforcement - that influence the intention of students to use pirated software. These indicate that effective prevention of software piracy requires multiple tactics. Software companies must ensure to protect their intellectual property, reduce consumer's desire to pirate their software, and implement software protection methods to stop those who want to steal it.

Based on the findings the government and software industries can undertake appropriate measures. Students learn at their early age to do illegal use of software or as opportunities to get pirated software are available to them. The findings also indicate that students who are well versed with the knowledge of the computer are involved more in the piracy as compared to other. Students come in close with illegal activities in their study life through a learning process. It degrades our country reputation. It represents the weak condition of law and order situation of our country. It is a crime committed by educated people; the person must have to know the application of computer. Piracy demands also advanced knowledge on Internet use. We can treat it as the dark side of modern technological advancement. With the raise of computer use in our country the piracy rate of software is also increase. Starting from small shops in alleys to big shopping malls in front of the main roads, the country has a surplus of pirated software. We can compare software piracy with traditional theft because it also modern stealing of other's intellectual property without his consent.

Some immediate steps should include awareness-raising about anti-piracy methods and legal measures to ensure intellectual property (IP). The industry must educate the public about the IP laws. Without proper enforcement, the laws can do nothing. It is important that there are criminal penalties for IP infringers, or the laws will be broken. Software companies can take several steps to do this, including making it easy to legally obtain the software, ensuring proper pricing, and changing social attitudes. Further empirical research is needed to identify the issues and problems regarding the uses, causes and remedies of software piracy and cybercrime in Bangladesh.

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APPENDIX

Table1.Ownership and experience of computer and software use (n=120)

Items	Percentage
Own personal computer	74
Use computer for more than a year	95
Use computer at work	47
Use computer for class	90
Use computer for recreation	79

Table 2: Piracy behavior among the students (n=120)

Variable	Indicators	No. (Percent)
Copy software	Have illegally copied	96 (80%)
	Have not	24 (20%)
Allowing others to copy	Let others copy	54 (45%)
	Did not let	66 (75%)

Table 3. Student access to commercial pirated software and perceptions towards software piracy (n=120)

Items	Percentage
I have copied commercial software instead of buying it.	54
I think that most people copy commercial software instead of buying it.	68
I think that most students copy commercial software instead of buying it.	78
I think that most professors copy commercial software instead of buying it.	39
I think that most administrators copy commercial software instead of buying it.	36

Table 4. Agreements on software piracy (n=120)

Variable	Percentage
For people such as myself to copy commercial software instead of buying it.	66
For people such as myself to copy commercial software instead of buying it when we use it for educational purposes.	74
For employees to copy commercial software to evaluate it for possible purchase.	54

Table 5. Student opinion concerning the reason for increasing software piracy in Bangladesh (n=120)

Reasons	Percentage
Poverty	18.75
Weak law enforcement	21.87
Moral degradation	18.75
Unaware of breaking laws	18.75
Lack of income	21.87

Chart 1. Types of software pirated by students