Prevalence and Causes of Software Piracy among Tertiary Students in Ghana

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

Original Research Article

ABSTRACT

In the era of the Knowledge Economy, Intellectual Property Rights (IPRs) have become a crucial aspect of the twenty-first-century environment. Software piracy, characterized by the unauthorized copying, downloading, sharing, selling, or installation of copyrighted software, remains a serious problem worldwide, and Ghana is no exception. Various forms of software piracy, such as software lifting, hard disk loading, counterfeiting, and unauthorized renting, are prevalent in the country, leading to negative economic consequences. These consequences include distorted competition, loss of tax revenue and jobs due to the absence of a legitimate market, and increased costs for recovery. The impact of software piracy affects the social well-being of the Ghanaian citizenry. This research aims to explore the causes and effects of software piracy in Ghana, especially among tertiary students, and proposes potential solutions. A quantitative survey design was used via an online questionnaire to collect data from a sample of 47 students in the tertiary institutions especially public universities in Ghana with backgrounds in IT and are familiar with evolving trends in IT. The findings revealed that software piracy is prevalent in the country as a result of a lack of awareness, poor economic conditions, and weak legal framework and/or enforcement. The study

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recommends increased public education and awareness, strict enforcement of laws related to software piracy, and the promotion of domestic software development as measures to address the menace.

Keywords: Software piracy; software lifting; counterfeiting; information technology (IT); intellectual property.

1. INTRODUCTION

The twenty-first century is characterised by a competitive environment heavily reliant on the Knowledge Economy, which thrives on Intellectual Property Rights (IPRs) [1]. Software piracy, a form of IPR infringement, refers to unauthorized activities such as copying, downloading, sharing, selling, or installation of copyrighted software (e.g., pictures, movies, games, music) [2,3]. Most software today is purchased as single-user licenses, allowing usage by one authorized user on one or more machines, and sharing with others violates the license terms [4]. Although most computer users are aware that unauthorized use and duplication of software is illegal, software piracy remains a serious problem [5].

Several factors related to psychological, economic, ethical, regulation, or cultural account for software piracy [3]. Research has found that attitudinal factors and motivational factors significantly influence the use of pirated software in the student environment [6]. In another study, it was found that the lack of critical institutional sanctions against software piracy is major influencing factor [7]. Other factors found in the literature include the cost of software, and awareness on the effects of software piracy [8]. To address the menace, Chankova [9] recommend organising frequent training sessions for students on the ethical use of information technology (IT) in general.

Ghana has witnessed substantial growth in the IT sector over the past few decades, accompanied by an increase in software piracy [10,11]. High software prices, poor economic conditions, lack of awareness, and weak legal enforcement contribute to this phenomenon [8]. The declining social and economic well-being in Ghana has led to various crimes, including cybercrimes, internet fraud, and software piracy. This study aims to investigate the causes and effects of software piracy in Ghana, particularly among tertiary students. It seeks to understand the role of Information Technology in Ghana's growth and social well-being and presents recommendations to address the issue.

As preventive measures to reduce software piracy, the study emphasizes the use of public education and awareness creation on understanding the proper use of software. The study will help us conclude whether software piracy has a significant effect on the economy of Ghana and will also make useful recommendations to assist the government in decision-making [12,13]. The rest of the paper is organized as follows: Section 2 presents the methodology and the tools used in collecting and analyzing data. Section 3 presents the research results and discussion. Section 4 discusses preventive measures for addressing software piracy, and Section 5 concludes the paper.

2. METHODOLOGY

A descriptive survey approach was employed to gather data systematically from the target population, consisting of students from various universities in Ghana, particularly those in IT-related fields. A sample size of 47 respondents was obtained using an online survey designed with Google Forms. To ensure respondent confidentiality, no personal information was collected. Questionnaires were distributed through online Media such as Email, WhatsApp, and Facebook.

A quantitative research technique was employed to analyze the survey data, with tables, charts, and graphs used to represent the collected data. The sample of responses received is representative, allowing conclusions drawn from this sample to reflect the national perspective on the subject matter. Survey participants came from diverse backgrounds in terms of their occupations and academic specialties. Below is the analysis, which briefly explains the questionnaire that was administered to the target audience.

2.1 Questionnaire Analysis

The questionnaire administered to the target population consisted of a total of 21 straightforward and easy-to-answer questions. The questionnaire also included nine statements

designed to gain a better understanding of respondents' attitudes toward software piracy. Using a five-point Likert scale, participants were asked to express their opinions on various statements related to software piracy. Additionally, the participants were asked if they were aware of the security risks involved in using pirated software. Finally, respondents were asked to mention some of the anti-piracy organizations they were familiar with. Next is a brief explanation of each of the results obtained after analyzing the collected data.

3. RESULTS AND DISCUSSION

The analysis provided valuable insights from the data collected. Below are the results of the analysis:

3.1 Using Open-Source Software

As shown in Fig. 1, majority of the respondents indicated that they always use open source software (51%), which aligns with common usage patterns.
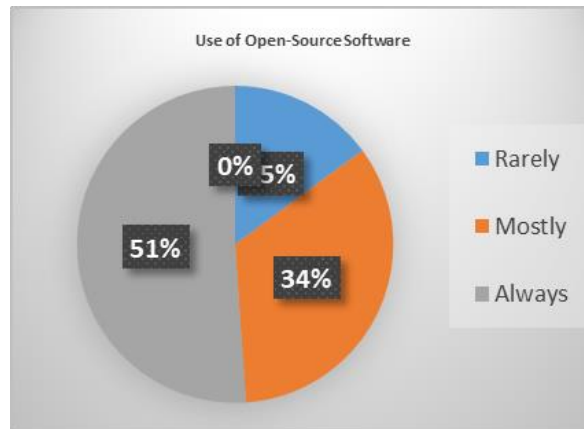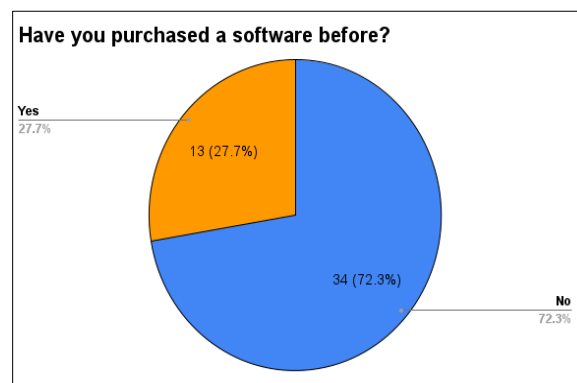
3.2 Purchase of Software

Asked if they have ever purchased software, 72% of the respondents indicated that they have never purchased software as shown in Fig. 2. This shows purchasing of software is not a common behavior among Ghanaians, especially students.

3.3 Conscious of Software Piracy

The participants were asked if they were conscious of software piracy. As depicted in Figure 3, while 66.0% percent of the respondents claimed to be conscious of software piracy, 34.0% answered in the negative. Although this encouraging, more efforts are required in terms of education.

3.4 Motivation behind the Use of Pirated Software

Most of the respondents claimed that "software price" is the major motivation behind software piracy. Details of the motivations behind software piracy are shown in Fig. 4.
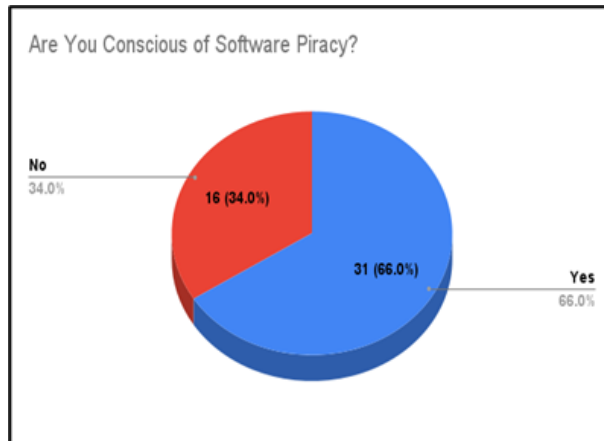

Fig. 1. The use of open source Software

Fig. 2. Purchase of Software among Participants

Fig. 3. Consciousness of Software Piracy among Participants

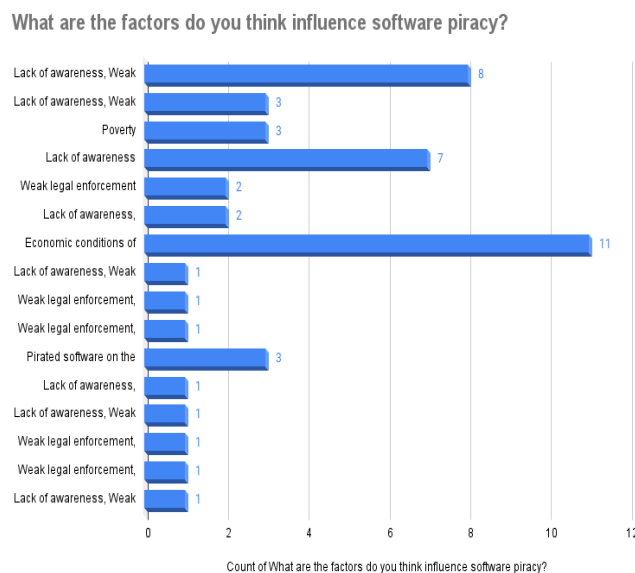**Fig. 4. Motivation behind the Use of Pirated Software**

Fig. 5. Factors influencing software piracy

3.5 Factors Influencing Software Piracy

Fig. 5 shows that a lot of respondents claim that economic conditions are a major factor influencing software privacy.

4. PROPOSED MEASURES AGAINST SOFTWARE PIRACY

In today's technologically advanced world, completely eradicating the problem of software piracy is challenging. However, efforts can be made to reduce the prevalence of piracy. These efforts have shown promising results through the endeavors of various governmental and non-governmental organizations at local and international levels. Organizations such as the BSA and SIIA have been successful in their ongoing battle against software piracy. Their focus lies on strict law enforcement and educating individuals and organizations about proper software usage.

Several studies have indicated that software piracy is more common in developing and economically disadvantaged countries, where the high cost of software makes legitimate purchases unaffordable [14]. Studies by Peace et al. [15] [3], indicate that individuals are more likely to engage in piracy when software prices are high. Consequently, one effective approach to reducing software piracy could be to lower software costs in countries with low per capita GNPs.

Additionally, awareness and education campaigns at both the government and individual levels can play a crucial role in reducing piracy. Promoting the value of software and its legal use requires raising awareness and providing education . Without proper training and guidance, computer users may not realize that downloading or copying software programs is a violation of copyright laws [3]. Research by Hossain et al. [16] established that awareness is the most influential factor in using pirated software. It is essential to convey the message that using illegal software is against the law and highlight the negative impact it has on software publishers, job opportunities, and tax revenues [17].

Moreover, individuals should be informed about the proper use of software and copyright laws [3]. Many individuals mistakenly believe that purchasing software grants them ownership rights to freely copy and distribute it. In reality, purchasing a software license grants users the right to use the software under certain limitations imposed by the software publisher. International treaties, such as the TRIPS agreement, WIPO Copyright Treaty, and Berne Convention, protect intellectual property rights and help combat software piracy [18].

Ensuring copyright protection is also vital in the fight against software piracy. Software is protected by copyright laws, and licenses are issued by software owners to define the permissible uses, limitations, and duration of use [3]. Unauthorized reproduction, distribution, or installation of software is considered a violation of copyright law. Copyright infringement can result in severe penalties, including fines and imprisonment. In Ghana, the Copyright Act of 2005, Section 5, states the exclusive economic rights of authors, while Section 12 determines the duration of copyright for individuals.

Software licensing plays a significant role in regulating the use of software. Software manufacturers or publishers distribute their products with various licenses, such as end-user license agreements (EULAs). These licenses outline the terms and conditions for using the software, including restrictions imposed by the copyright holder.

Different software types, such as proprietary and open-source software, have varying terms and conditions. Open-source software is often distributed under the GNU General Public License (GPL), allowing users to copy, distribute, and modify the software. On the other hand, proprietary software is licensed under the sole authority of the copyright holder, who determines usage limitations. The use of open-source software as an alternative to commercially licensed software help to minimise the menace of software piracy [19].

5. CONCLUSION

The purpose of this study was to provide an overview of software piracy in Ghana, particularly among tertiary students, including its causes, effects, and risks. The study successfully contributed to understanding the subject matter. Software piracy is a significant issue in the country, influenced by factors such as poor economic conditions and weak legal enforcement. The research and studies conducted shed light on the current state of software piracy and can guide the

implementation of stronger measures to reduce its prevalence.

While government agencies and the software industry are working diligently to combat software piracy, the results of these efforts have yet to show significant improvement. Some studies have recommended strong legal enforcement and differential pricing as measures to curb piracy. Ongoing efforts are necessary to combat software piracy, and perseverance is crucial as significant changes cannot be achieved overnight.

Based on the major causes of software piracy identified in Ghana, the study proposes the following recommendations:

1. Increase public education and awareness in Ghana regarding the consequences of software piracy, with a long-term focus on bringing about a change in attitudes and deterring piracy.
2. Strictly enforce existing laws related to software piracy by the government or relevant authorities in Ghana.
3. Encourage domestic software development in Ghana to reduce the high costs of software products and make them more accessible to the population.

Overall, by implementing these recommendations, Ghana can make strides in combating software piracy and fostering a culture of respect for intellectual property rights. The researchers declare no conflict-of-interest in the study. They followed the ethical processes of their university before carrying out the research. They also explained the purpose and implications of the research to the participants while ensuring participants' confidentiality by including no identifying information such as names in the surveys.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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