

# User Decisions in a (Partly) Digital World

## Comparing Digital Piracy to Legal Alternatives for Film and Music

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# USER DECISIONS IN A (PARTLY) DIGITAL WORLD: COMPARING DIGITAL PIRACY TO LEGAL ALTERNATIVES FOR FILM AND MUSIC

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## Abstract

*Technologies enabling digital piracy have expanded the variety of options available to users when deciding how to access a product. As a result, access-mode decisions for film and music are broader than for other goods where the piracy option is not as prevalent. This paper presents a model of access-mode decisions for film and music which integrates elements of previous digital piracy models and expands upon them to reflect the decision's complexity. We depict the access-mode decision as being influenced by the user's product desire, price perceptions, perceived risks, internal regulators of behaviour, resources and legal availability. We test the model for film and music using causal data of access-mode decisions collected from students at two Danish universities. Our findings indicate that the economic considerations of price perception and legal availability are the most consistent factors in influencing the access-mode decision across different legal options. The paper concludes with an outline for future research.*

*Keywords: user behaviour, digital piracy, adoption decision, digital products.*

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# 1 Introduction

With developments in ICT users have a broader variety of technologies that enable them to access and consume film and music. While many of these technologies have been utilized by firms to cater to the market, some have facilitated the illegal consumption of digital products, making piracy almost as easy as legal access. In this paper we examine the factors that influence a user's decision to use legal options over digital piracy.

The piracy of digital products is alarmingly common and piracy rates have begun to undermine the commercial foundations of some of the industries producing digital products, which have struggled to adapt to the digital age. Global sales of recorded music fell by around 30 percent from 2004 to 2009 (IFPI 2010), a drop largely attributed to the impact of piracy. Recent evidence from Denmark indicates that more than three quarters of people between the ages of 18 and 29 have pirated films or music (Benner and Vuorela 2012). In this paper, digital piracy refers to the unauthorised or illegal accessing 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.

Previous studies seeking to explain and predict digital piracy have applied theories and models from social psychology (e.g., Taylor et al. 2009), criminology (e.g., Higgins 2007), and business ethics (e.g., Peslak 2008), amongst others, converging around distinct research streams. Each stream has revealed important insights into the antecedents of digital piracy, but also omitted important variables necessary to understand the phenomenon covered in the other streams. These approaches have led to divergent streams of research, with each focusing on sets of variables derived from different research traditions. Currently, it is difficult to identify which elements of the different streams are the strongest determinants of piracy behaviours. 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 behaviours the most? Moreover, most investigations have focused on piracy in isolation and not studied how this behaviour occurs in relation to legal alternatives available to the user. This practice has limited our understanding of digital piracy itself as we still do not fully understand why a user chooses to pirate a product rather than access it legally.

Recently, Veitch and Constantiou (2011) drew on the existing body of research, introducing a model that contextualised piracy. The model is devised to investigate instances in which digital technologies are used illegally as alternatives to traditional and new legal options. To address fragmentation, the model integrates key elements of existing models used in IS research and introduces new concepts from consumer behaviour. Moreover, to address decontextualisation, digital piracy is conceptualized as just part of the user decision about how to access a digital product; a decision which also includes the legal access and non-access options.

In this paper, we report on the first application of this model to user decisions in context, exploring when traditional and new legal options are chosen over piracy. Our study contributes to the literature by reporting the first test of an integrated model about user decisions which explores the impact of available technologies and socio-economic characteristics on the legality of users' access behaviour. Moreover, our study uses a causal methodology and user behaviour data from actual consumption decisions, lending our findings a degree of ecological validity.

The rest of the paper is structured as follows. The theoretical model is described in the following section. Subsequently, a test of the model is presented which includes the research method and findings from its application to film and music decisions. The paper closes with a discussion and an outline for future research.

## 2 Research Model

The pervasiveness of technologies that enable digital piracy and the prevalence of the phenomenon indicate that it is commonplace (e.g., Madden and Rainie 2005). Despite this, decisions about how to consume products that are available digitally are distinct from the consumption of non-digital products and may be influenced by broad variety of factors, including social, ethical, legal, economic and product considerations.

In the model proposed by Veitch and Constantiou (2011, figure 1), digital piracy is conceptualised as just one option available to the user. The model integrates elements of theories and models from a variety of disciplines in order to capture the multiple factors thought to influence a user's access-mode decision. Bettman, Luce and Payne's (1998) choice goals framework, which suggests that consumers engage in decision-making to achieve some sort of goal, serves to integrate the various elements in the model. In the present model, variables are grouped according to the way they are theorised to affect the decision. Each of the peripheral boxes relates to a set of goals or constraints (i.e., the variables) that the user is trying to satisfy during his or her decision. The importance of each goal to the user or the impact of the constraint determines its influence on his or her decision, such that more important goals and constraints will exert a greater influence. For example, if avoiding punishment is most important to a user, then punishment certainty will have the strongest influence over his or her access-mode decision.

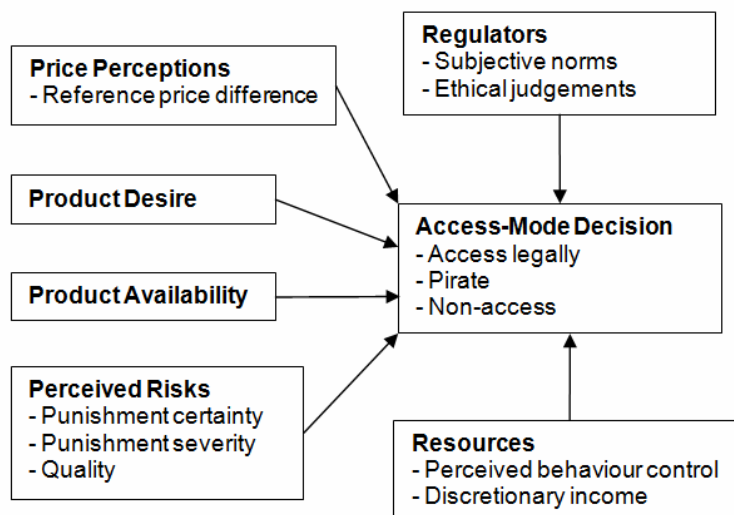


Figure 1. A Model of Digital Product Access-Mode Decisions, adapted from Veitch and Constantiou (2011)

The model represents user decisions in situations where he or she already knows about a specific product (e.g., a film or a song) and chooses how to access it (i.e., legally or via piracy). Many of the models used in earlier IS research focus on intentions to perform a behaviour. Intentions are not included in the present model because the access behaviour typically occurs quickly after a decision is made. In such circumstances, 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 behaviour."

As noted above, the decision is influenced by a variety of factors, including social (desire, subjective norms, and perceived behaviour control), ethical (ethical judgement), legal (punishment certainty and severity), economic (price perceptions, discretionary income, availability), and product (product quality) considerations. In the model these factors are grouped into six categories according to how they were originally theorised to influence the decisions. The categories are as follows: product desire, price perceptions (reference price difference), regulators (subjective norms and ethical judgement),

perceived risks (punishment certainty, punishment severity, quality), and resources (perceived behavioural control, discretionary income) and availability.

## 2.1 Product Desire

In the model, product desire is the primary motivation to consume a digital product, a contention which has both theoretical and empirical support. Desires drive intentions to act in the model of goal-directed behaviour (MGDB, Perugini and Bagozzi 2001), where desires are treated as general, reflecting beliefs about the outcomes of behaviour. Using MGDB as a framework for their investigation of music and film piracy in the US, Taylor et al. (2009) found that piracy intentions were positively associated with product desire. Ouellet (2007), using a sample from Canada, found that the desire to re-experience a piece of music was positively related to decision to acquire it, but subsequent to this decision, only positive evaluations of the piece's performer(s) were related to the purchase of that piece of music rather than acquiring it using piracy. In the present model product desire captures the user's motivation to access a specific digital product. Thus, we propose:

*Hypothesis<sup>1</sup>: Product desire is positively associated with the decision to access the product.*

## 2.2 Price Perceptions

Considerations of price play an important role in many models of consumer behaviour, and reference price in particular. "The concept of a reference price is that it is an internal standard against which observed prices are compared.... individuals make judgments and choices based on the comparison of observed phenomena to an internal reference point" (Kalyanaram and Winer 1995, p. 161). More recently, this concept was introduced in the IS field in relation to mobile service adoption and the choice among available services (Blechar et al. 2006; Constantiou 2009). We focus on price perceptions, the difference between one's reference price for a product and its expected price. This conceptualisation is similar to Thaler's (1985) concept of transaction utility. While price perceptions, according to the conceptualisation used in this paper, have not been investigated in relation to digital piracy, prices have. Researchers such as Bhattacharjee, Gopal and Sanders (2003) found that price increases are positively related to piracy behaviours in a US sample. Among peer-to-peer (p2p) users in Spain, the price of CDs was positively related to the proportion of p2p songs illegally downloaded relative to the number of albums purchased legally (Sandulli 2007). Though these findings are not specifically related to price perceptions, a price increase typically moves the price of a product further from one's reference price, and thus makes it less likely that he or she will choose to pay for it. Thus, we propose:

*Hypothesis<sup>2</sup>: Favourable price perceptions are positively associated with the decision to use a legal access mode.*

## 2.3 Perceived Risks

Digital piracy is an illegal and therefore risky activity. 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 is informed by Jacoby and Kaplan (1972), who identified five types of risk: financial, performance, physical, social and psychological risk. Physical risks are not relevant for digital products. However, 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 judgement (discussed above and below, respectively). Our understanding of how users 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 a user'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 who seek to identify users who pirate digital products and seek compensation for copyright infringement. Evidence that considerations of risk are related to digital piracy can be found in the existing literature. Chiou, Huang, and Lee (2005) found in Taiwan that punishment certainty and severity were negatively associated with digital music piracy behaviours. Moreover, Pryor et al. (2008) found in a US sample that the punishment certainty was negatively associated with the likelihood of a user's previous music acquisition occurring through piracy. Thus, we propose:

*Hypothesis<sup>3</sup>: 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.*

## **2.4 Regulators**

Internal regulators of behaviour are also likely to impact the access-mode decision, specifically, subjective norms and ethical judgements. A key component in the model of goal-directed behaviour (Perugini and Bagozzi 2001) is subjective norms, which are a user's perception of the social pressures to perform or not perform a behaviour. The influence of subjective norms has often been examined by researchers in relation to digital piracy and have 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<sup>4</sup>: Favourable subjective norms about piracy are negatively associated with the decision to use a legal access mode.*

Ethical judgements are also likely to influence access-mode decisions, as users are motivated to act in accordance with their ethical beliefs (Hunt and Vitell 2006), and a sizeable amount of research has examined the influence of ethical judgements. Using a sample of Taiwanese high school and university students, Shang, Chen and Chen (2008) found that intentions to engage in p2p music piracy were positively related to positive ethical judgements of the behaviour. Similarly, Gopal (2004) found in a sample from the US that positive ethical judgements about music-sharing behaviours 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<sup>5</sup>: Ethical judgements in support of piracy are negatively associated with the decision to use a legal access mode.*

## **2.5 Resources**

A user's ability to utilise resources at his or her disposal are 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 behaviour control is an important component in MGDB (Perugini and Bagozzi 2001), where the user's perception of his or her ability to perform a behaviour 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 using the theory of planned behaviour (e.g., see Venkatesh et al. (2003) for a summary of this research). As certain skills are necessary to obtain digital products illegally, users may consider whether or not they have the skills to conduct digital piracy when making access-mode decisions. Perceived behaviour control has been found to be related to piracy intentions the study by d'Astous et al. (2005). Thus, we propose

*Hypothesis<sup>6</sup>: Perceived behaviour control for piracy is negatively associated with the decision to use a legal access mode.*

Additionally, as legal access typically involves purchasing, then a user's discretionary income will likely influence the method used to access a product. The existing literature provides some evidence in support of the notion that discretionary income influences access-mode decisions. For example, household income has been found to be negatively related to intentions to pirate music among US college students (Coyle et al. 2009; Sinha and Mandel 2008). However, this research examined total income, rather than discretionary income. Total income is arguably less relevant as digital products are often perceived as discretionary items purchased for entertainment. Thus, we propose the following:

*Hypothesis<sup>7</sup>: Discretionary income is positively associated with the decision to use a legal access mode.*

## **2.6 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 for film and music across countries or instances of unauthorised versions of products appearing online before official release dates, a user may often not be able to obtain a copy of a product legally. Thus, as legal and illegal availability is likely to influence access-mode decisions by determining access options available, we propose:

*Hypothesis<sup>8</sup>: The availability of legal alternatives is positively associated with the decision to use a legal access mode.*

## **3 Method**

Data were collected during the spring and autumn semesters of 2011 using two methods: an initial paper survey and a subsequent online diary. The paper survey was used to collect data about general factors related to accessing film and music, whereas data from the online diary concerned instances when participants decided how to access specific films and pieces of music.

The paper survey had separate sections for film and music, in addition to demographic and control variables. The music and film sections measured variables in the model that reflect generalised beliefs about the access options for film and music, specifically: risks (punishment severity, punishment certainty, and quality); subjective norms; ethical judgements; and perceived behaviour control. The online diary measured variables related to the specific film or piece of music being accessed, including price perception, product desire, product availability, and the access-mode decision.

The online diary is an ongoing experience method (Reis and Gable 2000), which focuses on "direct, usually immediate reports of everyday experience... within the stream of routine, voluntary activity (p. 194)." Thus, it is appropriate for collecting data on the variables in the model that are not general beliefs but related to the specific product accessed by a user (e.g., the desire for a specific song).

The online diary offers a number of advantages when a researcher aims to collect data about events rather than generalized beliefs. As data about the access-mode decision were recorded in the context the decision was made, the data have enhanced ecological validity and are more realistic than those gathered by alternative methods such as hypothetical scenarios. Moreover, as data is reported by participants soon after decisions are made, the data is less prone to the influence of recall biases such as recency bias, salience bias, and state of mind bias (Reis and Gable 2000). Moreover, the mixed-method approach which combines the initial paper survey and the subsequent online diary allows inferences to be made about the causality of the relationships in the model, at least for the directionality of the relationships between the generalized beliefs assessed in the paper survey (e.g., subjective norms) and the decisions reported using the online diary.

### 3.1 Sample and Procedure

Participation in the project was anonymous and voluntary. Participants were recruited from undergraduate and graduate university classes at two Danish universities. During classes they were provided information about the study, completed the paper surveys, and were subsequently instructed on how and when to use the online diaries. Participants then recorded details about their access decisions for film and music over a fourteen-day period. The online diary was hosted by a web-based survey service. Unique personal codes were used to ensure the anonymity of participants but enable the paper responses to be matched to the online diary entries.

Participation in the project was incentivized. Those who completed the initial paper survey received a chocolate bar in class. Participants who also recorded their access decisions using the online diary received a cinema ticket at the end of the survey period and also went into a draw to win an iPad.

In total, 536 out of 618 paper surveys were returned by participants, at a response rate of approximately 87 percent. Of the individuals who completed the paper surveys, 161 (30%) also completed the online diaries, of which 110 recorded their film decisions and 103 recorded music decisions, with an overlap of 52. The mean age of participants was 23.98 years ( $SD = 3.52$ ). The sample consisted of 94 males (58%) and 67 females (42%). By nationality, the sample was comprised of 125 Danes (78%), 34 foreign nationals, and 2 who did not reveal their nationality. As the final data set included very few 'Non-access' responses, these observations were removed. Consequently, we were unable to evaluate the first hypothesis. Empty values were substituted with the sample mean after outlier cases were removed from the data set. This yielded 99 cases for film and 96 cases for music.

### 3.2 Measures

Measures used in the investigation were drawn from previous research and if necessary modified to suit the context. Table 1 presents the descriptive statistics. The Danish-language versions surveys instruments were forward- and back-translated to ensure accuracy, and any differences in translations were reconciled with bilingual academics acting as language experts. All the variables assessed in the paper survey were measured using Likert scales ranging from 1 (strongly disagree) to 7 (strongly agree), except for ethical judgements, which had items with a seven-point semantic differential scale. Cronbach's alphas for these measures were above 0.70, indicating acceptable levels of internal reliability. Principle components factor analyses using varimax rotation were conducted separately for the film and music scales, with all items loading on their expected factors. Due to the non-normal distributions for punishment certainty, perceived behavior control and discretionary income, these variables were median split and entered into the regressions as binary categorical (low = 0; high = 1) variables. Furthermore, after the first sampling period Spotify, a comprehensive and legal music-streaming service, was introduced to the Danish market, so we included a categorical variable about the adoption of this service in the second wave of data collection as a control.

The online diary contained measures capturing variables expected to vary across access-mode decisions. The access-mode decision was assessed by asking participants to indicate which of a range of legal and illegal categorical options they used to access the film or piece of music. Similarly, legal availability was assessed by asking participants to indicate if legal option was available that would have allowed them to access the film or music in the way they preferred. Desire was assessed using a Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). Price perception was assessed by subtracting participants' entries of what they were prepared to pay (i.e., their reference prices) from their expected purchase or rental prices for products (i.e., their expected prices). This difference was then converted into a score indicating the proportional difference between expected and reference prices. In this calculation, relevant expected and reference prices were used. For film, prices depended on which cost was most relevant to the user's decision: the cost of buying it, renting it, or seeing it in the cinema. For music, it depended on whether the user listed a song, album or collection. A negative



value indicates an unfavourable price perception, where a user is unwilling to pay the expected price for the product.

Variable	Source	Films			Music		
		Mean	SD	Alpha	Mean	SD	Alpha
Product Desire (4 items)	Campbell & Goodstein (2001)	5.35	1.08	.81	5.70	1.04	.80
Price Perception (2 items)	Folkes & Wheat (1995)	-0.18	0.36	NA	-0.17	0.61	NA
Punishment Severity (3 items)	Morton & Koufteros (2008)	4.23	1.68	.93	4.17	1.77	.97
Punishment Certainty (3 items)	Morton & Koufteros (2008)	2.09	1.19	.83	1.98	1.06	.90
Quality (5 items)	Liao, Lin & Liu (2010)	2.97	1.36	.85	2.73	1.45	.78
Subjective Norms (3 items)	Morton & Koufteros (2008)	4.59	1.49	.86	4.83	1.53	.91
Ethical Judgement (3 items)	Miyazaki, Rodriguez & Langenderfer (2009)	3.13	1.69	.90	3.09	1.60	.90
Perceived Behaviour Control (3 items)	Peace, Galletta & Thong (2003)	5.58	1.82	.92	6.21	1.31	.93

Table 1. Variables, Sources and Descriptive Statistics

## 4 Results

Two separate multinomial logistic regression analyses were conducted to evaluate model's propositions concerning the access-mode decision; one for film and another for music. These analyses allowed us to examine how the independent variables influenced the likelihood that users would decide to use the legal options over piracy and how these differ for decisions about film and music. For the final dataset, we randomly selected one of the participants' access decisions recorded using the online diary and matched it to their paper survey. Variables were centered before running the analysis.

The dependent variable was the decision to access the product using piracy or not, where piracy was the reference category. Piracy was used as the reference category as it allowed us to examine how elements in the model vary across the legal alternatives available to users. The regression models for films ( $X^2(30, N = 99) = 99.62, p < .0001$ ) and music ( $X^2(22, N = 96) = 72.40, p < .0001$ ) predicted 75% of cases to their correct 'type' for films, and 74% of cases to their correct 'type' for music. The initial 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.

The results indicate that the access-mode decision varies across products and legal options available. The decision to see a film at the cinema rather than pirate it is positively related to price perception, punishment severity and certainty, and legal availability, providing support for hypotheses 2, 3b, 3c, and 8. Similarly, the decision to legally rent or stream a film rather than use piracy is positively related to punishment certainty, but negatively related to perceived behavior control, providing support for hypotheses 3b and 6. None of the independent variables were significantly related to the decision to buy a film rather than pirate it. It is important to note that fewer than 10 decisions for film resulted in the 'purchase' option, which could account for this finding.

Turning to music, desire, price perceptions and legal availability were positively related to the decision to buy a piece of music rather than pirate it, providing support for hypotheses 2 and 8. Similarly, price perceptions, legal availability, and being a member of Spotify were positively related to the decision to stream a piece of music rather than pirate it, while discretionary income was negatively related to the decision to stream rather than pirate. In the case of streaming, the results provide support for hypotheses 2 and 8. The factors associated with access-mode decision for film and music were similar, but not identical.

Independent Variable	Likelihood ratio tests Chi-Square	Parameter Estimates: Film in Cinema			Parameter Estimates: Purchase			Parameter Estimates: Rent/Stream Legally		
		B	Wald	Odds Ratio	B	Wald	Odds Ratio	B	Wald	Odds Ratio
Model Intercept	26.65***	-5.66	9.76***		-22.49	102.03		-1.79	2.64	
Product Desire	4.60	0.25	0.52	1.28	-0.78	0.94	0.46	0.54	1.86	1.72
Price Perception	12.28***	3.29	6.35**	26.83	-2.14	0.38	0.12	-1.00	0.58	0.37
Punishment Severity	3.16	-0.48	2.86*	0.62	-0.18	0.10	0.84	-0.16	0.38	0.85
Punishment Certainty	12.06***	2.96	7.92***	19.32	3.17	2.35	23.87	1.66	3.49*	5.25
Quality	1.79	0.26	0.68	1.30	0.23	0.14	1.26	-0.18	0.27	0.84
Subjective Norms	1.39	0.05	0.04	1.05	-0.57	0.91	0.57	-0.06	0.05	0.94
Ethical judgement	3.01	-0.19	0.59	0.82	-1.26	1.88	0.28	-0.25	0.94	0.78
Perceived Behaviour Control	14.41***	0.05	0.00	1.05	-20.12	0.00	0.00	-2.65	7.44**	0.07
Legal Availability	15.16***	3.41	7.65***	30.23	19.16	0.00	0.00	1.34	2.32	3.82
Income	1.92	0.39	0.26	1.48	-1.38	0.94	0.25	0.16	0.05	1.18

Note: \* p < .10, \*\* p<.05, \*\*\* p<.01

Table 2. *Multinomial Regression Models for Film Access Mode, Reference Category is Access Illegally*

Independent Variable	Likelihood ratio tests Chi-Square	Parameter Estimates: Purchase Music			Parameter Estimates: Stream Legally		
		B	Wald	Odds Ratio	B	Wald	Odds Ratio
Model Intercept	1.83*	-0.10	0.01		1.99	6.05**	
Product Desire	5.01*	0.77	3.89**	2.16	0.12	0.12	1.13
Price Perception	7.48**	1.75	6.01**	5.77	1.34	4.42**	3.84
Punishment Severity	2.18	0.34	2.06	1.41	0.14	0.46	1.15
Punishment Certainty	1.96	0.62	0.46	1.86	-0.54	0.49	0.59
Quality	5.16*	-0.24	0.48	0.78	0.35	1.23	1.42
Subjective Norms	2.55	-0.46	2.41	0.63	-0.28	1.06	0.76
Ethical judgement	0.56	-0.05	0.03	0.95	0.11	0.27	1.12
Perceived Behaviour Control	0.60	-0.46	0.29	0.63	-0.57	0.58	0.57
Legal Availability	14.73	1.45	2.88*	4.45	2.87	10.42***	0.06
Spotify	17.28***	-1.31	0.82	.27	2.41	6.99***	11.17
Income	9.19***	0.25	0.11	1.29	-1.58	5.23**	0.21

Note: \* p < .10, \*\* p<.05, \*\*\* p<.01,

Table 3. *Multinomial Regression Models for Music Access, Reference Category is Access Illegally*

## 5 Discussion

In this investigation we tested a recently-introduced theoretical model to provide an integrated perspective on users' access-mode decisions for film and music. As the model recognises that a user is faced with a choice of accessing a product legally or via piracy, it attempts to provide a better understanding of the user's decision and reflect its complexity. Additionally, by taking into account price perceptions and legal availability, it captures the influence of these economic considerations on the user's access-mode decision.

When we applied the model to access-mode decisions for films and music we found that the economic considerations were important in influencing the decision to use a legal access mode over piracy. In particular, both price perception and legal availability were positively associated with the decision to use legal options. These findings are in line with economic theory and the consumer behaviour literature, which emphasise the importance of price and availability in decision making (e.g., Thaler 1985). Findings concerning other elements of the model were less consistent. Punishment certainty was positively related to the choice to see a film in the cinema and rent/stream it rather than access it via piracy, consistent with other findings (e.g., Coyle et al. 2009). Similarly perceived behaviour control was negatively related to the choice to rent/stream a film, a finding that is consistent with previous research (e.g., d'Astous et al. 2005). For music, product desire was related to the decision to purchase music, but not stream it. This suggests that people may buy music if they really like it. Conversely, being a member of Spotify increased the likelihood that someone would stream a piece of music rather than pirate it, indicating that Spotify does more than just broaden the range of legal options available to a user.

The factors associated with the access-mode decision for the two product types were similar, but not identical. In particular, we were able to identify some factors related to purchasing music, but not film. This may relate to the differences between the two product types: pieces of music are often enjoyed repeatedly by users, and perhaps perceived as worth owning, whereas this is not as typical for films, which are often just seen one or twice and thus may be perceived as more appropriate to rent. Interestingly, some factors from social psychology, such as subjective norms and ethical judgment, were not significant. This could be due to economic and risk considerations taking precedence in user's decisions. However, we should interpret this finding with caution due to the homogeneity of the sample, especially concerning income and perceived risks.

The research described in this paper has implications for the providers of digital products, especially in Europe. Our findings indicate that legal availability and favourable price perceptions motivate people to choose a legal access mode. Concerning availability, firms in the film and music industry would likely benefit from accelerating the process for which new releases are brought to market. For the film industry, this could be achieved easily for foreign films, which are often released in Europe much later than in their domestic markets. Similarly, the music industry would likely benefit from accelerating the process of making legal versions of the products available on streaming services such as Spotify, so firms can capitalise on the surge in demand that often occurs around the release date. The results concerning price perception are an indication that, on average, users are unwilling to pay the market price for film and music. As price perceptions are important determinants of access-mode decisions and most participants feel they have the requisite ability to engage in piracy (perceived behaviour control), it is possible that content providers could increase revenue if they lowered purchase prices for film and music. Indeed, such a tactic has already occurred in the US, where prices for new-release digital albums are as low as \$US4.50, though this tactic has yet to be tried in Europe.

## 6 Conclusion

In this study we tested a recently-introduced theoretical model to investigate the factors that influence users' decisions to use traditional and new legal access modes in favour of digital piracy. Our findings

indicate that economic considerations of availability and price perception have a prominent role and thus should be central in future research endeavours. Other factors in the model were less consistent across the various legal access modes. Any conclusions drawn from this study should come with some reservations as we used a homogenous student sample in terms of income and ability to pirate. Moreover, the sample size was relatively small given the number of variables in the model. One could expect the model to perform differently using a different, larger sample. In future research we will investigate the influences of these characteristics on the decision to access a digital product through a sampling process which will cover additional groups of the population.

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