Abstract

Technologies enabling digital piracy have expanded the variety of modes available to users when deciding how to access film and music. We examine user decisions in context, investigating which factors influence the decision to use traditional or new legal options over piracy. Our study contributes to the literature by reporting on an extension of an integrated model about user decisions which explores the impact of available technologies, socio-economic characteristics, and differences in user preferences on the legality of users' access behavior. The study uses a sample of Danish internet users recruited from the general population. Findings indicate that the economic considerations of price perception and perceived legal availability are the most consistent factors in influencing the access-mode decisions across the various legal options. We close with a discussion of the implications for research and practice.

Keywords: Digital goods, Piracy, User behavior, Decision making/makers
Introduction

Recent market developments have seen the introduction of an array of legitimate Internet-based services designed to cater to online demand for film and music. Such services exhibit varying degrees of success competing against each other and with technologies that facilitate illegal access to digital products. Access via digital piracy remains almost as easy as legal access and, due to national differences in availability, at times is the only option available to users. In this paper we examine the factors that influence a user's decision to use legal options over digital piracy to access film and music.

The piracy of digital products is alarmingly common. Recent evidence from the United States indicates that 40 percent of people have pirated music and 22 percent have engaged in film piracy, and for individuals aged between 18 and 29, more than two thirds admit to having engaged in these activities (Karaganis 2011). Rates are even higher in Europe. Findings from Denmark show that more than three quarters of people between the ages of 18 and 29 have pirated films or music (Benner and Vuorela 2012). The rise of digital piracy has accompanied the fall of profits of firms within the film and music industries, which have struggled to adapt to the digital age. In this paper, digital piracy refers to unauthorized or illegal access of digital products, where access covers both downloading products and streaming content, in addition to types of access that do not rely on the Internet, such as copying files from friends.

Scholars seeking to explain and predict digital piracy applied theories and models from various disciplines, including social psychology (e.g., Taylor et al. 2009), criminology (e.g., Higgins 2007), and business ethics (e.g., Peslak 2008), primarily using intention frameworks as foundations for their research. This body of research has made important contributions concerning the individual antecedents of digital piracy. However, it is limited in three important ways: the research is fragmented, it has decontextualized digital piracy, and it has largely disregarded how factors related to a product’s content influence the mode used to access it. Its fragmentation is a result of separate disciplinary streams of piracy research using models that emphasize some antecedents of piracy, but disregard other important influences. For example, d’Astous et al.’s (2005) research uses an expanded version of Ajzen’s (1991) theory of planned behavior (TPB) to investigate intentions to engage in music piracy, but disregards important variables like the price and perceived availability of legal alternatives. Decontextualization has occurred as most research has not examined how legal options are evaluated as alternatives to piracy. This issue is especially important given the recent rise of relatively inexpensive and free legal services that have entered international markets (e.g., Spotify for music, Netflix streaming for films). Such services provide consumers with legal options that serve as legitimate alternatives to piracy. Additionally, by disregarding factors that vary from title to title, we currently know relatively little about the extent to which consumers’ preferences for one film or song over another influence how they access a product. In this study we refer to product content as a specific film or music title.

Building on the insights provided by the existing body of research, we previously introduced a new model that contextualized piracy (Veitch and Constantiou 2012). The model is devised to represent the multiple factors that influence access decision when digital technologies can be used illegally as alternatives to traditional and new legal options. It addresses the fragmentation of the existing literature by integrating key elements of previous models used in IS research (e.g., Moores and Chang 2006; Peace et al. 2003) and introduces new concepts from consumer behavior. It addresses decontextualization, by providing a conceptualization of digital piracy as one option in the user decision of how to access a digital product; a choice set which also includes the legal access and non-access options. By incorporating price and perceived availability, the model includes factors that vary from title to title.

In this study we examine user access decisions for film and music. This choice is motivated by a number of considerations. Firstly, user decisions about how to access film and music are increasingly technology-dependent. Secondly, the film and music industries have been hit by the impact of piracy and the question of how to adapt to the evolving digital environment given user behavior remains open. Finally, film and music are content-based products which, apart from a few exceptions, rely on standardized business and distribution models. Such similarities make it more appropriate to make comparisons of access decisions for these products.

In this paper, we report on the application of an extension of our model for user decisions in context (Veitch and Constantiou 2012), by exploring which factors influence the decision to use traditional and
new legal options over piracy. Our study contributes to the literature by reporting on an extension of an integrated model about user decisions which explores the impact of available technologies, socio-economic characteristics, and differences in user preferences on the legality of users’ access behavior. Moreover, our study uses a sample of users recruited from the general population and asked about consumption decisions, lending our findings a degree of representativeness and ecological validity. The rest of the paper is structured as follows. In the next section a brief summary of existing piracy research is presented. Then the theoretical model is described. Subsequently, a test of the model is presented which includes the research method and findings from its application to films and music decisions. The paper closes with a discussion of the implications for research and practice.

**Piracy Research in Information Systems**

For over 20 years IS researchers have used theories and models from across the social sciences as foundations for investigations into the antecedents of individual piracy. This body of research has evolved into separate lines informed by social psychology, criminology, business ethics and marketing, with some hybrids (e.g., Plowman and Goode 2009). Each line provides unique insights and can be differentiated according to the theories and variables used.

Research informed by social psychology provides support for the applicability of TPB (Ajzen 1985) in the context of piracy, where subjective norms, attitudes, and perceived behavioral control (one’s belief in his or her ability to perform a behavior) influence piracy behaviors via intentions (e.g., Cronan and Al-Rafee 2008; d’Astous et al. 2005; Plowman and Goode 2009). Similar support has been found for the applicability of extensions of TPB, such as Perugini and Bagozzi’s (2001) model of goal-directed behavior (e.g., Taylor et al. 2009).

Contributions from research informed by criminology, which conceptualizes piracy as criminal behavior and utilizes frameworks such as deterrence theory (Ehrlich 1973) and self-control theory (Gottfredson and Hirschi 1990) indicates that perceived risks also influence piracy behaviors (e.g., Chiang and Assane 2007; Pryor et al. 2008; Shanahan and Hyman 2010), along with self-control and associations with pirating peers (e.g., Higgins 2005).

Business-oriented traditions have also informed piracy research. Research focusing on business ethics, and employing frameworks such as the model of ethical reasoning (Hunt and Vitell 1986), has demonstrated that ethical judgments (e.g., Lyonski and Durvasula 2008) and certain moral intensity variables including the magnitude of consequences are related to piracy behaviors (e.g., Gopal et al. 2004). Investigations focusing marketing-relevant characteristics, such as market conditions and product attributes also contribute to our understanding of piracy. Considerations of price and perceived value have been found to be related to piracy intentions (e.g., Chen et al. 2008). Similarly, price and risk are important variables in determining and the ratio of songs pirated to those purchased legally (e.g., Sandulli 2007). Moreover, satisfaction with variety, legitimacy and security have been found to be negatively related to music piracy, whereas the perceived quality of pirated music is positively related (e.g., Sirkeci and Magnusdottir 2011).

A brief review of the extant literature on digital piracy in IS goes some way to identifying its antecedents and reveals that a broad variety of factors influence piracy behaviors, including social, legal, and ethical considerations. However, as noted earlier, this body of research is limited in three important ways: it is fragmented, it has decontextualized digital piracy, and has disregarded factors that vary from title to title.

Fragmentation has occurred as researchers have adopted various theories and models, focusing on differing sets of variables. Separate streams of piracy research in IS have emerged as a result. Each stream has revealed important insights into the antecedents of digital piracy, but also omitted important variables covered in the other streams. Currently, it is difficult to identify which elements from the different streams are the strongest determinants of digital piracy. For example, is it the opinions of significant others (i.e., subjective norms), the severity of punishment if caught pirating, or the price of legal alternatives that influences piracy behaviors the most?

In terms of decontextualization, most investigations have not examined how consumers evaluate legal options as alternatives to digital piracy, apart from a few exceptions (e.g., Gopal et al. 2006; Pryor et al. 2008). This practice has limited what we know about digital piracy as we still do not have a good
understanding of the factors that influence a user’s decision to pirate a product rather than access it legally. Given the rise of new services such as Spotify and Netflix, it is worth examining how legal options serve as alternatives to piracy and influence users' access decisions.

Previous research has largely focused on factors related to the access mode for digital products (i.e., legal access vs. piracy) rather than those that vary from title to title, i.e., the specific film or music title. Evidence indicates that consumers are willing to pay more for digital products they expect will be better than others within a category (e.g., Lopes and Galletta 2006). Moreover, as consumers exhibit preferences for certain products within a category (e.g., having favorite actors or musicians), we expect factors related to a specific title (e.g., price perception) to influence their access decisions. By primarily focusing on factors related to the access mode, previous research has disregarded how consumers' evaluations of different products within a category influence their access mode decisions.

In the next section we present a model that draws upon the research outlined above, by integrating the various research streams, contextualizing piracy by examining how it occurs in comparison to legal alternatives and incorporating factors related to evaluations of a product's content.

**Research Model**

The prevalence of digital piracy and its frequent coverage in mainstream media outlets (e.g., Benner and Vuorela 2012) indicate that most users in developed countries know that piracy is an option available to them. Accordingly, many users are likely to consider piracy as an option when making decisions about how to access products available digitally. In this way, such decisions are distinct from decisions about products not available digitally as the latter typically do not involve considerations of illegal options. Thus, consumption decisions about products available digitally are likely to be influenced by a broader variety of factors than regular consumption decisions, and include social, ethical, legal, economic and product considerations.

**Theoretical Positioning**

In the proposed model (Figure 1, below), the access decision is influenced both by factors that vary from title to title and factors related to the access mode, where digital piracy is one option available to users. The model is designed to represent decisions in situations where a user already knows about a specific product (e.g., a film or a song title) and decides how to access it (i.e., legally or via piracy). We build upon TPB (Ajzen 1985) and integrate key elements of relevant theories and models to represent the multiple factors that influence a user's access decision.

The model differs from those previously offered in the literature because it focuses on decisions about how to access digital products when multiple access modes are available, rather than the intention to use one of them (i.e., use piracy). The model departs from TPB, reframing intentions as decisions with a degree of commitment and representing a choice among alternatives: legal access, piracy, and non-access. The model emphasizes the decision, because in contexts with more than two options, looking at the intention to engage in one does not adequately reflect the situation. For example, if the intention to pirate a song is low, we do not know if it is because the user intends to access it legally or not access it. Moreover, decisions take the place of intentions as users typically access digital products quickly after they make a decision to do so. As noted by Ajzen (1985, p. 22) “it may be neither feasible nor of much practical value to measure the intention in close temporal proximity of the behavior.” However, much of the previous research has used intention frameworks to examine digital piracy, and we draw upon existing findings to support our theoretical model. Previous findings concerning relationships between piracy intentions and variables in our model are taken as support for the propositions about the access decision.

The access decision for a digital product is influenced both by factors related to the access mode and factors that vary from title to title. According to TPB (Ajzen 1985), intentions are the primary determinant of behavior and are influenced by attitudes, subjective norms, and perceived behavioral control. In the model, these three variables are used, but the attitude variable is separated into ethical judgment of the access modes and product desirability. Our conceptualization of ethical judgment comes from Hunt and Vitell’s (1986) general theory of marketing ethics. Our conceptualization of product desirability is similar
to the concepts of attitude towards the product (e.g., Brown 1950) and product evaluation (e.g., Muthukrishnan and Ramaswami 1999). Another factor related to the specific product title is willingness to pay. Thus, price perceptions, derived from Thaler’s (1985) mental accounting, are included in the model. Moreover, the perceived legal availability of the product is included. Turning back to access-mode factors, the model incorporates risks associated with access. The core elements of Becker’s (1968) economic theory of crime are included, punishment certainty and punishment severity, as they cover potential risks associated with the legality of the access modes. Similarly, quality risk, termed performance risk in Jacoby and Kaplan’s (1972) typology of consumer risks, covers risk about product quality. Additionally, discretionary income, stemming from considerations beyond access modes and product title is included in the model.

In the model the above factors are grouped into four categories according to how they influence the decision, in addition to control variables. Some factors derive from factors related to the product content (desirability, price perceptions, availability), some are regulators of decisions (subjective norms and ethical judgment), some are perceived risks associated with access modes available (punishment certainty, punishment severity, and quality), some are resources that enable the use of an access mode (perceived behavioral control and discretionary income). The remainder of the section elaborates on each category in the model.

**Product Title Factors**

Product desirability is identified as the primary motivation to access a product. Within TPB, attitude towards the behavior captures an individual’s positive or negative evaluation of performing the behavior (Ajzen 1985). Applying this concept to our model, the personal evaluation of the access behavior has two parts: one concerns the content of the product being accessed (product desirability) and the other concerns access mode (ethical judgment). An individual’s evaluation of the desirability of a product is distinct from his or her judgment of the access modes available to acquire the product, though both are personal. Here product desirability is similar to the concepts of attitude towards the product (e.g., Brown 1950) and product evaluation (e.g., Muthukrishnan and Ramaswami 1999). Ouellet (2007), using a sample from Canada, found that the desire to re-experience a music title was positively related to decision to access it, but subsequent to this decision, only positive evaluations of the title’s performer(s) were related to the purchase of that piece of music rather than acquiring it using piracy. In the proposed model product desirability captures the user’s motivation to access a specific digital product. Thus, we propose:

*Hypothesis 1: Product desirability is positively associated with the decision to access the product.*
Considerations of price play an important role in many models of consumer behavior, and reference price, an expected price for a product (Thaler 1985), has been shown to be particularly important. We focus on price perception, the positive or negative difference between one’s reference price for a film or music title and one’s willingness to pay for it. This conceptualization of price perception is similar to Thaler’s concept of transaction utility. By this formulation of price perception we capture the user’s evaluation of the specific product relative to the typical price of the product category.

While price perceptions, according to our conceptualization, have not been investigated in relation to piracy, prices have. Researchers such as Bhattacharjee et al. (2003) have focused on the influence of price on Internet piracy, finding that price increases are positively related to piracy behaviors in a US sample. Among peer-to-peer users in Spain, the price of CDs has been found to be positively related to the proportion of songs illegally downloaded relative to the number of albums purchased legally (Sandulli 2007). Though these findings are not specifically related to price perceptions, in the case of digital products where willingness to pay is low, a price increase typically moves the price of a product further from what a user is willing to pay, and thus makes it less likely that a user will choose to pay for it. Thus, we propose:

Hypothesis 2: Favorable price perceptions are positively associated with the decision to use a legal access mode.

**Perceived Product Availability**

While in most cases a user is faced with a choice between legal access and piracy, there are often situations when legal options are not available. Due to differences in release dates across countries or instances of unauthorized versions of products appearing online before official release dates, a user may not be able to legally access a product. For example, many users illegally access the latest episodes of foreign television shows because they are not legally available. Evidence from Hong Kong and Singapore, where outdoor markets for selling illegal software have been an issue, indicates that the availability of pirated copies influences intentions to engage in piracy (Moores and Dhillon 2000; Moores and Dhaliwal 2004). Moreover, there is evidence to suggest that availability of free-to-air legal alternatives for film influences the demand for such films on peer-to-peer networks (Smith and Telang 2009). Thus, as perceived availability is likely to influence access decisions by influencing access options available, we propose:

Hypothesis 3: The perceived availability of legal alternatives is positively associated with the decision to use a legal access mode.

**Perceived Risks**

Digital piracy typically involves some degree of risk. Generally, two broad categories of risk can be associated with piracy: that associated with the consumption of the product and that associated with the access mode. Our knowledge of consumption risk comes from Jacoby and Kaplan (1972), who identified five types of risk: performance, financial, social, psychological and physical. Performance risk, termed quality risk in the model, is especially important as digital products accessed through piracy may be of lower quality than originals and viruses can cause problems with the operating systems of physical devices. The influences of financial, social and psychological risks are also important, though are captured in the model by the contributions of price perceptions, subjective norms, and ethical judgment (discussed above and below, respectively). Physical risks are not relevant for digital products. Our understanding of how individuals respond to the perceived risk associated with illegal activities comes from criminology. Becker’s (1968) economic theory of crime posits that criminal activities are inversely related to an individual’s perception of the probability of arrest (punishment certainty) and the likely punishment if apprehended (punishment severity). In the case of digital piracy, these risks can also come from companies that try to identify users who pirate digital products and seek compensation for copyright infringement. Evidence that considerations of risk are related to access decisions can be found in the existing literature. Chiou et al. (2005) found in Taiwan that perceived punishment certainty and punishment severity were negatively associated with digital music piracy behaviors. Moreover, Pryor et al. (2008) found in a US sample that the perceived punishment certainty was negatively associated with the
likelihood of a user’s previous music access being illegal. Thus, we propose:

Hypothesis 4: Perceived (a) quality risks and punishment (b) severity and (c) certainty associated with digital piracy are positively associated with the decision to use a legal access mode.

Regulators

In addition to users’ perceptions of external factors, internal regulators of behavior are also likely to impact the mode chosen to access digital products, specifically, subjective norms and ethical judgments. Subjective norms are a key component in TPB and represent an individual’s perception of the social pressures to perform or not perform a behavior. The influence of subjective norms has often been examined by researchers in relation to digital piracy and has been found to be related to piracy intentions in investigations into music in Canada (d’Astous et al. 2005) and digital products in general in the US (Al-Rafee and Cronan 2006). However, there have also been cases where subjective norms were not related to piracy intentions in samples from the US (Cronan and Al-Rafee 2008; Peace and Galletta 1996). Thus, we propose:

Hypothesis 5: Favorable subjective norms about piracy are negatively associated with the decision to use a legal access mode.

Ethical judgments are also likely to influence access-mode decisions, as users are motivated to act in accordance with their ethical beliefs (Hunt and Vitell 2006). In the research model, ethical judgments replace part of the influence of attitudes towards the behavior from Ajzen’s model (the remainder being covered by product desirability). Both ethical judgments and attitudes towards the behavior involve evaluations based on individual preferences about a particular behavior, which in this case concerns how a product is accessed. As digital piracy is ethically questionable, a sizeable amount of research examines the influence of ethical judgments. Using a sample of Taiwanese high school and university students, Shang et al. (2008) found that ethical judgments supporting piracy were related to intentions to engage in music piracy. Similarly, Gopal (2004) found in a sample from the US that positive ethical judgments about music-sharing behaviors were positively related to attitudes towards sharing music, and that these attitudes were related to the money saved by the user by downloading mp3s. Thus, we propose:

Hypothesis 6: Ethical judgments in support of piracy are negatively associated with the decision to use a legal access mode.

Resources

A user’s ability to utilize resources at his or her disposal is also likely to influence access-mode decisions, especially the knowledge and ability necessary to obtain digital products without paying for them. The variable of perceived behavior control is an important component in TPB (Ajzen, 1985), where the user’s perception of his or her ability to perform a behavior is an important predictor of his or her intention to engage in it. The concept has been intensively investigated in IS adoption and acceptance studies (e.g., see Venkatesh et al. (2003) for a summary of this research). As certain skills are required to obtain digital products illegally, having the necessary skills is likely to influence access decisions. Perceived behavior control has been found to be related to piracy intentions in the investigations using the TPB framework noted earlier, such as the study by d’Astous et al. (2005) into music in Canada and studies into software piracy in Saudi Arabia by Al-Jabri et al. (1997) and in the US by Cronan et al. (2008). Thus, we propose.

Hypothesis 7: Perceived behavior control for piracy is negatively associated with the decision to use a legal access mode.

Additionally, as legal access of products typically involves purchasing them, then a user’s discretionary income will likely influence the mode used to access them. The existing literature provides some evidence in support of this notion. Research indicates that household income is positively associated with piracy intentions (Coyle et al. 2009; Sinha and Mandel 2008) and piracy behaviors in the US (Madden and Lenhart 2003), though there is also evidence to suggest this association is negative (Bhattacharjee et al. 2003). The issue with the above research is that the authors looked at absolute income, rather than discretionary income, with is arguably more relevant, as digital products are often perceived as discretionary items purchased for entertainment. Thus, we propose the following:
Hypothesis 8: Discretionary income is positively associated with the decision to use a legal access mode.

**Control Variables**

The model we described previously (Veitch and Constantiou 2012) assumes a user makes an access decision based on an evaluation of multiple factors. However, there is evidence to suggest that other factors influence access decisions, including gender (e.g., Bhattacharjee et al. 2003; Gopal and Sanders 1997), age (Al-Rafee and Cronan 2006), product involvement (Chen et al. 2009) and self control (Higgins 2007; Higgins et al. 2007). Thus, in this study, we examine the influence of these variables as well.

**Method**

Data were collected from Denmark during February and March of 2012 using two separate online surveys; one for film and another for music. In addition sections for demographic variables and self control, the surveys collected data about general factors related to film and music access modes as well as a hypothetical access decision for a specific film or music title. The sections concerning general factors measured variables in the model that reflect generalized beliefs about the piracy access options for film and music, specifically: risks (quality, punishment severity and punishment certainty), subjective norms, ethical judgments, perceived behavior control, and product involvement. The section for the hypothetical decision measured variables related to a specific film or music title listed by the individual. These variables are those in the model that relate to the specific title under consideration, and not generalized beliefs about the access options or product category, specifically price perception, product desirability, perceived legal availability, and the access-mode decision.

**Sample and Procedure**

Participation in the project was confidential and voluntary. Participants were self-selected with the help of Danish film, music and technology websites, which linked to the online surveys in various ways, including writing articles about the surveys and placing advertisements on their sites during the survey period. In total 8 websites hosted links to the surveys while other websites shared links to the survey on their Twitter and Facebook pages. Participation was incentivized; those who completed one of the surveys went into a draw to win an iPad, and received an extra chance if they completed the other.

In total, 717 individuals responded to the film survey and 668 responded to the music survey. The data set included very few ‘non-access’ responses, and so these observations were removed. Consequently, we were unable to evaluate the first hypothesis. Following the removal of incomplete responses, duplicates, outliers, and the few ‘non-access’ responses, the sample yielded 502 responses for the film and 436 responses for music. In the final data set, the mean age of participants in each sample was 30.54 years for film (SD=10.91) and 30.58 years for music (SD=11.46). By gender, there were 107 women in the film sample and 102 in the music sample. While low, this is typical for investigations that recruit participants online for studies on film and music (e.g., Buxman et al. 2005; Nandi and Rochelandet 2008; Regner and Barria 2009).

By recruiting participants through Danish film and music websites and relying on self-selection, our data may be prone to non-response bias. In order to prevent this issue, we used a number of response facilitation approaches, as identified by Rogelberg and Stanton (2007), including publicizing the survey, designing it carefully to make navigation intuitive, providing incentives for responding, and managing survey length by using short item measures. After collecting the data, we conducted level of interest analyses by including ‘involvement’ in film and music (i.e., level of interest) as a control variable in our regressions. Level of interest in a survey topic is one of the best predictors of a respondent’s likelihood of completing a survey (Rogelberg and Stanton 2007). As described in the results (below), involvement was not significantly related to the access mode decision, indicating that non-response bias due to level of interest is unlikely. To the extent that non-response bias could be a problem in our data, we note that our research focuses on relationships between variables rather than levels of variables. In such instances, Blair and Zinkhan (2006) observe that “...the measurement of the extent to which the two variables covary is likely to be relatively accurate even if sampling is disproportionate at different levels of the
variables” (p. 5). Thus, we remain confident in our findings despite the limitations of our data.

**Measures**

Survey measures were taken from previous research and if necessary modified to suit the context. Table 1 presents the descriptive statistics. The Danish-language survey instruments were forward- and back-translated to ensure translation accuracy, and any differences in translations were reconciled with bilingual academics acting as language experts. All the variables assessed in the general factors and self control sections were measured using Likert scales ranging from 1 (strongly disagree) to 7 (strongly agree), except for ethical judgments, which had items with seven-point semantic differential scales. Cronbach’s alphas for these measures were above 0.70, indicating acceptable levels of internal reliability.

The hypothetical scenario section contained measures capturing variables expected to vary from title to title. A hypothetical scenario was used to collect data on the access decision as it involved less risk for the participants than reporting actual decisions (Bateman et al. 2002). Additionally, as the scenarios required participants to report how they were likely to access a product in an online context where they were likely to make such decisions, the method has a degree of ecological validity. Such decisions are likely to reflect actual decisions as users listed specific film or music titles they had considered accessing. Moreover, hypothetical scenarios are unlikely to be influenced by recall bias (Bateman et al. 2002).

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<th>Table 1. Variables, Sources and Descriptive Statistics</th>
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<tr>
<td>Product Desirability (4 items)</td>
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<td>Price Perception (2 items)</td>
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<td>Quality (4 items)</td>
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<td>Punishment Severity (3 items)</td>
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<td>Self Control (12 items)</td>
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<td>Involvement (4 items)</td>
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The access-mode decision was assessed by asking participants to list a specific film or music title they wanted to see or hear and indicate which of a range of legal and illegal categorical options they thought they would use to access it. Perceived legal availability was assessed by asking participants to indicate if legal option was available that would have allowed them to see the film or listen to the music. Desirability was assessed using items with seven-point semantic differential scales. Our calculation of price perception is consistent with Thaler’s (1980; 1985) formulation of transaction utility. It was assessed by subtracting participants’ entries of the expected purchase or rental prices for products (i.e., their reference prices) from their indications of what they would be prepared to pay for it (i.e., willingness to pay). Thaler (1980) states that price differences are evaluated in relative rather than absolute terms, thus the difference between reference price and willingness to pay was converted into a percentage indicating the proportion of the expected price that subjects were prepared to pay. A negative value indicates an unfavorable price perception, where a user is unwilling to pay the expected price for the product. Relevant reference prices were used in the calculation that depended on which cost was most relevant to the user's decision. For film, this included the cost of seeing it in the cinema, buying it, or renting it. For music, it depended on whether the user listed a song, album or collection and if the cost of streaming or buying it was most relevant.

To prevent common method bias, we created psychological separation between the various measures by inserting contextual shifts into the questionnaires, as suggested by Craighead et al. (2011). Harman’s (1976) one-factor test was used to assess common method bias, where the emergence of a single factor or a general factor that accounts for the majority of the covariance among the variables is indicative of common method variance (Podsakoff et al. 2003). Using SPSS 19, un-rotated principal components factor
analysis and principal component analysis with varimax rotation were conducted. The results showed that 16.61 percent of the variance is accounted for by the first factor in the film data and 16.06 percent in the music data. The remaining factors comprise 60.59 percent of the variance in the film data and the 59.70 percent in the music data. These findings indicate that common method bias was not present in the data.

All studies on digital piracy that use self-report measures face issues of validity, especially with participants recruited from the general public. However, a number of review papers over the years have indicated that self-report measures can be appropriate to assess illegal behaviors. For example, in their review of sociological literature on delinquency, Hindelang et al. (1979) concluded that differences between reported crime data and self-report data are “illusory” and comparisons of results using different measures are often “inappropriate and, in themselves, say little or nothing about the extent of criminal justice system biases or the adequacy of the self-report method” (p. 1012). Other reviews have concluded similarly (e.g., Huizinga and Elliott 1986; Thornberry and Krohn 2000). More recent conclusions from a review by Tourangeau and Yan (2007) indicated that misreporting on sensitive topics is largely situational and motivated by respondents desire to avoid embarrassing themselves or avoid repercussions from third parties. Our research methods were able to address each of these issues. Firstly, participation was online, so in the absence of an interviewer, those responding were unlikely to feel embarrassment and thus alter their responses. Moreover, participants were unlikely to be concerned about third party responses as participation was anonymous and those participants who chose to enter the competition left only their email address. Moreover, the survey used hypothetical responses, asking participants what they are likely to do, rather than report actual behaviors, thus lowering risks for participation.

**Results**

Two multinomial logistic regression analyses were conducted to evaluate the model’s propositions. The dependent variable for each analysis was the access mode decision, specifically the decision between piracy and the various legal access modes.

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<th>Parameter Estimates</th>
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<td>Likelihood ratio tests</td>
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<tr>
<td>Disposable Income</td>
</tr>
<tr>
<td>Self Control</td>
</tr>
<tr>
<td>Involvement</td>
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<tr>
<td>Age</td>
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<tr>
<td>Gender</td>
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Note: * p < .05, ** p<.01, *** p<.001

Piracy was used as the reference category in the analyses. This allowed us to examine how the factors in
the model influenced the likelihood that users select one of the legal access modes over piracy to access film and music. The model does not assume that the decision among access modes occurs all at once. Rather, it assumes that individuals face a Boolean choice between piracy and a legal access mode (e.g., theatre vs. pirate, buy vs. pirate, stream vs. pirate), and the legal access mode compared against piracy is influenced by the release stage of the product and consumption preferences in the specific context. Each of these choice sets has different characteristics, which is why we differentiate between the various legal access modes in our analysis. Because our analysis is cross-sectional, we are able to examine the different Boolean choice variables. Variables were centered before running the analysis.

The regression models for films ($X^2(42, N = 502) = 318.26, p< .0001$) and music ($X^2(28, N = 436) = 218.50, p< .0001$) predicted 58% of cases to their correct ‘type’ for films, and 65% of cases to their correct ‘type’ for music. The findings provide support for some elements of the model and indicate that the influence of the different factors varies according to product type and legal access mode. Tables 2 and 3 display the regressions’ results for film and music, respectively.

In the case of film, price perception and perceived availability were positively related to the decision to use each of the legal access modes, whereas perceived behavior control was negatively related to this decision across each access modes. These findings provide support for hypotheses 2, 3, and 7. Other results were less consistent. Product desirability and quality (beliefs that films accessed via piracy are of lower quality) were positively related to the decision to use the cinema and purchase modes, but not the rent/borrow/stream option. Providing partial support for hypothesis 5, subjective norms in favor of piracy were negatively related to the cinema and rent/borrow/stream options, but not significantly related to the buy option. Similarly, ethical judgments in support of piracy were negatively related to the cinema modes, but not significantly related to the decision to watch a film in the cinema, providing partial support for hypothesis 6. Punishment severity, certainty and disposable income were not significantly related to any of the legal access options. Lastly, of the control variables, age was positively related to the decision to use each of the legal access modes over piracy, whereas self control was found to be negatively related to the decision to watch a film in the cinema. Gender and product involvement were not related to decision to use any of the legal access modes.

| Table 3. Multinomial Regression Models for Music Access, Reference Category is Access Illegally |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| Likelihood      | Parameter       | Purchase        | Stream         | Odds            | B               | B               | Odds            |
| ratio tests     | Estimates       | Wald            | Wald           | Ratio           | Wald            | Wald           | Ratio           |
| Independent     | Chi-Square      | B               | Wald           | B               | Wald            | B              | Wald            | Ratio           |
| variable        |                 |                 |                |                 |                 |                |                 |                 |
| Model intercept | 6.95*           | 0.28            | 0.41           | -0.98           | 3.06            |                 |                 |                 |
| Product         | 5.85            | 0.51            | 5.49*          | 1.66            | 0.23            | 1.09           | 1.26            |                 |
| desirability    | 49.68***        | 0.02            | 29.80***       | 1.02            | 0.02            | 34.21***       | 1.02            |                 |
| Price perception| 10.52**         | 0.85            | 4.01*          | 2.35            | 1.65            | 9.11**         | 5.19            |                 |
| Perceived       | 4.77            | 0.22            | 1.76           | 1.25            | -0.06           | 0.10           | 0.94            |                 |
| availability    | 9.25**          | -0.13           | 1.79           | 0.88            | -0.31           | 8.51**         | 0.73            |                 |
| Quality         | 3.16            | -0.02           | 0.01           | 0.98            | 0.25            | 1.59           | 1.28            |                 |
| Punishment       | 11.05**         | -0.33           | 9.04**         | 0.72            | -0.12           | 0.96           | 0.89            |                 |
| severity        | 10.21**         | -0.32           | 9.80**         | 0.73            | -0.25           | 4.99*          | 0.78            |                 |
| Punishment       | 14.39***        | -0.65           | 9.66**         | 0.52            | -0.39           | 2.96           | 0.68            |                 |
| certainty       | 2.19            | 0.43            | 1.74           | 1.53            | 0.12            | 0.11           | 1.12            |                 |
| Subjective      | 1.06            | -0.10           | 0.31           | 0.90            | 0.06            | 0.10           | 1.06            |                 |
| norms           | 8.11*           | 0.20            | 1.35           | 1.22            | -0.22           | 1.58           | 0.80            |                 |
| Ethical         | 6.29*           | 0.04            | 5.95*          | 1.04            | 0.03            | 2.78           | 1.03            |                 |
| judgment        | 1.11            | 0.25            | 0.41           | 1.29            | -0.07           | 0.03           | 0.93            |                 |

Note: * p < .05, ** p<.01, *** p<.001
For decisions about music, price perception and perceived availability were positively related to the decision to download and stream legally, whereas ethical judgments in support of piracy were negatively related to the decision to use either of these access modes. These findings provide support for hypotheses 2, 3, and 6. Other variables were less consistent across legal modes. Punishment severity was negatively related to the decision to stream legally, evidence which is contrary to hypothesis 4b. Subjective norms and perceived behavior control were found to be negatively related to the decision to buy a copy, providing partial support for hypotheses 5 and 7. Product desirability was positively related to the decision to purchase a piece of music. Quality, punishment certainty and disposable income were not significantly related to any of the legal access options. Of the control variables, age was positively related to the decision to purchase music, but the results for self control, involvement, and gender were not significant.

The factors associated with access-mode decision for film and music were similar, but not identical. In the next section we reflect on and discuss the theoretical and practical contributions of this study.

Discussion

We tested a recently-introduced theoretical model that provides an integrated perspective on users’ access-mode decisions for film and music. The model builds on the notions that a user is faced with a choice of accessing a product legally or via piracy and that this choice is influenced by a variety of factors. It addresses the previously-identified limitations of the existing body of IS literature on piracy: fragmentation, decontextualization of piracy, and emphasis on access-mode over product-title factors. Thus, the model contributes to the literature by introducing a new perspective on the user’s access decisions and reflecting the complexity of these decisions.

Research Contribution

In response to fragmentation, the model is integrative and incorporates key elements of previous models used in IS research and new concepts from the consumer behavior literature. When evaluating the model for film and music, we found that different types of variables influenced the decision, indicating the value of an integrative model that draws on disparate research streams. More specifically, price perception and perceived legal availability were positively associated with the decision to use all of the legal options for film and music. These findings are in line with economic theory and the consumer behavior literature, which emphasize the importance of price and perceived availability in decision making (e.g., Thaler 1985). The results also highlight new aspects of user behavior not well addressed in the research literature and emphasize the importance of traditional economic factors in users’ access decisions. Another contribution of the model concerns the influence of factors related to the specific title under consideration (i.e., price perception and perceived availability), in addition to generalized beliefs about access modes. The model underlines their importance in access-mode decisions.

Elements from other models are also important in determining the access mode chosen by users, though were found to be less consistent across legal access options. Regulators of behavior, subjective norms and ethical judgment, were important determinants of the decision, with a few exceptions: streaming music and buying a film in the case of subjective norms and watching a film in the cinema for ethical judgments. These results are consistent with previous findings indicating the importance of these considerations in access decisions for film and music (e.g., Al-Rafee and Cronan 2006; d’Astous et al. 2005) and support the notion that they are general considerations for all access modes. Similarly, perceived behavior control was significant in all but one instance: the decision to stream music legally over piracy. This finding underscores the importance of users’ abilities when deciding how to access film and music.

The remaining elements of the model varied considerably across product type and access modes, demonstrating the value of a model that contextualizes access decision as a choice among legal and illegal modes. The model enables us to better understand how the factors that influence the decision vary across legal access modes. For example, concerns about quality were significant predictors of the decisions to see a film in the cinema and to buy it, but were not important for music. These results may reflect differences between the two products: low-quality music files have been available online for more than ten years and it is possible that file quality is not an important consideration when it comes to music. Conversely,
quality and resolution are important selling-points for films and the rise of Blu-Ray as a format reflects this. Conversely, findings for other variables reflect similarities between the legal access options. Product desirability was positively related to the purchase option for both film and music. This finding indicates that the decision to purchase a title is in part motivated by evaluations of content and how much a user will likely enjoy seeing or listening to it over repeat occasions, and to some extent independent of considerations of price. Moreover, desirability was positively related to the decision to use the cinema option for film. This may reflect the availability of films, which can only been seen in the cinema for certain durations following their release. Thus users may opt to pay for legal options if they believe the film will be good in order to see it as soon as it is released.

In addition to elements of the model, we evaluated a number of factors identified as possible influences on the access decision as control variables, specifically: age, gender, product involvement and self control. Of these, age was positively related to the decision to use all legal access modes for film and music. This finding indicates generational differences influence access decisions beyond the variables in the model and is in concert with recent findings from Danish surveys (Benner and Vuorela 2012) and previous research (Al-Rafee and Cronan 2006). Interestingly, gender was not related to access decision, a finding with is similar to those of other researchers (e.g., Al-Rafee & Cronan, 2006; Villazon & Dion, 2004) but in contrast with other researchers who have had contrary findings (e.g., Bhattacharjee et al. 2003; Gopal et al. 1997). Similarly, self control was only related to the decision to see a film in the cinema, indicating that it does not have much influence over access decisions and that such decisions are not as impulsive as other researchers suggest (e.g., Higgins 2007).

**Implications for Practitioners**

The research described in this paper has implications for the providers of film and music, especially in Europe. Our findings indicate that legal availability and favorable price perceptions motivate people to choose a legal access mode. Concerning availability, firms in the film industry would benefit from accelerating the process for introducing newly released features to foreign markets. Similarly, the music industry would likely benefit from quickly making legal versions of their products available on streaming services such as Spotify to capitalize on the surge in demand that often occurs around the release date. Firms releasing music also face the challenges of ‘leaks’, where albums are available online before official release dates, due to the time taken to produce physical copies of the releases. We would recommend that firms take into account the benefits of making digital copies available legally before physical versions are released. Physical releases are now often ‘bundled’ with download vouchers, enabling users who buy LPs access to digital versions as well. In such cases, it could be prudent for firms to provide such users with access to the digital version while the LP is being pressed to dissuade users from engaging in piracy.

In addition to price and availability, regulators of behavior such as subjective norms and ethical judgments that are favorable to piracy are negatively related to decisions to use legal access modes. While previous campaigns to influence users’ perceptions in this regard have not been so effective, perhaps new initiatives are worthwhile. Such efforts may be difficult, given that some genres of music celebrate wealth and are often cited as evidence that musicians are not in need of support. For example, in a recent song with Kanye West, the rapper Jay-Z boasts that 50,000 dollars is not a significant amount of money to him. Moreover the finding that age is positively related to legal access indicates that firms should focus their efforts on younger users and try to persuade them to use legal access modes.

**Conclusion**

In this study we tested an extended version of a recently-introduced theoretical model to investigate the factors that influence users’ decisions to use traditional and new legal access modes in favor of digital piracy. Our findings indicate that economic considerations of price perception and perceived availability have a prominent role and thus should be central in future research endeavors. Other factors in the model were less consistent across the various legal access modes. While we used a reasonable sample size and recruited from the general population, any conclusions drawn from this study should come with some reservations, as there was a degree of homogeneity in our sample: it was largely male and several key variables were highly skewed. Moreover, the research relied on a specific research context outside of the
US, where market dynamics are much different, especially with respect to the availability of films after US release dates. One could expect the model to perform differently using a different sample from another country. Additionally, while our data is cross-sectional, it relied upon participants' evaluations of self-chosen film and music titles. It is possible that the users listed highly anticipated titles, and the contribution of desirability in the model may change when less-favored titles are evaluated.

References


