
INDIVIDUAL AND SOCIAL REASONS BEHIND SOFTWARE PIRACY: AN ANALYSIS OF PREVIOUS STUDIES

Daha Önce Yapılmış Çalışmalar Işığında Korsan Yazılım Kullanımının Bireysel ve Sosyal Nedenleri

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Abstract

Software piracy is one primary area of the issue of copyright infringement. Before advanced technology and high speed Internet, software piracy was carried out by copying disks or other types of physical objects, but now almost all types of software piracy take place through the Internet medium. The Business Software Alliance defined software piracy as the illegal copying, downloading, sharing, selling or installing of copyrighted software. Definition of the reasons behind an existing problem is a crucial part of the problem solving process. The aim of this study is to explore the factors that contribute to pirated software usage. In order to define the dynamics behind the software piracy problem 28 previous studies were analyzed. Based on previous studies nine reasons at individual level and five reasons at social level were defined. Solutive strategies for software piracy to governments and software companies were also provided in this study.

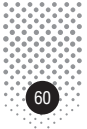
Key Words: Software piracy, Pirated software, Copyright law, Copyright infringement.

Özet

Yazılım korsanlığı korsancılığın en önde gelen alanlarından birisidir. Gelişmiş teknolojiler ve internetten önce yazılım korsanlığı çoğunlukla cdlerin yada benzer fiziksel objelerin kopyalanması yolu ile gerçekleştirilirken bugün çoğunlukla internet üzerinden gerçekleşmektedir. Business Software Alliance yazılım korsanlığını yasal yazılımların

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izinsiz kopyalanması, indirilmesi, paylaşılması, satılması veya kurulması olarak tanımlanmıştır. Problemlerin arkasındaki nedenlerin tespiti problem çözümünde en önde gelen basamaklardan birisidir. Bu çalışmanın hedefi korsan yazılım kullanımına yol açan nedenlerin tespitidir. Yazılım korsanlığı arkasındaki nedenlerin tespiti amacı ile değişik bölgelerde yapılmış 28 çalışma incelenerek analiz edilmiştir. Daha önce yapılmış olan bu çalışmalardan elde edilen sonuçlara dayanarak yazılım korsanlığının dokuz bireysel ve beş toplumsal nedeni tespit edilmiştir. Bu çalışmada aynı zamanda elde edilen veriler ışığında yazılım korsanlığına yönelik çözüm stratejilerine de yer verilmiştir.

Anahtar Kelimeler: Yazılım güvenliği, Yazılım korsanlığı, Korsan yazılım, Fikri mülkiyet hukuku.

Introduction

The basic reason for protection of intellectual property rights is the necessity to encourage and support innovation and to promote the creation of knowledge. Intellectual property has a functional effect on the creation, development and innovation of the intellectual products which improve our life. Information and communication technologies have improved human life, and the computer plays a leading role in this improvement. Hardware and software are the two basic parts of the computer. "Hardware" is a term used to define the physical components of computer system and "software" describes the digital tools used to operate computer hardware.

The Business Software Alliance (BSA) defined software piracy as the illegal copying, downloading, sharing, selling or installing of copyrighted software. Software piracy is one primary area of the issue of copyright infringement, and it is difficult to measure accurately the worldwide magnitude of the software piracy problem. According to Swinward et al. (1990) software was the first copyrighted product that was duplicated on a large scale.

Before advanced technology and high speed Internet, software piracy was carried out by copying disks or other types of physical objects, but now almost all types of software piracy take place through the Internet medium. According to the BSA 2009 Internet Piracy Report website, auction websites are the most popular channels to access pirated software; eBay, UBid, Mercadolibre in Latin America, Taobao and Eachnet in China, QXL in Europe are some of the leading auction websites in the mentioned report.

Peer-to-peer software connects individuals directly, and through this type of software, peer-to-peer (P2P) network users are able to share their digital files with other Internet users quickly and easily without any cost. Hill (2007) explained four types of effects of peer-to-peer networks on digital piracy: quick access to pirated material, easy search options for pirated material, reduced perceived risk of detention, and zero transaction costs. According to the BSA report, popular protocols were Bit Torrent, eDonkey, Gnutella, and FastTrack in P2P medium. eMule, Kazaa, BearShare, and Limewire are the most popular application in P2P file sharing.

Although measuring the worldwide magnitude of the problem of software piracy accurately is difficult, the BSA has been preparing annual reports since 1995 to draw attention to this serious problem. Until 2003, the BSA calculated software piracy rates based on the difference between computer sales and software sales with an “all computers need basic software tools” approach. In 2003, the BSA changed its methodology; cooperation with International Data Corporation (IDC) made it possible to start considering local data in its annual software piracy calculation.

According to the BSA Global Software Piracy Report, which includes 110 countries, the rate of software piracy in 2009 was 43% in the world, and if the assumption is made that every instance of pirated software usage equals a loss in the economy, the world economy lost more than 51 billion dollars in 2009. Compared to the 2008 worldwide results, the software piracy rate increased 2% in 2009, but the economic loss decreased 3%, from 53 billion dollars. When software piracy rates and economic losses were broken down by region, they included 20% \$8.3 billion in the USA, 35% \$12.4 billion in the European Union and 63% \$415 million in Turkey (64%; the software piracy rate decreased in Turkey from 2008 to 2009). The report also indicated that the lowest regional piracy rate was seen in North America, with 21%, and the highest regional piracy rates occurred in Central and Eastern Europe (64%), Latin America (63%), Middle East and Africa (59%), and Asia (59%). According to the report, 67% of counties had software piracy rates more than 50%, and the lowest piracy rate was calculated as 20%, which was in the U.S.

Definition of the reasons behind an existing problem is a crucial part of the problem solving process. The aim of this study is to explore the factors that contribute to pirated software usage. In order to define the dynamics behind the software piracy problem 28 previous studies were analyzed. Based on previous studies nine reasons at individual level and five reasons at social level were found in this study.

1. Reasons behind Software Piracy-Individual

Researchers have attempted to determine the factors and reasons behind the issues surrounding the problem of software piracy. The following studies are indicative of their efforts.

1.1. Public Awareness

The term “public awareness” means users’ knowledge of copyright legislation and punishments. Lau’s (2003) study that addressed public awareness regarding the current copyright laws represents one of the central explanations that affect software piracy rates. Although software industries currently employ licensing agreements as a means of information during the installation process, a majority of users pay no attention to the licensing agreements, thus making the tool ineffective. Thus, a strong negative correlation exists between a user’s knowledge of current copyright legislation and the software piracy rate. Similarly, Hsu and Shiue (2008) found that “normative susceptibility” has a significant positive effect on the degree to which a user’s “willingness to pay” for copyrighted software is involved.

1.2. High Software Prices

In the study conducted by Hsu and Shiue (2008), the degree of “willingness to pay” and the factors that affect a user’s “willingness to pay” were analyzed. Their findings revealed that more than 80% of the participants regarded “software price” as one of the main aspects that affected their decision in purchasing software. Essentially, prices were considered to be too high, and the products did not appear to be as valuable as their retail prices. As a result, high software prices were determined to be a contributing factor to software piracy.

In addition to Lau (2003), Cheng et al. (1997) also found high software prices as an important factor leading to software piracy rates. For example, “software is too expensive” and “can’t afford the software” were two complaints regarding the cost of software, and both reasons indicated users placed a high degree of importance on cost when formulating their attitudes toward piracy. According to Cheng et al. (1997), using a pirated product was more desirable than paying for overpriced software.

To illustrate the effect that high software prices have on the software piracy rate, Hill (2007) used equity theory, which explains human behavior during social exchanges from an equity standpoint. According to this theory, an individual seeks justice between inputs and outcomes. In other words, if there is a lack of justice, the individual user will attempt to restore equity by taking counteractions under the assumption that high software prices represent a case of injustice; by using pirated software, equity can be restored in this social exchange by blaming “high software prices” to justify their actions.

1.3. Risk of Penalty

Higgins et al. (2005) conducted research among undergraduate students on the effect of software piracy by explaining the problem from a deterrence theory viewpoint. Results indicated that “certainty about the security measures” had a negative effect on the software piracy rate and concluded that “certainty” is an important factor in the prevention of software piracy. Similarly, Peace et al. (2003) found that “punishment severity and punishment certainty” resulted in a negative effect on software piracy intention by the users.

Hsu and Shiue (2008), Hill (2007), Limayem et al. (2004), Peace et al., (2003) and Tan (2002) all concurred that the lack of penalty risk was a positive factor leading to software piracy rates. In these studies, consumers of pirated software were of the opinion that they were not prone to becoming high prosecution risks. However, when Hsu and Shiue (2008) approached the issue from a different point of view, corporations that were fined due to pirated software usage were occasionally encountered by the media, but because individuals were rarely fined, a confidence in using pirated software resulted.

1.4. Moral Factors

Using a sample of college students, Cronan and Al Rafee (2008) conducted research to determine the factors that influence an individual’s intent behind software piracy. Results indicated that moral obligation played a considerable role in the effect of the users’ intentions, or simply put, feelings of guilt prevented users from contributing to pirated software.

Higgins et al. (2005) also found that moral beliefs had a significant effect on an individual's behavioral attitudes toward software piracy.

When Gupta et al. (2008) sought to identify the factors that affect users' "attitudes" toward software piracy, they found that in addition to ethical attitudes that had a strong effect on their piracy behavior, users who exhibited fewer ethical considerations were more likely to partake of pirated software. In studies conducted by Swinyard et al. (1990), Christensen and Eining (1991), and Tan (2002), an individual's ethical attitude was found to be a factor that negatively affects software piracy rates.

1.5. Opportunity

Cronan and Al Rafee (2008), Peace (1997) and Cheng et al. (1997) revealed that the degree of a user's opportunity, consisting of skills and resources, is another factor that plays a role in the intention of using pirated software. According to Cronan and Al Rafee (2008), 84.3% of users believed that it is was very simple to pirate software as opposed to only 0.3% who felt that pirating was difficult. As Cheng et al. also found, "ease of pirating software" was considered to be a motivation behind pirated software usage, although it was ranked as a fifth reason when compared to other factors, namely "high software prices" and "required for school work or at the workplace." In another study regarding computer user professionals, Peace (1997) found that if users were given the chance to pirate software with an extra personal benefit, a large majority would take advantage of the situation.

1.6. Social Factors

Social factors, specifically family and friends, play an important role in the user's behavior regarding software piracy. In most studies (Gupta et al., 2004; Higgins, 2005; Higgins et al., 2005; Hsu and Shiue, 2008; Lau, 2003; Limayem et al., 2004; Tan, 2002; Tang and Farn, 2005), "social factors" were considered to be the central reason for both positive or negative effects related to software piracy rates.

According to Hsu and Shiue (2008), individuals are affected by the values of family members or friends. According to the researchers, users' attitudes toward pirated software usage were defined basically by the beliefs of other people in their environment. Higgins et al. (2005) also found that "family disapproval had a significant negative link with software piracy." In another study, when Higgins (2005) placed special emphasis on peer networks and association with software piracy, peer association had an important effect because it creates an environment that shapes an individual's behavior.

Because behaviors are shaped based on the current values of society, according to Lau's (2003) findings, users do not generally believe that piracy is wrong because "everyone is doing it;" further, using pirated products has become normal activity in some developing countries. On the other hand, Higgins et al. (2005) and Tan (2002) found that social consensus has a significant negative effect on the rates against software piracy. As such, Gupta et al. (2004) considered software piracy to be not only an individual activity but one that takes place in a community "where others support piracy or at least ignore instances of it."

1.7. Previous Behavior

Besides the effects of moral factors on software piracy, Cronan and Al Rafee (2008) researched previous behaviors that influence college students' future intentions with respect to digital piracy. They found that if students had used a pirated product in the past, their intention to pirate in the future increased. Likewise, Tan (2005) suggested that use of pirated and/or copyrighted software were significantly related to users' previous behaviors.

1.8. Gender

Lau (2003), Hinduja (2001, 2003), Gopal and Sanders (1997), and Kini et al. (2003) found a relationship between pirated software usage and gender, with males being more prone to usage than females.

1.9. Author's Remoteness

In a study conducted by Hill (2007), another reason behind software piracy stems from an author's remoteness, an issue that assumedly makes software piracy a clean "digital transaction" in the user's mind. Nettler (1984) also mentioned this concern by suggesting that individuals feel less guilty due to an author's remoteness (cited in Gupta et al., 2004).

Table 1. Author's Remoteness Reasons and Resources

Reasons	Recourses
Public Awareness	Lau (2003), Hsu and Shiue (2008)
High Software Prices	Cheng et al. (1997), Lau (2003), Hill (2007), Hsue and Shiue (2008)
Risk of Penalties	Tan (2002), Peace et al. (2003), Limayem et al. (2004), Higgins et al. (2005), Hill (2007), Hsu and Shiue (2008)
Moral Factors	Swinyard et al. (1990), Christensen and Eining (1991), Tan (2002), Gupta et al. (2004), Higgins (2005), Cronan and Al Rafee (2008)
Opportunity	Cheng et al. (1997), Peace (1997), Cronan and Al Rafee (2008)
Social Factors	Tan (2002), Lau (2003), Gupta et al. (2004), Limayem et al. (2004), Higgins (2005), Higgins et al. (2005), Tang and Farn (2005), Hsu and Shiue (2008)
Previous Behavior	Tan (2002), Cronan and Al Rafee (2008)
Gender	Gopal and Sanders (1997), Hinduja (2001, 2003), Kini et al (2003), Lau (2003)
Authors Remoteness	Hill (2007)

2. Reasons behind Software Piracy – Social

2.1. Critiques Regarding Copyright Laws

According to Drahos and Braithwaite (2001), a critique relating to international copyright agreements exists among countries that do not have a domestic software industry. Those countries were under the impression that copyright and related agreements were tools utilized by software producing countries for the purpose of creating a monopoly over production and software distribution. Accordingly, this is one reason behind the lack of effective copyright enforcement in countries that experience a high piracy rate; they do not want their law enforcement structure to be used for economic gains by other countries (cited in Piquero and Piquero, 2006).

2.2. Domestic Software Industry

Piquero and Piquero (2006) examined the relationship between software piracy and a nation's democracy status by analyzing data of 82 countries from 1995 to 2000 including the U.S., EU members and Turkey. According to their findings, democratic countries that enjoy a high level of civil and political liberties have less software piracy rates than non-democratic countries. They explained their findings using the conflict perspective in criminology (Taylor et al. 1973; Greenberg, 1981; La Free, 2005 cited in Piquero and Piquero, 2006). According to the conflict approach "cross-national patterns of unequal development, economic inequality, and unemployment may account for growing crime differences between highly industrialized core nations and developing peripheral nations." According to Piquero and Piquero (2006), from the conflict viewpoint, the differences between the software piracy rate of developed and developing countries can be explained as follows; democratic countries are rich, and most of the copyrighted intellectual properties are produced in those countries. Because democratic countries benefit from intellectual property production, their copyright enforcement structure is strict, but states that have a low degree of democracy receive a lesser benefit from intellectual property production. This in turn creates a lack of motivation for copyright law enforcement and this issue also arouses critics regarding copyright regulation. Similarly, Oksanen and Valimaki (2008) stated: "Developing countries do not have much internal reason to enforce copyright[s]. Their national cultural industries are weak and the trade balance is distorted towards the rich countries." Gopal and Sanders' (1998) research findings also supported the relationship between domestic software industry and software piracy by concluding that a domestic software industry has a motivation to support a country's antipiracy measures.

2.3. Individualism vs. Collectivism

There were several research studies about the effects of cultural factors (such as masculinity, power distance, uncertainty avoidance and individualism) on countries' software piracy rates. But only the individualism vs. collectivism factor was found to have a significant affect

on software piracy rate (Depken and Simmons, 2004; Gopal and Sanders, 1998; Husted, 2000; Moores, 2003; Cohen et al., 1996; Swinyard et al., 1990; Yang and Sonmez, 2004; Ronkainen, 2001; Morron and Steel, 2000; Bagchi et al., 2006).

According to Bagchi et al. (2006), Moores (2008), Marron and Steel (2000), and Swinyard et al. (1990), a nation's social individualist or collectivist characteristics have a considerable effect on the software piracy rate. For example, individualist societies place importance on individual rights and benefits, contrary to collectivist societies that consider communal benefits to be more important than individual ones that can be sacrificed for the community's benefits. According to related studies, this phenomenon has an important effect on a country's copyright law enforcement structure. Because collectivist societies value the community benefit that can arise from pirated software usage more than individual copyright holders' benefits, this influences usage of pirated software.

2.4. Economic Wealth

Bagchi et al. (2006) and Moores (2008) suggested that a country's economic status has a considerable effect on the software piracy rate because individuals in low GNP countries cannot afford to purchase high priced software. Bagchi et al. (2006) found that an increase in GNP per capita results in a decrease in the software piracy rate. In other research (Cheng et al., 1997; Hill, 2007; Hsu and Shiue, 2008; Lau, 2003), high software prices were also found to be a leading factor in determining an individual's "willingness to pay" for copyrighted software and software piracy rates.

2.5. Benefits of Software Piracy

Besides BSA's annual software piracy reports, governments that do not have possession of a domestic software industry are also aware of the benefits that pirated software generates for their productivity and economy. With the availability of pirated software, more citizens can use the latest versions of software at a low price or without payment. According to Gopal and Sanders (1998), "IT capital stock (which includes hardware, data communications, software, and services) provides an impressive 70.6% return on investment." Thus, an awareness regarding the benefits of software piracy creates a dilemma for governmental agencies concerning the enforcement of copyright laws.

Table 2. Benefits of Software Piracy Reasons and References

Reasons	References
Critiques Regarding Copyright Laws	Drahos and Braithwaite (2001)
Domestic Software Industry	Gopal and Sanders (1998), Piquero and Piquero (2006), Oksanen and Valimaki (2008)
Individualism vs. Collectivism	Swinyard et al. (1990), Cohen et al. (1996), Gopal and Sanders (1998), Husted (2000), Steel (2001), Ronkainen (2001), Depken and Simmons (2004), Bagchi et al. (2006), Moores (2008)
Economic Wealth	Bagchi et al. (2006), Moores (2008)
Benefits of Software Piracy	Gopal and Sanders (1998)

3. Proposed Solutions for the Problem

Software piracy is a different type of problem that requires diverse action from governments, educational institutions and software companies. According to Lau (2003), the issue of software piracy cannot be solved through only educational and legal actions because the problem is not related to only these aspects. Therefore, software developers should take additional actions that are vital to this concern.

There are also dilemmas for governments and software producers in regard to taking serious action against software piracy. One concerns civil rights, in that current digital copyright regulations have been criticized for various reasons, namely that they promote reduction of civil rights, form a barrier against the development of civil society and restrict an individual's creative abilities. Another dilemma involves the benefits gained through piracy for both software producers and users. In other words, software piracy expands a network's size, recruits new customers and increases the product's market value in the user's mind. Further, software producers acknowledge that other software producers intentionally disregard pirated samples at the product's beginning term in an effort to evaluate its usability and expand the size of a user's network (Gupta et al., 2004).

Previous research regarding software piracy has offered solution strategies for both government and software producers. To clearly define these strategies, they are divided into two sections: Proposed Strategies for Governments and Suggestions for Software Producers.

3.1. Proposed Strategies for Governments

3.1.1. Legal Actions

Lau (2003) and Higgins et al. (2005) suggested that government agencies should enforce copyright laws in an effort to reveal the legal certainty of software piracy. Lau (2003) proposed that heavier penalties should be considered as a solution for software piracy since they would raise the cost of using pirated software. On the other hand, according to Piquero and

Piquero (2006), legal regulations are not sufficient to end software piracy because the rates are so high in many countries that already include severe legislation. Higgins et al. (2005) emphasized that in addition to legal changes, investigation procedures should be developed, and prosecutors and law enforcement staff should be trained and properly funded in an effort to seriously enforce legislation.

3.1.2. Educational Action

According to Higgins et al. (2005), in addition to legal actions, governments should develop educational programs to inform students about the legal and ethical issues surrounding software piracy. Further, education should not be restricted to students but rather be directed to families as well, due to the strong effect that their behaviors have on the users' attitudes toward software piracy. In addition to educational programs, students should be informed through school computer usage with pop-ups or similar technical tools. According to Higgins et al. (2005), these actions would create a school climate against software piracy, which is important in initiating prevention strategies. Limayem et al. (2004) also stressed the importance of ethical education but added that prevention should be strongly supported by "clearly stating penalties and criminal liabilities."

3.2. *Suggestions for Software Producers*

3.2.1. Lowering Prices

"High software prices" have been identified as a leading factor related to software piracy (Cheng et al., 1997; Hill, 2007; Hsu and Shiue, 2008; Lau, 2003). Therefore, lowering prices should be considered a software piracy prevention tool (Hsu and Shiue, 2008; Hill, 2007). Lau (2003) further suggested that software companies should approach piracy as a competitor. Simply stated, decreasing the high software costs may very well result in recruiting consumers who would otherwise use pirated products.

Tang and Farn (2005) approached the "high software prices" from the perspective of developing countries by suggesting that software prices should be regulated based on the country's per capita income. In other words, although \$100 may be considered as a low price for individuals in Western countries, this amount is difficult to afford if it represents a user's monthly income.

Although Lau (2003) suggested lowering software prices, he also considered the issue from a software producer's perspective. For example, a low price strategy might decrease the product's quality and "might discourage software developers in their research and development."

3.2.2. Ethical Training

As demonstrated by numerous researchers (Christensen and Eining, 1991; Cronan and Al Rafee, 2008; Gupta et al., 2008; Higgins, 2005; Swinyard et al., 1990; Tan, 2002), ethical and moral factors play an important role in the prevention of pirated software usage.

Hill (2007), Lau (2003) and Hsu and Shiue (2008) suggested that a consumer's ethical education could serve as a prevention strategy for software producers. However, according to Hsu and Shiue (2008), the software piracy problem will continue to survive as long as users' intentions and demands to use pirated software remain on the market. In this context, software producers should also consider ethical training. According to Hill (2007) and Lau (2003), ethical training might also be a means of creating social consensus against software piracy.

3.2.3. Legal Training

Training consumers about the legal regulations against software piracy is another suggested solution offered to software producers (Gupta et al., 2004; Higgins et al., 2005; Hsu and Shiue, 2008; Lau, 2003;). According to Higgins et al. (2005), in addition to governmental regulations, software producers should establish educational programs to demonstrate to families and students "what software piracy is."

Hsu and Shieu (2008) emphasized the value of cooperation between software producers and governmental institutions in developing long-term educational consumer programs that stress the "importance and legitimacy" of using copyrighted software. Gupta et al. (2004) also defended the benefits of educational programs by suggesting that they should be provided for specific user groups, namely young males, who are most likely to use pirated software.

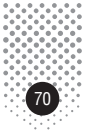
3.2.4. Market Strategies

Lau (2003) suggested that software companies should treat piracy as competition, and, by so doing, producers might perhaps provide "shareware" to break the cycle of pirated software usage. Another strategy includes the provision of discounted packages for specific users such as students and/or academia. Hsu and Shiue (2008) further proposed a long-term trial as a solution that might encourage users to buy the full software version and also suggested that higher standards of customer service should be extended to users.

According to Limayem et al. (2004), in addition to piracy prevention strategies, software producers should focus on informing users about the benefits of using copyrighted software, for example, providing a reduced upgrade price or high standard customer support.

Hill (2007) proposed the following three strategies that copyright holders might use to solve the problems of software piracy:

- Counter piracy by providing free samples,
- Offer something extra to consumers who purchase the legal good,
- Switch to a business model that is less vulnerable to piracy (lowering software prices, providing high standard online service, upgrading and supporting low prices).



Conclusion

Analysis of the findings gathered from 28 previous studies indicates that;

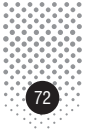
- Social factors at individual level and social structure of the society (individualist vs. collectivist) are the most supported factors behind software piracy,
- “Risk of penalties” and “moral factors” are the second most supported reasons at individual level,
- “High software prices” can also be taken as one of the leading reasons behind pirated software usage at individual level,
- Lack of domestic software industry is second most supported reason behind software piracy at social level,
- “Economic wealth” can also be taken as one of the leading reason behind pirated software usage at social level.

Based on these findings it can be said that software producers and governments should consider social norms, moral factors, societies social structure and economic issues in order to solve problems about pirate software usage. Although legal copyright law amendments should attend to concerns raised by both authors and publishers, they should also consider the realities related to the Internet, ICTs, individual demands, and high software prices. By disregarding the concerns of authors and publishers and not considering current realities will ultimately lead to harmful or unenforceable regulations. In other words, neglecting concerns will disrupt high quality works that will result in the loss of authors and artists, and not considering current circumstances, prevent societies from taking advantage of new opportunities provided by the Internet will attract Internet users to commit crimes, and render legislation unenforceable.

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