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The Study on the Effectiveness of Preventive Methods for Online Piracy

Full paper

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Abstract

As online use becomes commonplace in the digital environment, more and more people are indiscriminately copying, sharing, and reproducing online content. Thus, the government and institutions strengthen the level of punishment or take strong sanctions, but online piracy behavior is not reduced and becomes an ethically serious problem. Therefore, the purpose of this study is to empirically examine the effect of two common preventive methods, perceived morality and punishment, on self-control and piracy intention based on the deterrence theory. This study also attempts to investigate the mixed outcomes of gender differences to determine what preventive measures are gender-specific. The result of this study shows that the perceived morality directly effects on reducing online piracy intention while the perceived punishment effect on increasing self-control. The direct effect of punishment on reducing online piracy is moderated by online education. The gender differences vary the degree of morality by education and punishment. This study would provide both theoretical and practical implications emphasizing awareness and moral beliefs of online piracy and suggesting the awareness of gender differences in developing deterrence methods.

Keywords Online piracy, Preventive methods, Piracy intention, Deterrence theory

1 INTRODUCTION

With the rapid spread and use of communication and information technology, information on the network is quickly and easily shared, exchanged and distributed. In particular, the digital asset on the Internet is valuable and increased synergies for collaborating works and open innovation when shared and used widely to create ideas and develop innovation (Grosse et al. 2018). However, on the other hand, it should be considered preventing illegal use and unlawful piracy for digital assets on the Internet. Digital piracy is an unlawful action of reproducing, using and distributing information and digital goods such as music, movies, and software that are protected by the intellectual property without having a right to use them from the copyright owners (Higgins et al. 2006, Belleflamme & Peitz, 2014). The form of digital piracy varies from downloading a single song, copying pieces of pictures to grabbing entire catalogs of an artist. Such illegal and unethical behavior is pervading and becoming a big concern in many industries and business sectors over the world. Users often use illegal use without legal understanding and awareness because they can easily access and use a large amount of information online and on the network for free or for a small fee. Also, most online users use digital materials without guilt and feel they are harmless, which is a serious concern for online piracy (Kini et al. 2003; Choi & Kim 2009). A report showed that most online users perceived nothing wrong and harmless to online piracy, which indicated that users easily commit criminal activity without recognizing their illegal behaviors (Infographic, 2011).

Despite preventive deterrence policies and measures to get rid of illegal downloading and sharing of copyrighted contents, pirating digital goods remains prevalent across the world through global networking. While the preventive regulation and punishment on online piracy are getting intense, but anti-piracy regulation and sanctions are not the only solutions to prevent digital piracy. Many researchers argue that ethical training and education on the understanding and awareness of digital piracy have to be also in practice with proper punishment and regulation to reduce piracy behavior and intention (Cheng et al. 1997; Lee et al. 2018). Online users will be less likely to illegally download digital content if they are familiar with the legal rules governing digital piracy. However, the proper education and ethical program to enhance the understanding and awareness of online piracy are still short in most institutions and organizations. Online users, especially those with active social networking and Internet use, often do not know the legitimate understand or the consequences of illegal use or sharing of copyrighted online content (Catherine et al. 2015).

The number of previous research on IS security behavior and online piracy context showed different preventive methods and proved their effectiveness (John D'Arch and Herath, 2011; Siponen and Vance, 2010). Among the methods to prevent digital infringement, legal sanction and punishment rely on a person's fear of getting caught while ethical education and morality are based on awareness and conscience of feeling shame and guilt for online piracy action. However, the preventive measures for reducing online piracy have not shown clear results to reduce piracy and often showed contradictory results in the IS security context. Moreover, it is difficult to prove the effectiveness of preventive methods since underlying social factors and individual characteristics are different in various circumstances (Workman and Gathegl, 2007). Thus, little studies have empirically explored the effectiveness of preventive measurements for a deterrence mainly applied in an online security issue.

Additionally, there still need to pay considerable attention to the ethical training and moral perspective in preventing piracy behavior. Therefore, the purpose of this study is to empirically examine the effect of two common preventive methods, perceived morality, and punishment, on self-control and piracy intention based on the deterrence theory. This study also attempts to investigate the mixed outcomes of gender differences to determine what preventive measures are gender-specific. This study would emphasize awareness of online piracy and moral beliefs to provide theories and practical implications for effective curbing online piracy.

2 HYPOTHESES DEVELOPMENT

Deterrence theory demonstrates that people choose to deter a certain action after calculating the gains and consequences of their action (Gunter, 2009). This theory focuses on the decision-making process of one's deterrence action assuming that humans are rational actors (Wolfe et al. 2008), and provides an understanding of individuals' propensity that inhibits factors engaging in online piracy. Since the theory predicts illicit behaviors with preventive methods, it has been widely applied in IS security studies (D'Arcy and Tejaswini, 2011). The deterrence theory suggests underlying factors inhibiting illegal behaviors with two forms of deterrence – classical and contemporary. The classical deterrence theory proposes certainty and severity of punishment as a deterrence method, while contemporary deterrence

theory proposes moral belief and unpleasant emotion such as shame, guilt, and embarrassment as a measurement of deterrence (D'Arcy and Herath, 2011; Wolfe et al., 2008).

According to the classical deterrence theory, the level of punishment makes people calculating their behaviors not to be caught. That is, the more severe the punishment for illegal activities, the greater the tendency for people not to commit illegal acts to avoid punishment. (Higgins, et al. 2005). The prior study shows that when the level of punishment certainty and severity is high, an individual will be deterred from committing a criminal act. In other words, when an individual believes that the punishment will be detected and the action is severe, the individual may be reluctant to commit criminal acts (D'Arcy and Herath, 2011). Pogarsky (2002) suggested that forbidden factors such as swiftness, severity, and certainty of punishments are significantly related to criminal behaviors and deterrent effects. In addition, the perceived risk of being caught is important in influencing consumers' piracy behavior (Jeong et al. 2012). Sinha and Mandel (2008) examined that the perceived risk and punishment on illegal music download is significantly associated with the attitude of digital music piracy. Punishment for piracy refers to the degree of punishment severity regarding online piracy (Peace et al. 2003). The level of severity implies an individual's belief that conduct will be severely punished (Choi and Kim 2009), and thus, it is measured as the piracy punishment in this study.

The level of certainty is often considered to be playing a more apparent role in preventing criminal behavior than the level of severity. In other words, the level of piracy attitude could decrease when people perceive the certainty of punishment. Tittle (1969) also argued that the severity could only deter criminal action when the certainty of punishment is guaranteed. That is, severe penalties or tough policies themselves do not have a great deterrent effect, but its effect is greater when there is certainty of punishment. Similar to the previous research has shown about the relationship between punishment and online piracy that the greater the severity of punishment, the higher the effectiveness of attitude on digital piracy.

H1-1: The degree of the perceived punishment severity for online piracy is positively related to the self-control of online piracy.

H1-2: The degree of the perceived punishment severity is negatively related to online piracy intention.

The other forms of contemporary deterrence theory proposed that moral beliefs to an illicit act draw to prohibit from committing criminal behavior (Peace et al. 2003). Moral beliefs include negative feelings and emotions of self-consciousness such as shame and guilt on wrongful behaviors. The contemporary deterrence literature suggested that moral beliefs are a key factor influencing the decision-making process of illicit behavior such as corporate crime. People with strong moral beliefs are already effectively refraining from criminal behavior, and the threat of external punishment can be either significantly unrelated or weak (Pratt et al., 2006; Pogarsky, 2004). Regarding online piracy behavior, perceived moral beliefs and ethical awareness are proved to be an important measure to prevent unlawful behavior. Jeong et al. (2012) revealed that moral awareness is a key determinant of piracy risk and proved that if users feel uncomfortable, guilty or the loss of self-image for illegal activity on the internet, it may inhibit their pirate behavior. Higgins' study (2007) on digital piracy revealed that moral beliefs had a significant relationship with shame, which influences reducing the instances of online piracy. He argued that external sanctions do not link to shame and moral and are not significant in reducing online piracy.

The research on software piracy with self-control theory also showed that moral beliefs and understanding of software piracy have a great impact on self-control and behavior on software piracy (Higgins 2007). In short, online users tend to pirate when they feel free from moral beliefs and when they believe that no one is being harmed by their illegal behaviors. That means the degree of awareness and ethical morality may be important measures in increasing self-control and inhibiting piracy behavior on the internet.

H2-1: The degree of the perceived morality for online piracy is positively related to the self-control of online piracy.

H2-2: The degree of the perceived morality for online piracy is negatively related to online piracy intention.

Self-control is defined as an individual's characteristic of possessing the ability to control digital piracy (Cronan & Al-Rafee 2005). Self-control is applied to a large extent in the literature of deterrence, suggesting that the individual's low self-control is the most important factor behind criminal behavior (Hirschi 2004). Studies have shown that self-control has a great impact on many crimes and misconduct, and people with low self-control are more likely to engage in criminal activity. In particular,

self-control has been used to gain an understanding of online piracy in that software and digital copyright infringement are more likely to occur when self-control is low (Piquero and Bouffard 2007). Self-control claims to have direct or indirect effects on online piracy and suggest that students with low self-control are more likely to commit illegal activities online. That is, individuals with low self-control tend to believe that online piracy is harmless, and thus, there is a possibility of committing piracy (Higgins et al. 2006).

H3: The self-control of online piracy is negatively related to online piracy intention.

Environmental conditions such as education on online piracy could affect actual behavior. Moral education for piracy refers to the degree of efforts in schools and educational institutions to prevent online piracy on the Internet. The educational efforts include raising awareness and moral beliefs and conveying knowledge about shame and risks that may occur from piracy (Limayern et al. 2004). Crotty (2012) argued that piracy education could be the best tool to deter online piracy and awareness and advertising on piracy have to be the first step against online piracy. Previous research has found that awareness and informational campaigns can reduce illegal behaviors and the ethical program can deter misuse attempts of using internet sources (D'Arcy et al. 2009). Despite such ethical awareness and education that can prevent misbehavior, ethical education and training on online piracy still lack in schools and institutions (Nho, 2016). As in Higgins' study of digital copyright infringement (2007), external sanctions such as punishment may not directly reduce online piracy but may be linked to a decline in piracy when there is a high level of shame or moral belief that sanctions are certain.

H4: The direct effect of the degree of the perceived punishment severity on online piracy intention is moderated by piracy education.

Based on the previous literature review, this study presents the following research model.

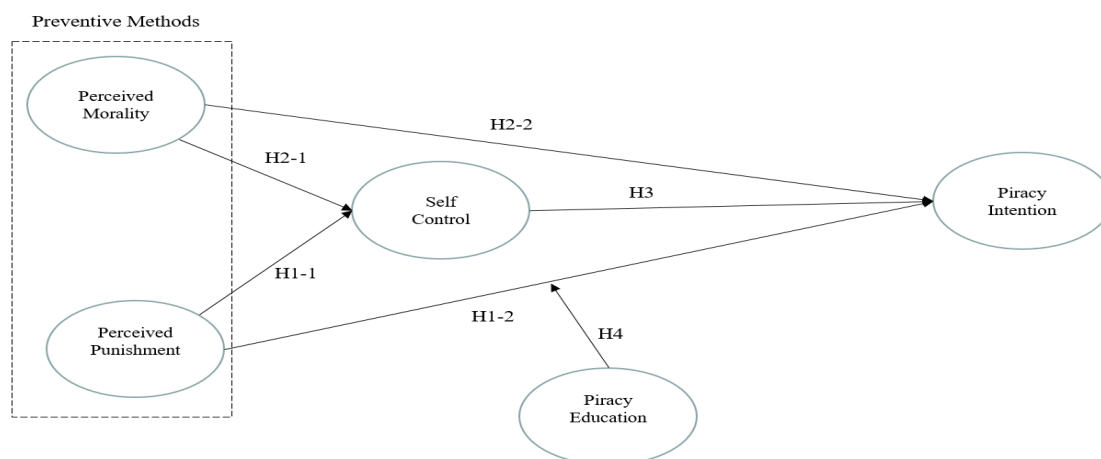


Figure 1. The proposed research model

3 RESEARCH METHOD AND RESULT

3.1 Research method

To examine the relationship between each variable, a survey instrument was given to undergraduate and graduate students taking MIS related courses in business. Students are known to be a prominent source of digital piracy since they may be the most active users on the Internet (Sims et al. 1996). Each survey question was drawn from the previous studies and measured as 7 Likert-scales.

The 241 samples were used for the analysis out of 257 student samples after excluding biased and missing data. <Table 1> shows the characteristics of respondents. Most respondents were 18-24 years old in the third and fourth grade, and Internet usage was the most in 1-3 hours per day. In the result of one-way ANOVA analysis for each characteristic, the duration of internet usage is shown to have no difference in self-control and piracy intention, but the Internet ability is significant differences in self-control ($p < 0.01$). It represents that those who can use the Internet may perceive that they have the ability in performing digital piracy. Gender is also shown to be significant differences in self-control ($p = 0.001$) and piracy intention ($p = 0.000$). That is, the effects of piracy education and punishment on self-control and piracy intention might be different by gender. In this study, therefore, variables that

would affect the relationship, such as duration, gender, and internet ability has been controlled in the full research model.

Characteristics		Frequency	%
Age	18-24 years old	154	63.9
	25-34 years old	87	36.1
Gender	Male	126	52.3
	Female	115	47.7
Internet ability	Excellence	103	41.8
	Moderate	117	48.5
	Poor	21	8.7
Duration of Internet Usage	Less than 1hr.	24	10
	1-3hrs	162	67.2
	4-6hrs.	45	18.7
	More than 7hrs	10	4.1
		241	100

Table 1. Characteristics of respondents

3.2 Data analysis and result

The Partial Least Square was used to analyze both the path of the research model and confirm the reliability of each item. Partial Least Square is suitable for this study because it is acceptable for analyzing the influence relationship of each construct and is suitable for initial research and a small number of samples (Hair et al. 2017). Before the path analysis, the validity of each survey item, internal consistency, discriminate validity and individual item reliability was tested using smart PLS 2.0. Since each measurement item used in this research reflects the corresponding construct and has a high correlation among them, all the measurement items were analyzed with reflective indicators (Wixom and Watson 2001). <Table 2> represents the individual item reliability showing that the loading value greater than 0.7 and the cross-loading values for other items are less than the loading values of a correlated construct. It is suggested that the loading value of each item for a corresponding construct should exceed 0.7 or above and the value of cross-loading for another item should be lower than the loading value of the item (Chin, 1998). Therefore, each item used in this study is acceptable.

	Perceived morality	perceived punishment	Behavioral Control	piracy education	Piracy Intention
Morality1	0.72	0.19	0.04	-0.01	0.23
Morality2	0.69	0.17	-0.02	-0.12	0.14
Morality3	0.68	0.26	-0.03	-0.05	0.13
Morality4	0.86	0.35	0.13	0.00	0.30
Morality5	0.84	0.32	0.04	-0.02	0.28
Punishment1	0.32	0.80	0.17	0.00	0.17
Punishment2	0.27	0.85	0.11	0.09	0.26
BehaviralControl2	0.16	0.23	0.80	0.18	0.61
BehaviralControl3	-0.10	0.01	0.69	0.36	0.34
BehaviralControl4	0.03	0.06	0.80	0.16	0.44
BehaviralControl5	0.02	0.16	0.82	0.25	0.49
Piracy edu1	0.12	0.10	0.23	0.82	0.16
Piracy edu2	-0.09	0.06	0.17	0.82	0.07
Piracy edu3	-0.18	-0.03	0.26	0.80	0.13
intention1	0.29	0.18	0.62	0.13	0.92
intention2	0.25	0.25	0.60	0.14	0.93
intention3	0.30	0.27	0.44	0.18	0.83

Table 2. Factor loading of measures

Internal consistency was examined by using CSRI (Composite Scale Reliability index) above 0.7 is recommended for reliability (Chin 1998). As shown in <Table 3>, all measures meet the recommended criterion of above 0.7 and thus are to be reliable. Discriminant validity was also tested by the square root of the average variance extracted (AVE), the diagonal values are shown in <Table 3>. It is recommended that the square root of the AVE for each construct should be greater than other variance shared between a construct and its measures (Fornell & Larcker 1981). All measures in this model satisfy the common criterion for a validity test.

	Mean	S.D.	Internal Consistency	Correlation of Constructs					
				1	2	3	4	5	
1. Perceived Morality	3.23	1.12	0.87	0.76					
2. Perceived Punishment	3.58	1.18	0.81	0.35	0.83				
3. Self-control	4.35	1.11	0.86	0.06	0.17	0.77			
4. Piracy Education	4.44	1.12	0.85	0.03	0.06	0.28	0.81		
5. Piracy Intention	3.78	1.17	0.92	0.31	0.26	0.62	0.16	0.89	

Table 3. Test for reliability and validity

Based on the adequate measurement model, the proposed hypotheses are tested by assessing the structural model. The structural Equation Model analysis using Smart PLS2.0 is conducted for this study. The structural model from PLS analyzes the strengths of the relationships between the variables and the predictive power of variables in a model. The result of the analysis for the sample model is shown in <Table 4>. The result shows that perceived punishment is significantly related to self-control ($t=2.36$, $p=0.16$), but is not directly associated with piracy intention ($t=0.00$, $p=0.00$). Thus, H1-1 is supported while H1-2 is not supported. The relationship between the degree of piracy punishment and piracy intention is significantly moderated by piracy education with the level of $p<0.05$ ($t=1.77$, $p=-0.24$), representing H4 is accepted. This suggests that related punishment can be effective in preventing piracy when there are awareness and ethical awareness of online piracy. The relationship between perceived morality and self-control is not supported (H2-1). However, the direct effect of the perceived morality on piracy intention is negatively significant ($t=4.66$, $p=-0.26$), meaning that the higher morality of online piracy lowers the piracy intention. Thus, H2-2 is supported. The result also shows that self-control is negatively related to piracy intention ($t=-13.53$, $p=-0.60$) supporting H3. The negative effect of self-control on piracy intention implies that a person with a higher level of self-control shows a lower degree of intention to pirate.

Hypothesis	From	To	Path Coefficient	t-value
H1-1	Perceived Punishment	Self-control	0.168	2.368*
H1-2	Perceived Punishment	Piracy intention	0.001	0.001
H2-1	Perceived Morality	Self-control	0.004	0.058
H2-2	Perceived Morality	Piracy Intention	-0.267	-4.663**
H3	Self-control	Piracy Intention	-0.608	-13.53**
H4	Perceived Punishment X Piracy Education	Piracy Intention	-0.242	-1.773*

** $p<0.01$, * $p<0.05$

Table 4. Test for the structural model

<Figure 2> represents that the moderating role of piracy education for the level of punishment on the prevention of online piracy. When the level of piracy education is low, strong punishment seems not to be effective in preventing online piracy. However, it shows that the higher the level of piracy education, the punishment is more effective in decreasing online piracy intention.

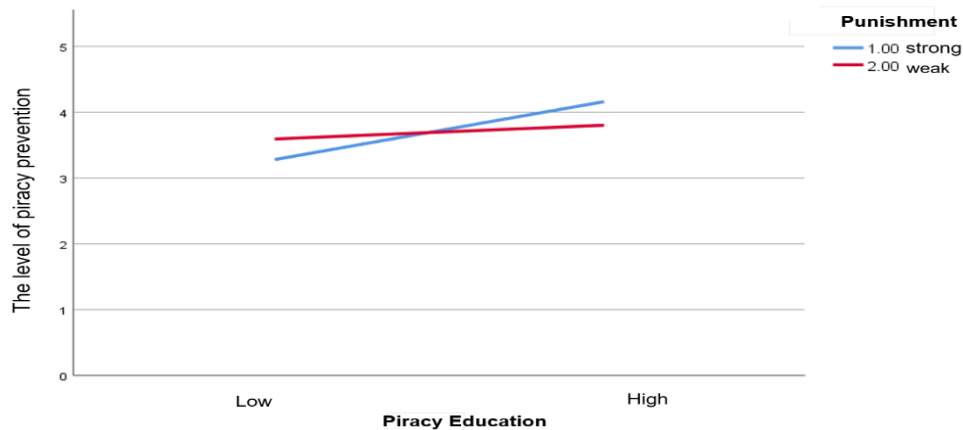


Figure 2. The interaction effect of piracy education and punishment

3.3 Further analysis of gender differences

Although gender differences have decreased in recent years, differences in gender and moral judgment over Internet use still exist. However, as Bouhnik and Mor (2014) stressed, there is little research on gender differences in piracy intention in the Internet environment. Therefore, in this study, we also examined how the level of moral belief for online piracy differs according to gender difference. These results would suggest that educators can develop effective ways to understand anti-piracy campaigns and educational programs according to gender. Previous studies have found that there are gender-based gaps in computer use and internet immoral behavior (Mesch, 2009, Smith et al., 2008). However, findings of gender differences on online piracy are mixed. The literature argues that males are more likely to engage in online piracy because they have lower self-control than women (Chapple et al. 2010; Higgins, 2007; Morris & Higgins, 2009). Moreover, females are more likely to be aware of a fairly high risk of certain activities than males (Jeong, 2012), and males are more likely to be involved in immoral activities such as online pirate than females (Lenhart and Madden, 2007). In a similar vein, females have a higher level of moral and ethical judgment than males since women tend to an emphasis on compassion and social conformity (Valentine et al. 2009).

In this study, it is proved that the perception of online piracy, ethical understanding, and moral belief can effectively reduce false behavioral intentions, and empirically confirms the importance of piracy education to provide such understanding on online piracy. Thus, the gender differences were examined for the impact of both piracy education and punishment severity on the level of moral belief. As shown in <Figure 3>, men feel more wrong with online piracy through pirate education than women, and the increase in understanding that online piracy is wrong behavior is much larger than that of women. This means women can be judged to have a better understanding of social criticism and misjudgment of online piracy, regardless of the moral beliefs and ethical attitudes offered by external education than men. On the other hand, according to the intensity of punishment, as shown in <Figure 4>, the degree of perception that online piracy is wrong is increased in both genders.

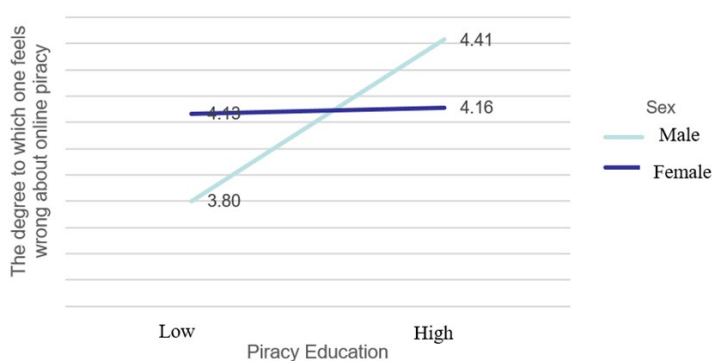


Figure. 3 Gender differences in piracy education on the level of morality

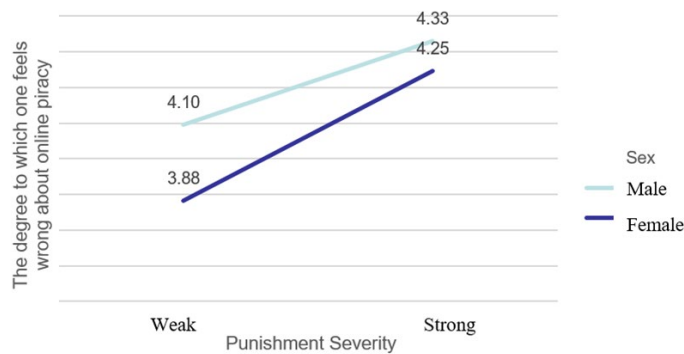


Figure. 4 Gender differences in punishment severity on the level of morality

Overall, the results demonstrate that education and guidance that provide awareness of the wrong behavior of online piracy and suggest the right ways to use online content can be a fundamental solution to improve moral beliefs and reduce online piracy. Ultimately, this additional analysis shows that the degree of education and punishment for moral beliefs and judgments that affect the prevention of online piracy varies according to gender. Therefore, it shows that effective prevention methods can be suggested according to gender.

4 DISCUSSION AND IMPLICATION

This study suggests an insight of the preventive methods for online piracy intention by deterrence theory. This study provides valuable insights into online security and piracy for researchers and managers. From an academic perspective, this study suggests the following insights: First, this study applied the deterrence theory drawn from the criminal context. This study proposed two common preventive methods suggested from the deterrence theory, punishment and moral belief, to identify its differential effect on an individual's self-control and piracy intention. It is meaningful to use deterrence theory to investigate online piracy in information systems research in that it allows researchers to examine individuals' behavior from a rational perspective, and provides researchers with potential information on policy development that can help reduce online piracy.

Second, this study showed that the punishment of online piracy could influence on enhancing behavioral control that may lead to reduce the online piracy action. However, punishment itself has not demonstrated direct effects on reducing online piracy. Interestingly, this study revealed that punishment threat is only effective in preventing online piracy when education engaged regarding the awareness of piracy consequences, promoting and suggesting guidelines for online piracy. This result represented that ethical education on online piracy can enhance users' awareness and consciousness of online piracy and inhibit piracy intention by increasing users' behavioral control (Higgins et al. 2006.). In other words, increasing the intensity of punishment or applying strong external sanctions to prevent online piracy cannot be seen to have a great effect. However, in the same vein as previous research, it implies that punishment to prevent online piracy is effective when moral education, publicity, and guidance to perceive the wrong behavior of online piracy (Crotty, 2012).

Third, the perceived morality, as suggested in the contemporary deterrence theory (D'Arcy and Herath, 2011), reduces the online piracy intention. That is, individuals with an understanding of online piracy policy and a strong moral conviction prohibit illegal activities on its own. Thus, the threat of punishment may not be relevant or effective. This result is similar to previous research showing that moral beliefs often moderate the impact of punishment (Cochran et al., 2008). The results of these moral beliefs about online piracy suggest the importance and necessity of education that provides guidelines for understanding and recognizing online piracy. Ethical education in the context of online piracy has not been explored in-depth and any studies have not been referred to piracy education as the formal education level (Nho, 2016). Therefore, this study explores the notion of piracy education and awareness in the form of reducing piracy behavior. Increasing users' awareness and self-conscious emotion on piracy behavior through formal education can provide a critical role in enhancing self-control and deterring online piracy. It is suggested since when people are encountered with an ethical dilemma that results in psychological discomfort or embarrassment, they tend to inhibit wrongful behavior.

As for the practical implication, the understanding of effective deterrence methods on online piracy is important since its effects on piracy control strategies. For example, as this study revealed, it may be more effective to provide education for the self-consciousness and awareness of the negative impact of

piracy than enforcing punishment and legal sanctions. The educational program should provide information about the correct use of internet content, punishment associated with piracy action and awareness of users' responsibilities regarding online piracy. This educational program on piracy may encourage users to control piracy behaviors and motivate their attitude changes. Second, this study would be a warning to policymakers that the external sanctions and punishments are not the best solution to reduce the likelihood of online piracy. The reason that online users are easily engaging piracy behavior and not obeying laws and regulations committing online piracy is that people often misunderstand online piracy has no physical target to hurt and no harm to anyone at all. However, people with high moral commitment might be sensitive to illegal action no matter what the level of punishment because they feel guilty and uncomfortable when accusing a socially undesirable action (Pratt et al., 2006). Given these instances, this study suggests that educational programs and policies emphasized on the morality and awareness of online piracy are as important as developing severe sanctions. By earlier findings that the morality predicts compliance with anti-piracy laws (Cronan and Al-Rafee, 2008, Wingrove et al., 2011), this study suggests that educational program that enhances morality on illicit action for online piracy should be considered in a formal educational institution. Third, in this study, we further investigated whether there were differences in effective gender-based sanctions for online piracy. This study suggests that deterrence methods for preventing online piracy should be applied differently by gender. Since there exists a little research on the gender difference in moral behavior and judgment on the Internet, this study sheds light on gender differences of online piracy providing different influences by gender of deterrence methods on piracy intention. Educators should be aware of the gender differences in developing programs and guidelines for reducing online piracy. This result predicts that the level of piracy punishment and education should be organized and developed carefully in accordance with the different groups of users including gender and age to provide effective protection for digital online piracy.

Overall, by identifying the effectiveness of the prevention methods presented in the deterrence theory, this study suggests efficient prevention methods and piracy education that enhance self-control and reduce online piracy. However, this study brings limitations that will need further investigation in future research. This study only used mostly student samples aged from 18 to 34 years old which could be biased in generalizing the result. In future research, it will need to set up a wide range of the analytic population to investigate the effectiveness of deterrence methodologies within different age groups. The future research will also need to suggest a clear educational pedagogy in the different sectors in need of online piracy deterrence.

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