



Exploration of the antecedents of digital piracy through a structural equation model



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ABSTRACT

The prevalence of unauthorized downloading and duplication has been a serious ethical and financial threat. The current study explored the antecedents of digital piracy attitudes and intentions in a country with a high piracy rate. A structural equation model was proposed to investigate the interrelationships among the proposed antecedents and digital piracy intentions. The model was tested with 268 high school students, 610 undergraduate students and 406 adults. Latent variables of interest were derived from the recent literature on piracy, which were facilitating conditions, optimism bias, previous experiences, prosecution risk, current habits, attitudes towards digital piracy and behavioral intention to conduct piracy. The model revealed a positive relationship between facilitating conditions and optimism bias. Optimism bias and prior experiences had a positive relationship with current digital piracy habits, whereas prosecution risk had a decreasing influence on these habits. Relationships among piracy habits, attitudes and intentions were significant as well. The structural equation model revealed acceptable and consistent fit values across three samples. Findings maintain that further research may resort to the assumptions of the Theory of Planned Behavior and the Theory of Reasoned Action to explain the nature of behavioral intentions towards digital piracy and eliminate undesirable piracy acts.

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1. Introduction

Rapid developments in online connectivity and digital compression technologies provided novel opportunities for interaction and diffusion of information. On the contrary, such advances have increased the unauthorized duplication and use of digital products. Referred to as piracy, this misconduct included behaviors such as copying digital materials, illegal installation, Internet piracy and loading a single-user program to multiple machines (Prasad & Mahajan, 2003). Even though the digital goods have high development costs, duplication is almost free of charge and does not influence the performance of the product in the original computer. Thus, software piracy and illegal file downloading, increases the concerns for both intellectual property rights and lost sales (Bhattacharjee, Gopal, & Sanders, 2003). For instance, the Business Software Alliance has recently investigated the volume and value of unlicensed software used in personal computers in 2011 (BSA, 2012). An extensive survey with 14,700 respondents, which represented 82 percent of the global PC market, indicated that 57 percent of the world's PC users admitted software piracy. In addition, the commercial consequences of this shadow market increased from \$58.8 billion in 2010 to \$63.4 billion in 2011. PC shipments to emerging economies tend to increase this volume, because developing countries are the places where piracy rates are the highest. As an illustration, the piracy rates in Turkey (i.e., 62%) are quite higher than the worldwide average (i.e., 42%), and it almost doubles the western European average (i.e., 33%). Accordingly, it is quite relevant to investigate the antecedents of software piracy attitudes and intentions in such a problematic setting.

Turkey is listed among Middle Eastern and African countries while reporting the piracy rates (BSA, 2012). The report reveals that the piracy rates in Turkey decreased from 65% in 2007 to 62% in 2011. On the other hand, the commercial value of unlicensed software in Turkey increased from \$365 million to \$526 million in the same time span probably due to the growth of software market in similar emerging

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economies. Frequent pirates in such emerging economies tend to “install nearly four times as many programs of all sorts per new PC as do frequent pirates in mature markets” (BSA, 2012, p. 2). Furthermore, frequent pirates are more than twice as likely to live in a developing economy as they are to live in a mature one.

Some of the pirating instances in emerging economies like Turkey can be attributed to the lack of a general understanding about which ways of acquiring software are legal and which are not (BSA, 2012). The lack of such awareness can be exemplified with the fact that even computer technology students do not take compulsory courses related to computer ethics in Turkey (Namlu & Odabasi, 2007). A recent empirical work cites the lack of educational precautions and maintains that the lack of policies regarding unethical computer use worsens the problem (Beycioglu, 2009). For example, stores in such emerging economies may sometimes be stocked with illegal copies of original software, which increases the undeliberate piracy rates among end users as well (BSA, 2012).

Unethical or unhealthy digital behaviors of Turkish users have been investigated through several empirical studies. However, a content analysis on ScienceDirect reveals that relevant studies are generally conducted in undergraduate settings with pre-service teachers. These works have addressed the extent and predictors of unethical computer or Internet use (Beycioglu, 2009; Şendağ, Duran, & Fraser, 2012), unhealthy online behaviors (Aricak, 2009), and psychosocial variables which predict problematic computer and Internet use (Ceyhan, 2008; Ceyhan & Ceyhan, 2008; Çuhadar, 2012; Tekinarşlan, 2008). Very few studies have investigated contexts other than formal educational institutions, and proposed empirically supported hypotheses to investigate the behavioral antecedents of digital piracy. Limited number of studies in such contexts have addressed IT professionals in particular, and listed digital piracy antecedents as gender, age and experience (e.g., Mishra, Akman, & Yazici, 2006). Follow-up works with the same target population revealed further interrelationships among the code of ethics, attitudes towards unethical software use, training on computer ethics, and awareness of license conditions in government and private sectors (Akman & Mishra, 2009).

In short, the current study aimed to investigate the antecedents of digital piracy through proposing a structural equation model, which is expected to be consistent both in and outside formal educational contexts. In this regard, facilitating conditions with regard to digital piracy, optimism bias, prior piracy experiences, perceived prosecution risk, current piracy habits and attitudes towards piracy were used to predict the future piracy intentions. The next section summarizes the theoretical framework, which is followed by research hypotheses and the rationale for proposing current latent variables.

2. Theoretical framework

Most of the antecedents investigated in the current context were borrowed from a recent structural equation model (Nandedkar & Midha, 2012). In the study, researchers confirmed the proposed model with 219 university students. Through resorting to the arguments of the Theory of Reasoned Action (i.e., TRA, Fishbein & Ajzen, 1975), vital components in a music piracy framework were regarded as attitude and behavioral intention. That is, attitude towards music piracy was regarded as the major determinant of participants' piracy intentions. In addition to interrelationships among piracy habits, attitudes and behavioral intentions; the model highlighted the influence of perceived risks on eliminating piracy (Tan, 2002). That is, increasing perceived risk was expected to let individuals avoid digital piracy (Chiou, Huang, & Lee, 2005). Furthermore, it was hypothesized that facilitating conditions were positively related to music piracy attitudes (Limayem, Khalifa, & Chin, 2004), which could not be retained statistically. The authentic contribution of the study was the introduction of optimism bias into the model, which attenuated the relationship between perceived risks and piracy attitudes. In essence, individuals having an optimism bias (i.e., unrealistic optimism) perceive their likelihood of experiencing negative events less than other individuals around them. Such people tended to engage in digital piracy because they perceived themselves to be at a lower risk than other individuals around them. The model of Nandedkar and Midha (2012) is illustrated in Fig. 1.

Many researchers have explained the reasons of digital piracy through resorting to different theoretical frameworks. For instance, Cronan and Al-Rafee (2008) used the Theory of Planned Behavior (i.e., TPB, Ajzen, 1991) as a framework to determine the predictors of digital piracy. Their factor structure explained 71 percent of the piracy intention, which sheltered attitude, past piracy behaviors, perceived behavior control, and moral obligation (i.e., feeling of guilt). Likewise, Taylor, Ishida, and Wallace (2009) resorted to the modified version of Perugini and Bagozzi's (2001) Model of Goal Directed Behavior, which was based on the TPB. The proposed structure was validated for both movie and music piracy. The model highlighted the importance of attitudes towards digital piracy, frequency of past piracy behaviors along with motivations and intentions underlying digital piracy.

Theoretical frameworks challenging the arguments of the TPB have emerged as well. For instance, Jacobs, Heuvelman, Tan, and Peters (2012) reviewed several frameworks including the aforementioned ones, and came out with a refined model, which is based on a recent application of the Social Cognitive Theory (Bandura, 1986). The idea was that descriptive and prescriptive norms influenced deficient self-regulation, but did not have a direct influence on behavioral intentions (LaRose & Kim, 2007). This idea was in contrast to the TPB and consistent with the social cognitive theory. It was noted that – in addition to common antecedents – less conscious influences were on stage

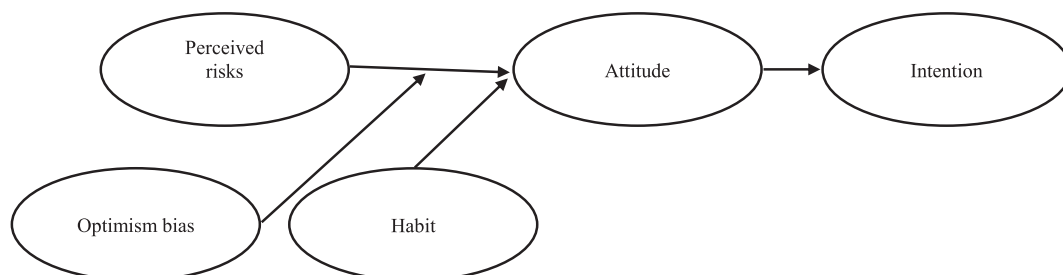


Fig. 1. Illustration of the previous model by Nandedkar and Midha (2012).

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