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Identifying Major Reasons for Software Piracy in Developing Nations

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Abstract: *The major threat to the software industry is counterfeiting/piracy issue, most especially in developing nations of the world. This paper is an attempt at identifying the reasons behind the high level of software piracy in the developing regions. Clear distinction is made with regard to free or open software and commercial software that users are expected to purchase with licenses. The process of piracy by crackers is illustrated. Research instruments (questionnaires) were administered among groups of software users in both academics and professional communities in Nigeria, as a case study with respect to grounds for piracy and how it should be addressed. Reasons were deduced from the result of the study and recommendations were made.*

Keywords: *Software Piracy, Developing Nations, Reasons, Recommendations.*

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I. Introduction

Software products are critical part of the global infrastructure. They constitute major part of the world economy, ensure public safety, and provide a source of entertainment to millions. Today, the driving force behind the industry's growth is the vast selection and availability of commodity software from many competing sources.The demand for software is growing globally as well as the potential revenue for software developers (Robert, et al, 1996).According to Bernichi, et al (2005), with an increase in demand for software, the market for software piracy also increases. Software, like other forms of intellectual property, is protected by intellectual property laws. To purchase software means to purchase a software license. A software license specifies specific regulations and terms of use that are determined by the software maker as a copyright law (Hayes, R et al 2003). In general,most software licensesallowfor use on a singlemachine and for a single backup copy. Copying, distributing and exchanging software withfriends, coworkers, or on the internetviolatethe license,and is a violationof copyright law.Stealingintellectual property is a crime and so is software piracy.It is a crime regardless of thetype, severity,or the motives. Not only is using or distributing pirated software a crime, but it increasingly violates many corporate and professional organization's policies (Julien, et al 1999). Today, corporations specify strictintellectual property policies for their employees. These policies are meant to protect the corporation from breaking copyright and property laws. The policies prevent users from installingpersonal software on corporate machines bysecuring copiesof company software and licenses,and limitingaccessto employee workstations (Bamfield, T 2004). Many of the corporate policiesare adoptions from professional organizations' lawsand ethics. Proper creditshouldbe givenwhen usingintellectualproperty. The professional community organizationsare leadersin respectingand honoringintellectualproperty. When software is used illegally, a company is deprived of its earnings.Piracy undermines the software market, makingit less lucrativefor software companies to continueto offer innovativeand highqualitysoftware. It alsohurtstheconsumer. Frequently, pirated software does not include documentation or provide access to customer support, and or future software upgrades. Most importantly, pirated software is illegaland a crime in most countries (Adu, et al 2013).There are many agencies and organizationsthat have been created for thesole purpose of reducing andpreventingactsof software piracy. An increase in penaltiesfor piratingsoftware and a larger push for wider enforcement are attempts to curb the rising piracy rates worldwide (Peitz, M., et al 2004). The act of software counterfeiting/piracy is today very common in the developing world. Unlike in the developed world, the corporate organizations, government and their agencies have put in place laws and regulations that do not allow software piracy. The reasons for software piracy in developing nations remain the focus of this paper.

II. Classification of Software

According to Simon, F. (2002), there are two basic types of software, although these do have their own sub-divisions;

2.1 Commercial Software

They are purchased with a license for one or more computers. This generally is coupled with some form of support and regular updates to patch errors. Sometimes a new version of the software is offered at a reduced rate as "update". This type of software is generally relatively expensive and is often designed to cover specific industrial purposes (Andrés, A. R. 2006). The big exception is the various sets of "office" software, which are designed for use in the commercial environment, but can equally be used for various tasks at home. The most common application in this category is, of course, text editing. Most of the other classic "office" applications, such as calculations and databases are only of limited use in the domestic environment, although they will be used in some cases, particularly now that more computer-literate generation is growing.

2.2 Free or "Open Source" Software

This is designed for general distribution and has no particular limitations as to use, except that it may not be changed in any way. Naturally, such-software has its limitations, but may serve very adequately for many purposes (Andrés, A. R., et al, 2011).

III. Process of Carrying out Software Piracy

Software piracy has become a much greater concern over the years. Today, virtually everyone can get access to such equipment and distribute CD based copies of software application to whomever they please. Mass distribution of pirated software products does not only deprives software manufacturers of their deserved earnings but also allows other software pirates to pirate unlicensed copies of that application and propound the damage exponentially (Barker, et al, 1989). As such, piracy has often resulted in inflated software prices and irresponsible damage of software companies. Although various protection schemes have been proposed, software piracy still causes major losses to software vendors, since virtually all of these protection schemes can easily be cracked by a malicious users.

Most of these software protection schemes enable access control mechanisms in the program code, and a user has to pass these authentication processes before using the software. The process may require serial number of the corresponding user, password from the manual, or checking the source where the software locates (CD, for example) unfortunately, these authentication processes have been cracked by many crackers as shown in Figure 1.

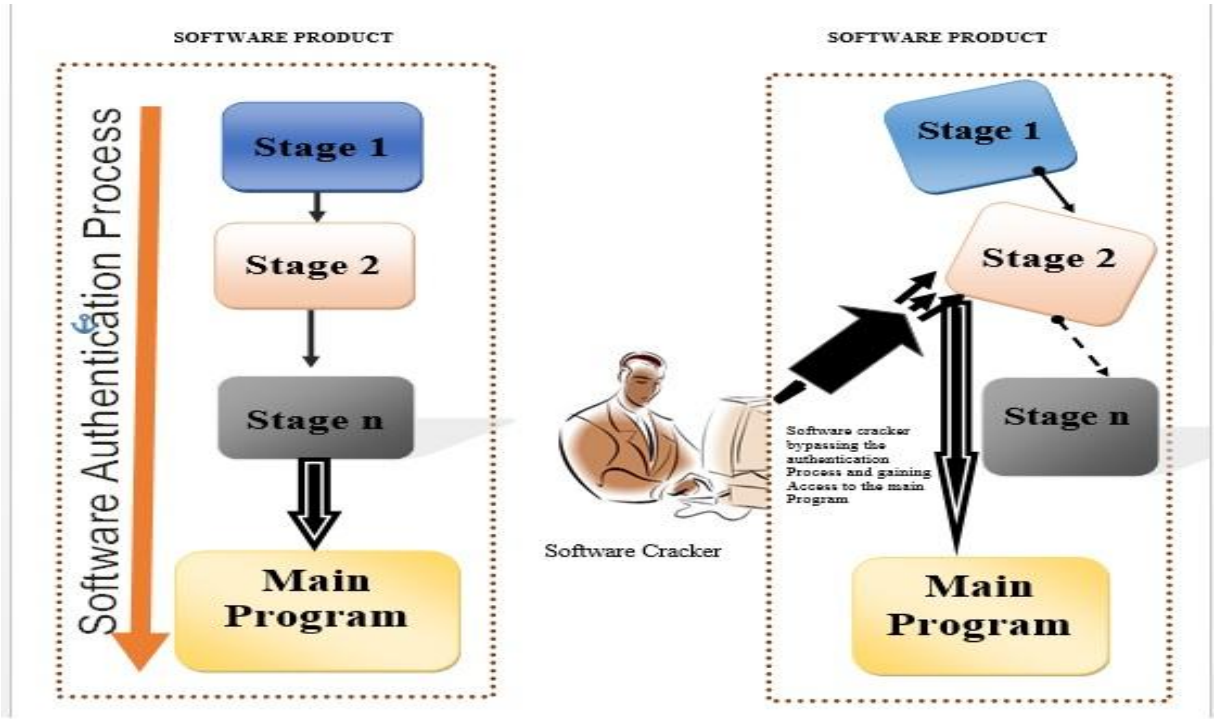

Figure 1. Process of Software Piracy

The difficulty of cracking such protection schemes depends on how complex this part of the code is written. For example, some software vendors put checksum values for the authentication process in the

software. If someone tries to modify the code to bypass the authentication process, an error may be found and the execution will be terminated.

This only increases the time to crack the software, from day-to-day experiences, it cannot prevent unauthorized use. The new style of software usage on the internet causes more serious software piracy problem, and similarly common software protection schemes that relies on the authentication process within the software itself cannot effectively prevent the software from being cracked by a smart cracker.

IV. The Study and Research Method

Most of the academic piracy research works to date have not really addressed this issue with regard to the developing nations of the world. This paper is an attempt to further create enlightenment on software piracy with respect to causes and how it should be addressed.

Research instruments (questionnaire) were administered among identified groups of software users, mostly in academics to identifying reasons for the prevalence of software piracy in developing nations, Nigeria as a case study. The questionnaires were distributed to a sample of adults in their final year classes at the Federal Polytechnic, Ado-Ekiti, Ekiti State, Nigeria, and workers in Financial Institutions, Engineers, programmers and those engaged in the telecommunications industry. No incentives were given for completing the questionnaire, and all respondents were promised anonymity. These categories of individuals were chosen because they belong to the expected group of professionals with the ability, opportunity and knowledge to use computer technology. All of the respondents indicated some training with computers during their education, and 60% stated that they worked with computer systems on a daily basis.

V. Results

One Hundred and Twenty Two (122) questionnaires were distributed and One Hundred and Three (103) were returned. Seventeen (17) respondents who indicated that they did not use computers were considered unusable. Usable respondents were 86. 67 respondents representing 77.9% were male. 26 respondents representing 30.2%ranged in age from 25-35 years old, 42 respondents representing 48.8% ranged in age from 35-45 years old, and the remaining 18 (20.9%) were above 45 years of age at the time of the survey. The respondents were highly educated with Bachelor and Master Degrees. 7 of them are holders of Doctor of Philosophy (PhD) degree. They were very conversant with computer systems and applications. They either have it at home or use them in their various offices.

82% of the respondents understood clearly the issue of software piracy and have had course to discuss or learn about the fact that software piracy is a crime. They also agreed that they did copy/duplicate software products illegally.

The sources of their pirated software according to the respondents are; 78% claimed to obtain software products from their friends,15% have pirated software already installed on their computer by the sellers in what is described as hard disk loading and the remaining 7% did not agree that their software products are pirated since they got them from professionals in the industry.

5.1 Identified Reasons for Software Piracy in Developing Nations

When asked for the main reason behind their usage of pirated software, price was the number one issue raised. 56% of the respondents listed the cost of software as the main reason for committing piracy. A further 28% responded that they simply saw no reason for paying more when the software was available at cheaper price or even for free. 68% stated that they were satisfied with their decision to pirate software more so as this can be done in comfort of their homes using Compact Disk (CD) writers, while the remaining 32% admitted to some dissatisfaction or guilt associated with their choice.Understanding the significance and impact of software piracy is very important in addressing issues relating to software piracy. Lack of intellectual property laws, different social stands on property rights, and a lack of education are identified as motivating factors for pirating software products.

The followings have been identified as major reasons for software piracy in developing nations.

5.1.1 The unaffordable cost of software products

Software cost is the most significant reason for high rate of software piracy in developing nations identified in this work. However, it would not be totally surprising to find that cost is more of a problem as a result of the poor economy resulting in an annual per capital GDP of US$500 on the average, compared to developing nations like United State of America of per capital GDP greater than US$33,600 (Business Software Alliance (BSA), 2002).

5.1.2 Software Format

Due to software unique digital format, it is an easy medium to pirate and easily disseminated using low cost digital media and the internet.Only in the past few years, with the wide availabilityof largediskcopyingmachines, the internet,and largeprofit gainsdue to the increasingdemand for piratedsoftware,has larger, more professional groups began mass copying and distributingsoftware.

5.1.3 Connectivity Software and High Speed network Connections

Recent connectivity software and the growing availability of high speed network connections provide the means for easy access and proliferation of illegal software in the developing nations.

5.1.4 Enforcement Difficulties

Currently, the monetary benefits, access to counterfeit material, and enforcement difficulties make software piracy a growing epidemic in the developing world.

5.1.5 Growth in Software Applications

The large growth in software applicationmakes developingsoftware a bigbusinesswithpotentially large profits. Software enables users and businessto do more withtheirsystems, and theneed for software is growing. But many times, software is not free, and depending on the type of software, it can cost large amounts of money. Wherever there is potential for large profits and there exists a high demand, illegal methods for satisfying the demand at a lower cost also exist (Greenberg, J 1998).

5.1.6 Lack of Education

Lack of education is also a major factorfuelingthe software piracy industry (Peitz, M et al, 2006).
The six identified reasons can be clearly seen as products of identified factors in a model developed by Peace, et al (2003).

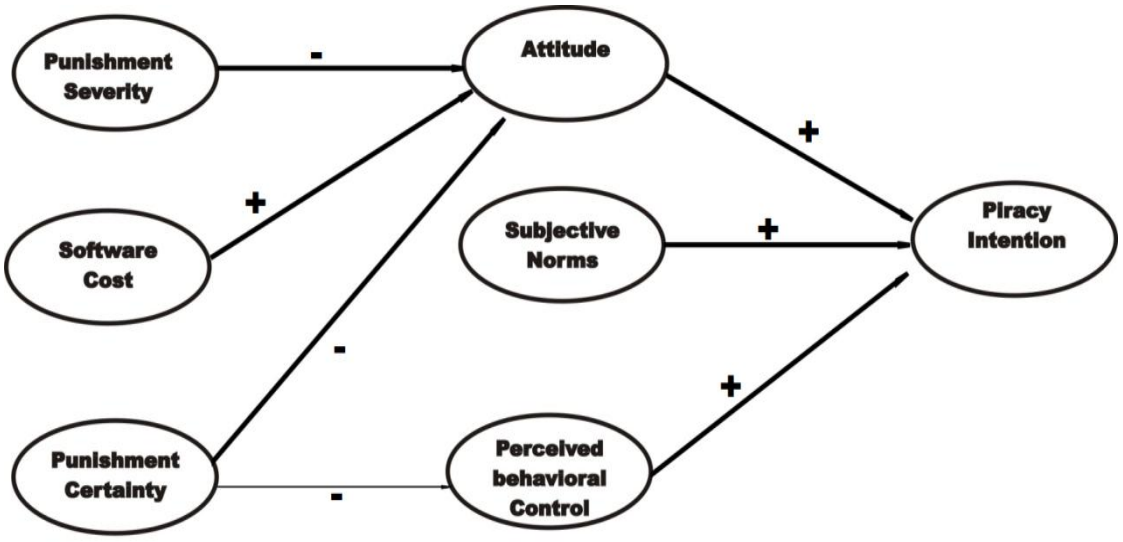

Figure 2. Model of Software Piracy Behavior (Source: Peace, et. al. 2003)

From the work of Peace et al (2003) it can be deduced again that economic factor contributes a lot to the desire to pirate software especially among the young ones in developing nations.

Recommendations

In order to effectively curb the menace of software piracy in developing nations, the following must be admitted as necessary recipe for success.

a. First, it is recommended that reducing the price tag on software in developing nations like Nigeria with lower per capital income would be a major tool to reducing software piracy. In several research works including Gopal and Sanders (2000) and Moores and Dhillon (2000), they are of the opinion that there should be price variation for software products across regions of the world.

b. The software developers need to do advocacy to generate support especially from governments of developing nations with regard to cultural relativism in the area of ethics. Most cultures in developing nations do not have a history of protecting intellectual property rights, and the concept of intellectual property ownership is therefore strange to them. It is part of the community life to share anything you have with others.

c. A complete solution for software piracy that would typically insist on installation/execution environment itself to be internet based and the user or buyer is connected directly to the server of the software developer is recommended. This is not based on client/server approach where a legitimate user downloads the content of the software product directly from the developer's database and it is automatically installed. This has not been so successful especially in developing nations as a result of poor network connection that is expected to be secured during the entire installation period and insufficient bandwidth problem, however it is essential that mobile agent technology be integrated to address the limitations of client/server and software downloading.

VI. Conclusion

In this paper, the reasons for high rate of software piracy in developing nations are identified and recommendations are made to provide insight into appropriate steps that could be taken to curb pirating of software products in developing nations. 56% of the respondents listed the cost of software as the main reason for committing piracy. A further 28% responded that they simply saw no reason for paying more when the software was available at cheaper price or even for free.Software cost is a more interesting aspect of the problem. Other reasons are equally important and therefore any attempt to adequately check the menace must address the issue of cost of software products alongside the technicalities to be adopted.

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