



Digital movie piracy: A perspective on downloading behavior through social cognitive theory

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ABSTRACT

This study refined and specified a model based on the application (e.g. LaRose & Kim, 2007) of social cognitive theory (Bandura, 1986) to analyze and compare the behavior and attitudes exhibited by movie downloaders and to compare the number of movies they consume. The model is tested against data obtained from college students and from attendees of a technological lifestyle forum in the Netherlands. After revisions, the model explained nearly 23% of the variance in the number of movies downloaded. The most important factors in this model were the drive to view many different and new movies, the social environment and perceived attitudes toward the behavior, and the degree to which downloading has embedded itself in the daily routine. Because the Dutch government and lobbyists are unclear about the current legislation in the Netherlands, a unique opportunity existed to study the impact of being aware of legislation on the behavior. The results also indicate an unexpected openness among the participants to an alternative film-distribution method in which both the producers and the consumers receive an honest deal. These findings suggest options for relieving the current political and social tensions associated with movie downloading without prosecuting an increasing portion of the population.

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1. Introduction

Previously, when groundbreaking new technologies have found their way into commercial markets and into the hands of end users, unforeseen psychological and sociological consequences have often surprised both legislators and analysts (Bijker, Hughes, & Pinch, 1987). The World Wide Web is a prime example of a technological breakthrough that upset the social status quo (Van Dijk, 1999). The phenomenon discussed in the current study, however, may not have come about through this revolution of interconnectivity before the turn of the millennium, although it was certainly heavily dependent on it. Downloading a file larger than a still image was difficult during the early infrastructural stages of the internet (Hilbert & López, 2011). However, the smaller technological advances made during that time enabled users to share their files with increasing ease and speed and thus slowly created a downloading culture (Williams, Nicholas, & Rowlands, 2010). The current state of the internet allows users to download complete movies in less time than it takes to watch them, making file sharing rapid and accessible to anyone with an internet connection (Van Dijk, 1999).

Because of this accessibility, the continuous rise in the number of users, and their right to privacy, it is difficult to track what files

are being shared (Johnson, McGuire, & Willey, 2008). Most internet users know, however, that the creators of some of these files did not necessarily intend them to be shared. Sharing communities circulate vast amounts of copyrighted material among their members, in most cases without any compensation to the owners of the material. The exact statistics on this topic are difficult to compile because of the decentralized manner in which modern sharing methods operate. Most of these programs involve direct peer-to-peer sharing (for an overview of technologies in this field, see Johnson et al., 2008), in which each user uploads and downloads files at the same time. Users are usually only connected to each other, making any form of centralized tracking extremely difficult. Oberholzer and Strumpf (2004) managed to compile a dataset that is based not only on survey responses but also on tracking statistics. Although their data are from 2003, when the sharing community was still arguably in its infancy, the larger networks boasted millions of simultaneous active users, a large number of whom exchanged copyrighted material on a daily basis. Although the relevant data could not be measured directly, Oberholzer-Gee and Strumpf (2010) reviewed several methods of obtaining indicators of file sharing, suggesting that in 2006, around approximately half of the bandwidth used in the United States was used for this activity.

This phenomenon continually upsets the major intellectual property markets, with many stakeholders in the music and movie industries frequently attempting to prosecute not only the parties

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that facilitate file sharing but also the offending individual users (Bhattacharjee, Gopal, Lertwachara, & Marsden, 2006). The music industry specifically cited the emerging downloading culture as the primary cause of the drop in reported sales. Although Oberholzer and Strumpf (2004), using empirical data gathered online, failed to correlate these phenomena significantly, their findings did not stop the industry (or other researchers) from considering this apparently spurious connection as real (e.g. Al-Rafee & Cronan, 2006). Researchers then developed their own theories from this perspective, vilifying the downloading community as parasitic and criminal (Yar, 2005).

The aim of this article was to provide objective insight into the factors that influence people's movie downloading behavior. Two research questions were the focus: What psychological factors affect downloading behavior, and how do these factors relate to one another? To properly frame the research, the following sections examine the context for movie downloading, including the history of piracy, the modern regulatory environment and the differences among software, music and movies with regard to downloading. Consequently, the models previously used to correlate the factors that influence downloading behavior were discussed, and a new model was proposed as a means of integrating factors from the relevant previous research with more recent findings and logical additions.

1.1. Background

It has been an interesting decade for the 'digital pirates' of the world. From the turn of the millennium to the time when this article was written, many factors shaped the landscape. As discussed above, governments were only beginning to respond to the problem and instituted laws that were often not suitable for a population that was spending increasing amounts of time online. Internet bandwidth soared, placing the Netherlands in the top 10 of digitally included countries (Intel Digital Inclusion, 2010). In 2000, only 16 of every 1000 residents of the Netherlands had access to broadband internet. By 2010, this number had risen to 378 per 1000 (Organisation for Economic Co-operation, 2010).

However, even before the advent of the internet, movie piracy was already a known issue. The difference between the phenomenon researched in the present study and that observed in the 1980s and 1990s was commercialism. Piracy was a thriving and profitable market, especially in the Russian Federation (Yar, 2005). Factories were able to copy and print copyrighted DVDs (and the older VHS technology) cheaply. Because these fake prints were cheaper than the distributor versions, it is reasonable to assume that many consumers opted to purchase these "fakes" instead of their original counterparts. Yar reported in 2005 that this type of piracy was still taking place. While this sector may remain profitable even today, it is safe to say that in the Western countries, downloading movies without paying for them has overtaken commercialist, organized piracy in terms of the number of units moved.

1.2. Legislation

Unfortunately, despite the mostly negative perspectives held by legislators and industry lobbyists toward downloading and the controversial nature of the topic, the Dutch government has failed to clarify the current applicable laws. In fact, a minor qualitative investigation indicated that the Dutch people were largely unaware that simply downloading a movie is completely legal on its own (Engelfriet, 2008). Both music and movie files are legally downloadable. However, downloading computer software or uploading any of these three file types is punishable by law. These freedoms stem from the urge to protect consumer autonomy; it is completely legal to create copies of certain media for home use.

The law does not specify whether users need to have purchased this item themselves. Furthermore, legislators have acknowledged the difficulty of demanding that all downloaders completely verify their sources before downloading. Although lobbyists, such as the BREIN foundation (<http://www.anti-piracy.nl/home/home.asp>; text is available in English), have attempted to completely outlaw file sharing, the government has been slow to react, leaving the current state of affairs intelligible only to those who take the time to study it. A small Dutch political party, the Piratenpartij, promoted changing copyright laws to legalize more aspects of file sharing. Although they failed to garner enough votes to win the election into the Dutch governing body, they have added to the controversy surrounding the topic.

The United Kingdom takes a firmer stance on this issue. Not only is downloading a movie (or any other media file) completely illegal, but the government is also taking steps to make Internet Service Providers (ISPs) liable for prosecution if they do not stop their customers from downloading (Elliot, 2008), although this step may not be feasible. The United States also forbids all downloading and uploading of media.

Al-Rafee and Cronan (2006) noted another problem with this type of legislation: that downloaders seemed to have little fear of getting caught. Whereas the Dutch laws do not clearly communicate that downloading is not illegal, downloaders in other countries did not seem to feel any anxiety about their actions. Al-Rafee and Cronan (2006) identified two reasons for this. First, the people who are prosecuted usually are not end-users; instead, they are groups of people who openly lead the way for other downloaders, championing new technologies and uploading large amounts of pirated media. Second, media coverage of end-user prosecution has not been publicized sufficiently widely. It was suggested that better coverage of the consequences for file-sharing communities would act as a deterrent, especially if combined with tougher laws.

1.3. Movies versus music

Most researchers working on this topic have focused on downloading music, which is the most widely controversial subject, not least because of the outcry by record labels and artists in the last decade. In the discussion of downloading activity, music, movie and software downloading are often not differentiated, which can naturally lead to inaccurate conclusions. Taylor, Ishida, and Wallace (2009) expressly avoided this problem by categorizing downloaders into movie and music consumers. The parameters of music downloads are often completely different from those of movie downloads. For example, because of bandwidth constraints, downloading a movie was more of a chore in the past, which discouraged potential downloaders. Whereas the average MP3 music track is approximately 3 megabytes in size, the average AVI file for a 1.5-h feature film is approximately 700 megabytes. The AVI format is the current standard in the downloading community, although it is slowly being overtaken by newer formats that more readily support higher quality video as the bandwidth continues to grow. Hypothetically speaking, the way movies and music are consumed may differ radically, and the same may be true for software and television series. Television series, although otherwise similar to movies, are also unique because of their shorter, episodic content and their availability. Whereas movies can easily be imported when they are unavailable in a potential buyer's region, series are often more expensive, come without appropriate subtitles or voice-overs, or are simply not available for purchase.

Although the exact influence of these factors has not been shown, they clarify that researchers should not overlook which format they are researching. The current study focused on the exchange of movies: more specifically, commercially produced

entertainment films that can either be purchased on DVD (and possibly imported) or observed in movie theaters.

1.4. Past models of downloading

Many researchers have attempted to explain why users continue downloading behavior despite attempts to discourage it (e.g. Al-Rafee & Cronan, 2006; Cronan & Al-Rafee, 2008; LaRose & Kim, 2007; Taylor et al., 2009). However, the issue is complex, and it is apparent that differences in downloading behavior and affinity cannot be accounted for by the variance in a single observable factor. A number of behavioral models have therefore been employed to determine what factors underlie an individual's downloading behavior. Prior to establishing a new model, we reviewed earlier models from similar studies.

Cronan and Al-Rafee (2008) proposed a specific revision of the theory of planned behavior (Ajzen, 1991) that highlighted several factors. These factors included the intention to perform the behavior, attitude toward the behavior, subjective norms (the way an individual believes his/her social group feels about the behavior), the behavioral control that an individual believes he/she has over the behavior, the extent to which the individual has performed this behavior in the past, and finally, the individual's sense of moral obligation, described as “*the feeling of guilt or the personal obligation to perform or not to perform a behavior*” (Cronan & Al-Rafee, 2008, page 530). In this study, the intention was influenced by all of the other factors, which in turn affected downloading behavior.

Taylor et al. (2009) adapted the model of goal-directed behavior for use in explaining the behavior of movie and film downloaders. Apart from the factors of intention, past behavior, and subjective norms, which combine to create a model similar to that based on the theory of planned behavior, more emphasis was placed on the individual's motivations and needs. Hedonic and utilitarian attitudes were measured as well as anticipated negative emotions and anticipated regret.

Compared with the previous researchers, LaRose and Kim (2007) were less insistent on blaming the downloading community for decreases in revenue and looked to Bandura (2001) to adapt social cognitive theory. After comparing that theory to the theory of planned behavior, LaRose & Kim named the factors as intention to continue, expected outcome (including social, novelty-seeking and economic expected outcomes), self-efficacy (the extent to which an individual is confident that he/she can perform a behavior), deficient self-regulation (the extent to which the behavior is out of the conscious control of the individual) and finally, moral justifications and descriptive norms. Although they followed Cronan and Al-Rafee in many respects, LaRose & Kim went further in noting the less conscious influences on this behavior, operationalized as deficient self-regulation.

1.5. New model of movie downloading behavior

To determine the personal factors that might influence Dutch downloaders, all of the conditions above needed to be considered. The instability and lack of clarity of laws, the rapid changes in connectivity solutions and internet bandwidth, the growing number of downloaders who feel comfortable using it, and the growing sense of community that people feel online may all be important for users deciding whether to download movies. None of the models mentioned used all of these factors in their efforts to explain variance. To bring these models up to date, it was therefore beneficial to revise and further develop them.

Social cognitive theory, proposed by Bandura (1986) and adopted by LaRose & Eastin (2004), LaRose & Kim (2007), served as the theoretical background for this endeavor. In a review of mobile communication technology use Peters (2007) compared three

models with competing theoretical backgrounds, one of which was the new model of media attendance proposed by LaRose, Lai, Lange, Love, and Wu (2005) and inspired by social cognitive theory. Although this model did not explain a higher percentage of variance than all of the models compared, the new model was nevertheless promising in terms of its ability to explain and predict media use. Peters (2007) also recommended applying this model to other media technologies.

The newer social cognitive theory model of normative influence and tested by LaRose and Kim (2007) included the following factors: the dependent variable, intention to continue, and the explanatory variables, which are the expected outcomes (social, novelty-seeking and economic expectations), self-efficacy, deficient self-regulation, moral justification and descriptive norms. These factors and the structure of their relationships were established following LaRose (2007).

To improve the clarity of the dependent variable, it was changed from intention to number of downloads: i.e., the estimated number of movies downloaded per month as self-reported by the user. This made it possible to categorize users according to the strength of their habits.

Because of the uniquely unclear state of Dutch laws at the time of writing this paper, it was logical to use knowledge of laws as an expected outcome and indirectly as an explanatory variable affecting the number of downloads. The aim was to determine whether the current course of action of lobbyists and legislators is proving effective as a deterrent.

To account for the differences between the medium researched in LaRose and Kim (2007) – which was music – and that researched in the current study, the novelty-seeking motivation was separated into two factors more applicable to movie downloading. The items used by LaRose & Kim described the desire to sample new and rare music. Although similar motivations probably motivate some movie watchers, it could be argued that two motivations drive movie watching: novelty compulsion and completionism.

Novelty compulsion measures the drive to see new and different movies. When an anticipated movie arrives at theaters, bootlegged versions often appear online the next day, showing evidence of this drive. These versions, known as CAMs, are recorded in movie theaters using a camera/camcorder. The low video and audio quality of these files fail to dissuade eager viewers, with thousands of users signing into peer-to-peer networks to download them.

Completionism measures a similar drive: the desire to simply see a large number of films. A completionist user will go out of his or her way to download rare films but does not necessarily seek new experiences like someone driven by novelty compulsion.

Self-efficacy and deficient self-regulation were used largely as they had been in the past due to the stability of the variance explained in the studies that employed them. The former measures an individual's confidence in his/her ability to download movies, whereas the latter detects how embedded downloading movies has become in the daily behavior of the user. Deficient self-regulation was also used to measure the level of “addiction” that the user exhibits, giving it a slightly negative connotation.

The economic expected outcome factor indicates whether the downloader believes that he or she is saving money by downloading. Downloaders were also asked whether they believed that they watch more movies because it is possible to download them. The social expected outcome was altered slightly to reflect the fact that movies are social events for many consumers. Although many downloaders may watch movies on their own, their social environment might exert an influence on the way their behavior is perceived. A social milieu that has a negative view on downloading may change the attitudes of downloaders, causing them to download less.

The descriptive norms factor was expected to be influenced by the social environment. This factor measured the attitude of the individual regarding the downloading of movies and how he projects this onto his environment. The subjects were told what term is used for their activities by opponents of downloading, i.e., “movie piracy,” to determine how they view themselves in that regard.

The final factor, moral justification, is closely linked to descriptive norms because it measures the moral attitude of an individual toward the behavior. In this research, the subjects were asked about their coping methods (e.g., compensating for downloading by buying films or placing the responsibility elsewhere). Although this factor was closely linked to the descriptive norms factor, the latter reflects the norms of the downloader’s culture, oral justification reflects the beliefs of the individual regarding the ethicality of downloading.

All of these factors were integrated into a new conceptual model to explain why certain users download more than others (Fig. 1). Expected outcomes, deficient self-regulation, descriptive norms and moral justification influenced the number of downloads directly, while knowledge of laws, self-efficacy and the social environment exerted their influence indirectly through expected outcomes and descriptive norms, respectively. Only expected outcomes was a latent variable, and the data were measured through the outcome categories: completionism, novelty compulsion, economic, knowledge of laws, and social expected outcomes.

1.6. Hypotheses

Based on this model, the following hypotheses emerged:

Hypothesis 1. Deficient self-regulation is directly and positively related to the number of downloads.

H2. Moral justification is directly and positively related to the number of downloads.

H3. Descriptive norms are directly and positively related to the number of downloads.

H4. All of the expected outcomes are positively related to the number of downloads, which are

H4a. Completionism.

H4b. Novelty compulsion.

H4c. Economic expected outcomes.

H4d. Knowledge of laws.

H4e. Social environment expected outcomes.

H5. Knowledge of laws is directly and positively related to expected outcomes (and indirectly related to the number of downloads).

H6. Social environment (expected outcomes) is directly and positively related to descriptive norms (and indirectly related to the number of downloads).

H7. Self-efficacy is directly and positively related to expected outcomes (indirectly related to the number of downloads).

An important side note regarding H5 and H4d: It was expected that because of the positive legislation regarding movie downloading, downloaders with a clearer understanding of the current laws would be motivated to download more. Anxiety about getting caught was expected to drop sharply (if it was present to begin with), leading to a higher download figure. This would mean that by failing to clarify the current legal situation lobbyists and anti-piracy organizations were succeeding in their attempts to reduce downloading.

2. Methods

2.1. Sample and procedure

To reach as many downloaders as possible, a link to a questionnaire was placed on a Dutch online technological forum, Gathering of Tweakers (gathering.tweakers.net), and on a University of Twente newsgroup focused on movies. The study was also entered into the University of Twente experiment management system, and the students who participated were rewarded with credits.

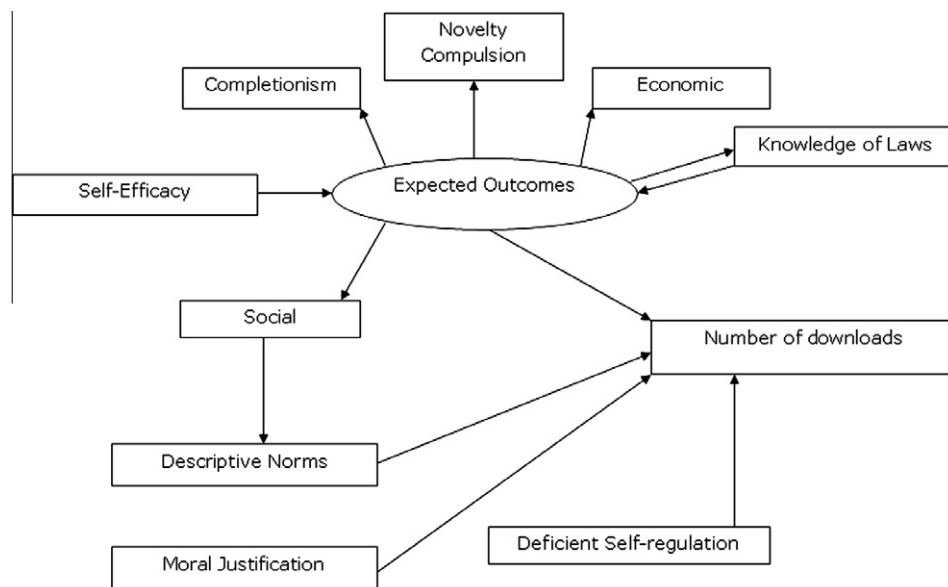


Fig. 1. Conceptual social cognitive theory model of downloading behavior.

The questionnaire was begun 436 times. An overview of the dataset found that 62 entries (14%) were incomplete or improperly completed (for example, the respondent indicated that his/her age was 1000 years). After the removal of these entries, 374 respondents remained. Twenty-six respondents indicated that they never download movies, which meant they did not complete the whole questionnaire. These entries were separated from the downloading portion of the sample. The remaining 348 respondents downloaded an average of 6.4 movies per month, with a standard deviation of 8.8. Of those 348 downloaders, nearly 90% were male, with slightly more than 10% indicating that they are female. The mean participant age was 26.5 years and ranged from 14 to 51 years. Nearly a quarter of the sample (85 respondents) consisted of individuals studying Psychology, Communication Studies and Information Sciences at the University of Twente. The remainder of the sample (263 respondents) was not enrolled at the University of Twente. The questionnaire did not inquire about the occupations or education levels of these individuals.

2.2. Questionnaire

The online questionnaire included six pages. After the introductory information came a page of basic gender/age items and a question intended to verify that the respondent was a student at the University of Twente. The respondents were then asked how many movies they normally download per month. If the reply was, "I don't download any movies", the respondent was linked to the last page of the questionnaire. The downloaders, in contrast, would then respond to the 41 factor-related questions. To allow for greater variance resolution, a 7-point Likert scale was used that ranged from 'completely disagree' to 'completely agree'.

Because LaRose and Kim (2007) studied many of the same factors, several items were adopted from their study and translated into Dutch. The items were also made more specific such that they pertained solely to the act of downloading movies. The complete list of items can be found in Table 1. Because several factors were entirely new, original items were created. The factor knowledge of laws is unique in that it allows for the direct and objective measurement of respondent knowledge. Two items were included that posed questions about the legality of downloading/uploading. These items were inserted after those concerning self-reported knowledge of laws to ensure honest and unframed responses.

For exploratory purposes, the two last pages were devoted to the items outside of the range of the current model. Respondents who did not report downloading movies were asked about the attitude of their social environment regarding downloading and were also asked the knowledge-based questions. The respondents were asked about their interest in a hypothetical online film-sharing service provided that the costs were not too high (7-point Likert). They were also asked if, in the event that such a service were offered, they would download fewer movies through currently available channels (7-point Likert). One item concerning fear of "getting caught" was used (7-point Likert), although based on the results of Al-Rafee and Cronan (2006), it was not expected to vary a great deal. Several multiple-choice items concerning downloading characteristics were used: the media format most often downloaded (e.g., the CAM format mentioned above or conversion from retail DVDs, among others), the environment in which the respondent watches the films most often (alone or with friends), the preferred downloading method (via peer-to-peer networks or centralized pirate servers), and finally, the uploading habits of the respondents. This last item was taken into account because of the contrast between the legality of simply downloading and that of sharing files fully. Finally, the questionnaire asked about the number of physical movies the respondent had in her/his home at that time. Downloaders with a large collection of movies might be said to be

compensating for their downloading behavior; thus, their answers to this question might complement their responses to the questions regarding moral justification.

2.3. Data analysis

In this study, structural equation modeling was conducted using Amos 18.0. All models are analyzed based on maximum likelihood estimation. As suggested by Holbert and Stephenson (2002), the following model fit indices will be used. First, the Chi-square estimate with degrees of freedom will be used, as it remains the most commonly used means to make comparisons across models (Hoyle & Panter, 1995). The ratio between the Chi-square and the degrees of freedom should not exceed 5 for models with a good fit (Bentler, 1989). In addition, the standardized root mean squared residual (SRMR) is used as a second absolute fit statistic (Hu & Bentler, 1999) in combination with the Tucker–Lewis index (TLI) as an incremental index and the root mean squared error of approximation (RMSEA) (Browne & Cudeck, 1993). Hu and Bentler (1999) recommend using a cutoff value close to .95 for the TLI in combination with a cutoff value of .09 for the SRMR to evaluate model fit and an RMSEA value of .06 or less.

3. Results

3.1. Pre-test

Before analyzing the model fit, the items were tested for common factors using principal component analysis. Items with highly correlated error variance and items that loaded poorly onto their unique factor were removed. This procedure reduced the number of items (see Table 1).

3.2. Structural model

The results obtained by testing the validity of the hypothesized model showed that the initial model did not fit the data well, $\chi^2(33) = 292.43$, $p < .05$, $\chi^2/df = 8.86$, SRMR = .163, TLI = .389, RMSEA = .151 (90% confidence interval, CI: .135, .167).

An inspection of the modification indices of the structural model suggested that the fit improved when self-efficacy, moral justification, and the path from knowledge of laws to expected outcomes were removed from the conceptual model. Furthermore, inspecting the modification indices suggested a path from deficient self-regulation to descriptive norms, implying the influence of habit-driven downloading on the way in which a downloader views his or her behavior compared to that of his or her environment. A correlation between the error terms deficient self-regulation and expected outcomes was also suggested, as was a correlation between the error terms descriptive norms and novelty compulsion, lending further credence to the notion of the mutual background of these two categories.

The re-specified model generated a good fit, $\chi^2(15) = 17.09$, $p > .05$, $\chi^2/df = 1.14$, SRMR = .031, TLI = .991, RMSEA = .020 (CI: .000, .056). Fig. 2 shows the model with the standardized estimates. All paths are significant at the $\alpha < .05$ level. As shown, 22.7% of the number of downloads is explained by the three predictors expected outcomes ($\beta = .227$), descriptive norms ($\beta = .183$) and deficient self-regulation ($\beta = .200$). The correlation matrix is presented in Table 2.

Now that the model in Fig. 2 shows satisfactory fit levels, the hypotheses can be evaluated. The first hypothesis predicted that deficient self-regulation would have a positive effect on the number of movies downloaded per month. This hypothesis is supported by the current data, with a standardized estimate of .20 and a

Table 1
Items used in survey.

Category/item	Mean	Standard deviation
Self-efficacy ($\alpha = .76$)	6.37	.88
I am good at downloading movies	6.44	1.30
It is not hard for me to avoid spyware and viruses when I am downloading movies	6.28	1.61
I know how to use downloading software (usenet clients, P2P clients)	6.28	1.50
I am capable of finding decent versions of movies I want to download	6.48	1.01
I can usually find the movies I am looking for	6.22	1.19
When I am downloading movies, I do not have to think about how to do this	6.50	1.12
Descriptive norms ($\alpha = .54$)	4.76	1.49
I am proud of being a 'movie-pirate'. (excluded from further analyses)	3.52	1.56
I know a lot of people that download more than I do	5.09	1.86
I download fewer movies than the average student	4.42	1.73
Deficient self-regulation ($\alpha = .60$)	2.99	1.00
Sometimes I download movies without actually considering it	3.27	2.08
Downloading movies has become a habit for me	4.31	1.99
I download so much movies that it is disrupting my life	1.21	.68
I get upset when circumstances like a bad connection stop me from downloading movies	2.84	2.01
I often download more or less the same amount of movies every week, even when I cannot find movies I really want to see	1.53	1.10
If from now on I could never download a movie again, I would be very upset	4.76	2.04
Moral justification ($\alpha = .73$)	4.63	1.10
It is the movie industry's responsibility to prevent piracy (downloading movies without paying for them), not mine	4.30	1.75
Everyone's downloading movies, so I get to do it too	3.25	1.84
Movie piracy is not a (serious) problem	4.94	1.70
I allow myself to download all the movies I want	6.04	1.82
I compensate for my downloading behavior by purchasing movies I appreciate. (excluded from further analyses)	4.07	2.15
<i>Expected outcomes</i>		
Economic ($\alpha = .45$)	4.97	1.40
Downloading movies saves me money	4.24	2.19
If I were to buy or rent the movies I currently download, or if I went to see them in movie theaters, it would be too expensive for me	5.00	2.13
I watch a lot more movies now than I would if I was not able to download them	5.67	1.73
Social ($\alpha = .54$)	2.53	.89
I often download movies in order to watch them with friends	4.07	1.93
I often talk with my friends about the movies we download	4.22	1.92
I feel connected to a downloading community (a P2P-network like BlackCats or Demonoid)	2.25	1.69
If my friends would disapprove of me downloading movies, I would probably do it less	2.09	1.28
Among my friends, downloading a lot of movies is considered normal behavior	5.18	1.57
Novelty compulsion ($\alpha = .55$)	4.22	1.39
I prefer seeing newly released movies as soon as possible	4.23	1.97
I keep an eye out for new movie releases	3.94	2.05
When downloading, I prefer movies I am unfamiliar with. (excluded from further analyses)	4.09	1.77
I am always searching for new experiences as far as watching movies is concerned	4.13	1.71
When hearing about a movie I have not seen yet, I am usually eager to download them	4.60	1.69
Completionism ($\alpha = .63$)	3.66	1.22
I would love to download all of the good movies	4.67	1.97
I try to keep good movies I have downloaded and seen for as long as possible	4.25	2.24
I want to have seen as much movies as possible	3.33	1.86
Sometimes, it takes a while for me to find a movie to download that I have not seen before	2.76	1.64
I often try to download rare movies	3.30	1.90
Knowledge of Laws attitude ($\alpha = .66$)	4.88	1.50
I am aware of the Dutch laws surrounding the topic of downloading movies	5.43	1.68
I follow the developments around lawsuits concerning the downloading of movies (like those surrounding Piratebay en BREIN/BAF)	5.16	1.82
I am aware of the Piratenpartij's major party views.	4.05	2.15
Knowledge of Laws objectified	.78	.35
Knowledge question 1: Downloading legality (correct: true/false)	.84	.37
Knowledge question 2: Uploading legality (correct: true/false)	.73	.44

significance level between .05 and .01. The second hypothesis is rejected because moral justification was not significant. Its standardized estimated effect on the two models was approximately .05. The effect of descriptive norms on downloading proved to be significant even when applying an alpha of .001, leading to the conclusion that hypothesis 3 holds true with this dataset.

The following 5 hypotheses (H4 a through e) are all confirmed in this sample because the five subcategories of expected outcomes are significantly influenced by this factor. In summary, the five subcategories of expected outcomes had the following standardized estimates: completionism, .61; novelty compulsion, .66; economic outcomes, .47; knowledge of laws, .29; and social outcomes, .46. All five of the effects are significant below $p = .01$. The expected outcomes also had a significant influence on the number of downloads with a β of .23.

Because the influence of knowledge of laws on the number of downloads had to be removed from the model to facilitate the model computations, its direct effect is measured separately. In a univariate analysis of variance, the influence of this factor did not prove significant at an alpha of .05 ($F(21,327) = 1.44$ with $p = .097$). It is barely significant at the .10 level, suggesting that it was appropriate to remove that link from the analysis. Because the direct effect of knowledge of laws on expected outcomes and its indirect effect on the number of downloads could not be calculated, the fifth hypothesis is disregarded.

Social expected outcomes showed a significant effect on Descriptive Norms with a standardized estimate of $-.13$ ($p = .012$). Why this estimate is negative will be discussed in the Conclusions and Discussions section. For now, hypothesis 6 is accepted based on this sample.

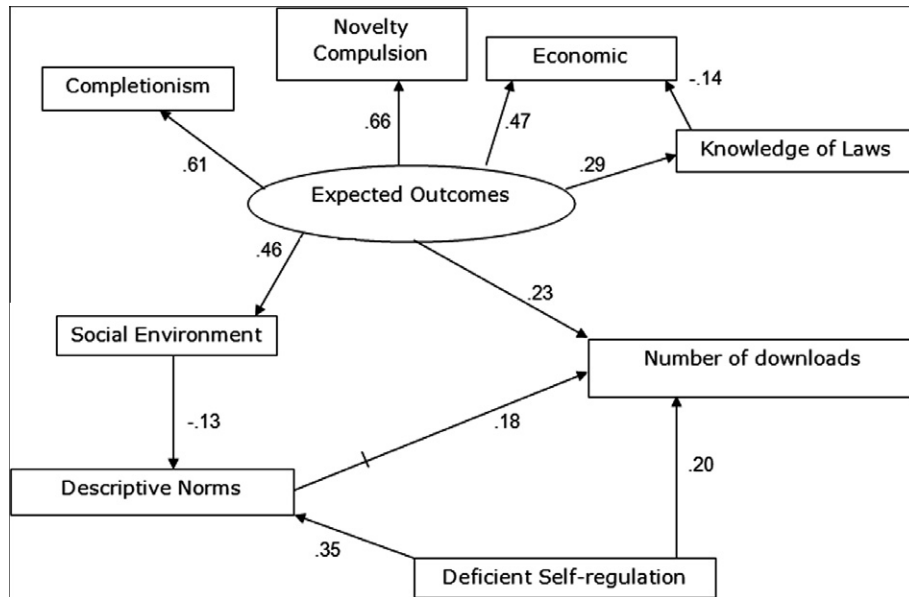


Fig. 2. Final model of downloading behavior with standardized estimates. All paths are significant at $p = 0.05$.

Table 2

Covariance matrix of the model categories.

Covariance Matrix	1	2	3	4	5	6	7	8	9	10
1. Number of downloads	77.68									
2. Self-efficacy	8.82	27.89								
3. Economic E.O.	6.36	.90	17.61							
4. Social E.O.	4.42	-.71	4.83	19.61						
5. Completionism E.O.	15.06	1.38	5.00	7.58	37.29					
6. Deficient self-regulation	22.08	6.06	7.72	8.71	15.97	36.24				
7. Knowledge of laws E.O.	7.85	11.17	.02	1.60	5.63	7.37	23.42			
8. Descriptive norms	7.42	2.45	.95	-.25	3.45	5.22	1.32	8.41		
9. Novelty compulsion E.O.	13.88	5.20	7.03	7.55	15.08	15.22	4.11	4.23	30.88	
10. Moral justification	7.11	3.58	3.73	2.08	5.11	8.59	5.98	.53	3.88	19.52

Note: The numbers displayed in the top row point to the categories in the first column.

The last hypothesis proposed in the introduction addressed the influence of self-efficacy on the expected outcomes. In both of the earlier revisions of the model, self-efficacy was not significantly correlated with this latent variable. Removing this variable from the model actually greatly boosted its fit and made the influence of expected outcomes on the number of downloads significant. Self-efficacy as a category returned an average value 6.37 of 7, with a tight standard deviation of 0.88 (see Table 1). Therefore, hypothesis 7 is rejected.

3.3. Univariate analyses

Several items were added to the survey to probe the attitudes of current downloaders about factors outside the model, as previously discussed. Although this section will focus more on simply displaying the data gathered, one item is worth comparing with the data used in the model: the fear of being prosecuted. Consistent with the findings of Al-Rafee and Cronan (2006) indicating that downloaders show little fear of getting caught, the average value returned for the entire sample is 6.0 of 7 where the item is posed negatively (i.e., "I am not in the least afraid of getting arrested for my downloading or uploading behavior"). Only 12.9% of the respondents admitted neutral or anxious attitudes. A univariate analysis of variance proves that this item did not significantly affect the number of downloads ($F(6,342) = 1.011, p = .418$).

However, knowledge of laws was found to have a significant effect on prosecution anxiety ($F(21,327) = 2.172, p = .002$).

Two-thirds of the downloaders sampled in this study responded positively to the idea of a service that offers downloads for a nominal fee ($M 4.9$ of 7), with 55% indicating their willingness to download fewer movies through current channels if such a service existed ($M 4.5$ of 7). The comments section provided a chance for many of the participants to specify caveats related to this option; for instance, the service would have to offer a variety of content and match the content available in the downloading communities. Many file-sharing communities offer movies that are no longer in print because of their age or a lack of sales. Staggered release schedules (for example, when films arrive on DVD in the US before they do in the E.U.) also cause frustration in eager viewers. Of course, the fees that such a service would charge need to be minimal, although many respondents have noted they agree to the fees most video rental stores charge.

Four items were included to explore the way in which downloaders consume movies. The first asks the respondents about the format in which they usually download movies. Although most viewers (71.0%) opt for the community standard DVDrip (in which video files are transferred from an original DVD source), the BluRay format is swiftly becoming popular (70.7%). The latter format takes advantage of the ever-increasing market penetration of HD-capable monitors and television sets. Only 1.4% of the respondents indicated that they usually download CAM versions, negating the

suspicion that downloaders would rather view films early than download high-quality files. The other formats that are inferior to DVDrips in terms of quality, Telesync (which consists of CAM video and directly captured audio) and R5 (a Russian type of DVD that is usually available before those in other regions), attract 4.0% and 26.4% of the downloading community, respectively. Although the quality of the R5 files is certainly superior to that of the CAM and Telesync versions, there is still a tradeoff between early viewing and version quality.

Regarding movie watching as a social activity, it should be noted that a little less than 50.6% of the sample prefers to watch movies alone. This group of participants is evenly divided between those who watch movies on the computer and those who watch them on a television screen. In contrast, 44.3% of viewers prefer to watch movies together, with most of these get-togethers taking place in front of the television (35.9% of the total sample). The remaining downloaders did not indicate a preference.

In downloading movies, the peer-to-peer BitTorrent client is most often used, with more than 42% of respondents using the protocol to automatically download their movies from peer clouds. However, 39.4% of the respondents prefer to download from Usenet, a downloading service that charges minimal monthly subscription fees. A third category of respondents downloads files directly through File Transfer Protocol (FTP) servers. This category includes Usenet clients. Such clients do not need to upload files back into the community.

Such clear categories do not exist among those who upload movies. Although 44.5% of users do not have the opportunity or obligation to share their downloads with others, the second largest portion (17.8%) simply does not pay attention to their uploading. Other downloaders either upload files according to a set ratio of downloaded to uploaded data (14.7%) or simply leave their files available for download for extended periods of time (8.9%).

The last non-model-related item asked about the amount of copyrighted material the respondent had purchased or received through regular commercial channels. Of all of the downloaders, 35.6% owned between 1 and 25 DVD or BluRay discs or VHS tapes at the time of the survey. Another 36% of downloaders owned between 25 and 100 movies. Only 4.6% of the respondents did not own any original hardcopies of films at that time.

Although the non-downloaders were not asked to answer most of the questions in the survey, both the downloaders and the non-downloaders answered three questions: they addressed the final social expected outcomes question and the two knowledge-based questions about legislation. Although the group sizes are completely different (348 versus 26), independent sample *t*-tests were performed on these three items. Because they were drawn from the same sample, equal variance was expected of the different groups. Any differences found were not significant. Interestingly, the results of the first knowledge-based question were completely insignificant ($p = .677$) with a 95% confidence interval, showing that neither group was more knowledgeable. The answers to the second question provided by the downloading group were not significantly more correct ($t(372) = 2.096$, $p = .037$ assuming equal variance).

4. Discussion

It is clear that the model proposed in the introduction needs to be revised. Not only have self-efficacy and moral justification failed to significantly affect the number of downloads, but also having failed to foresee the mathematical impracticality of the two-way connection between the participants' knowledge of laws and the latent expected outcomes required a change in the proposed model. The resulting final model of downloading behavior, shown

in Fig. 2, benefits from these results and exhibits greater parsimony.

Given the acceptance of hypothesis 4, it seems that deeply embedded habits are correlated with a higher level of consumption. Peters (2007) noted the same effect when using the new model of media attendance but indicated that for established technologies, this effect is greater. The current data indicate a near-tie in this regard between the estimated standardized effects of the expected outcomes and deficient self-regulation. It appears that although downloading as a whole is an established activity, the particulars (such as the level of knowledge and economic interest) are still in constant flux, leading to both habituation to downloading and an awareness of the expectations.

Moral justification, unlike deficient self-regulation, was not significant in either version of the model, and the standardized estimate never rose above .06. The current generation does not seem to harbor many moral qualms about downloading movies. This conclusion is easily reached given that the average response of the downloaders regarding the proposition "I can download as many movies as I want" is 6.04 of 7. The data from our model computations, which show that the variance in the items for moral justification is not significantly correlated with the changes in the number of downloads, are also consistent with these results.

The data show that the descriptive norms do have a significant influence on the dependent variable, although to achieve homogeneity among the items, one of the three items had to be removed. The sample surveyed did not respond to the proposition "I'm proud of being a 'movie pirate'" the same way as they did to the other items regarding comparisons to others. This reflects a negative attitude toward the label 'pirate' or at least toward the way in which it was used in the survey.

Completionism and novelty compulsion are more commonly indicated than the expected economic outcomes. This might indicate that although downloading movies is cheaper than renting or purchasing them, this does not have as large an effect on the model as does the motivation to see rare and new movies. A possible explanation for this finding is that buying movies and wanting to see movies are increasingly disconnected from one another. Downloaders do not download movies because they would otherwise have to spend money; rather, they do so because they want to see a lot of movies.

Although knowledge of laws is a valued component of the expected outcomes, any direct effect on it is questionable. However, it is still worth noting the significance of this variable in the current model in light of the unique circumstances that exist in the Netherlands today. It seems clear that whereas lobbyists' efforts to hinder downloading activity by attempting to keep the population confused regarding the legislation are arguably effective, more definite legal constrictions will influence how much people will download.

The significant influence of knowledge of laws on the expected economic outcomes is negative, raising a new question: Why are attitudes toward and knowledge of the current downloading laws lowering the expected economic outcomes? The significance of this effect cannot be overlooked and may present a new avenue of inquiry.

The influence of expected social outcomes on the descriptive norms is also negative. The expected social outcomes indicate the participants' perceptions of the general attitude toward downloading in their environment. Thus, these results could lead to a better understanding of the downloading behavior that this environment exhibits as indicated by the descriptive norms factor. The descriptive norms question was posed negatively (i.e., "I know lots of people who download more than I do"), but because the responses were recoded, the effect that this category had on the number of downloads was still positive. It can therefore be argued

that clearer respondent perceptions regarding their social circles lead more of them to believe that their peers download more than they do.

Returning to the rejection of the last hypothesis, it can now easily be argued that self-efficacy does not play a major role in predicting downloading behavior, were it not for the mean item score and its standard deviation. These data points imply a focused sample, which is probably the result of the high response rate attained from the technological forum, a population that is certainly not inexperienced in operating a computer. Another possible reason for the lack of influence of self-efficacy on the rest of the model is that downloading movies might not require a great amount of skill. The Internet is still maturing, and given the vast number of programmers and hobbyists willing to devote time and resources to developing easy-to-use software that is often open source, it is becoming progressively easier to navigate the Web and explore its possibilities. BitTorrent clients often come pre-installed with the advanced options set to optimized defaults, ensuring that even the most casual Internet users have access to and are able to participate in downloading communities.

The final model developed based on these analyses represents a community undergoing major shifts. The Internet is becoming faster and easier to use, and as a result, social changes are occurring to which many stakeholders are objecting. As the influence of self-efficacy and moral justification fades, for an increasing number of consumers, downloading is becoming second nature, and an activity that for many seems criminal does not concern downloaders much.

4.1. Limitations and recommendations

The current research was used to create a pool of 436 respondents. However, 75.6% of the usable portion of this pool consisted of visitors and contributors to the technological forum described in the section on the recruitment phase. Although they were more age-diverse than the population derived from the university, one factor was common to all of the respondents: an interest in technology and the digital universe. Although this sample was well suited to an exploratory study focused on movie downloading, the respondents did not significantly vary with regard to their computer skills. The previously reported small standard deviation associated with self-efficacy supports this theory. Three possible conclusions emerge from these findings. First, self-efficacy could be considered not to play a vital role in predicting downloading behavior. Second, a different sample might return completely different results in this variable category. Finally, the items used in this study were meant to be answered by the entire spectrum of the downloading community, thus leading to generalized propositions. More specific items could be used to separate the heavy downloaders from the casual ones and thus create greater variance.

The paths open to the category moral justification are less clear. Moral justification co-varies with deficient self-regulation and has a direct positive influence on the knowledge of laws. Although it exerts some influence within this model, moral justification cannot be said to have a significant effect on how many films that respondents download. It is recommended that this variable not be given primary consideration in future research, along with the fear of getting caught. In the current online and social cultures, downloading simply does not seem to be observed as deviant behavior, let alone theft, although this is how organizations, such as BREIN, view it.

The dependent variable used in this study is different from those used in previous research in that it allowed for greater response variance than a measure of intention. That a large number of respondents rounded off their answers indicates that they do not keep track of how much they download. Although the reported

figures may not be as accurate as is desirable in quantifiable research, the importance of perception in this matter cannot be ignored. If the respondents had been asked to estimate their downloading behavior on a 7-point Likert scale, the results for this item would likely be very similar to the results for the descriptive norms in that it would force them to think about what the researcher believes constitutes ‘a lot.’ Although LaRose and Kim (2007) had the respondents compare their behaviors only to their own past behavior, i.e., “Download more than last month” (page 272, item list), it would be interesting to more thoroughly investigate the phrasing of the dependent variable. Perhaps combining three different versions of this variable would yield more accurate results. At the very least, this would provide a more stable and truer method.

A similar problem exists regarding the sample itself. The current survey focused heavily on the act of downloading. It was therefore difficult to accommodate respondents who did not download movies. The three items mentioned in the Other Analyses section that were posed to both the 26 non-downloaders and the downloaders did little to represent the portion of the population that otherwise went unheard. Ultimately, to obtain comprehensive results, future research should survey those who do not download media files. Future studies may struggle to achieve a representative sample.

Because of the exploratory nature of the subject of this study, the internal consistency of some of the measures was not above the aspiration level. To obtain more discriminant validity, extended item batteries should be developed for downloading behavior that will better operationalize the measures.

As indicated in the final model presented in this study, the number of movies a person downloads is heavily influenced by how deeply embedded the behavior is in the person's daily routine. In all probability, efforts to reduce movie downloading without paying distributors need to take that finding into account. Another method of reducing the tension surrounding movie downloading is to take an in-depth look at the problem. Although it is most certainly beyond the scope of this article to imply that movie downloading does not have negative consequences, other research on profit reduction in media sales has not always correlated these faltering sales with the increase in downloading activity (Oberholzer & Strumpf, 2004). In addition, the current study indicates that there is most definitely interest in a service that could be used to distribute movies to consumers digitally while still paying the artists responsible for the films. Clearly, simply demonizing the downloading community might not be the only strategy or even the most effective strategy available to stakeholders and governments.

Social cognitive theory made it possible to identify and use seven observed factors to explain 22.7% of the variance in the number of downloads. Differences in the self-efficacy and moral justifications of the downloaders did not increase or decrease the number of reported downloads. Rather, deficient self-regulation, descriptive norms and five types of outcome expectations (social, completionist, novelty compulsion, economic, and law-related knowledge) represented the major intrapersonal predictors of downloading behavior in a model that exhibited good fit and parsimony. The lack of significance of self-efficacy and moral justification implied that this group of individuals did not worry about the ethics of their behavior or their ability to perform it. This is partially because downloading is embedded so deeply in their everyday lives that conscious thoughts about saving money had a smaller impact than the urge to watch more movies and seek new experiences. Future research should determine whether these effects can be replicated with a more representative sample and whether they will endure under the increasing pressure of stricter laws and the emergence of paid services that can compete with free downloads.

References

- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50(2), 179–211.
- Al-Rafee, S., & Cronan, T. P. (2006). Digital piracy: Factors that influence attitude toward behavior. *Journal of Business Ethics*, 63, 237–259.
- Bandura, A. (1986). *Social foundations of thoughts and action*. Englewood Cliffs, NJ: Prentice-Hall.
- Bandura, A. (2001). Social cognitive theory of mass communication. *Media Psychology*, 3, 265–299.
- Bentler, M. (1989). *EQS structural equations program manual*. Los Angeles: BMDP Statistical Software.
- Bijker, W. E., Hughes, T. P., & Pinch, T. J. (Eds.). (1987). *The social constructions of technological systems: New directions in the sociology and history of technology*. Cambridge, MA: MIT Press.
- Bhattacharjee, S., Gopal, R. D., Lertwachara, K., & Marsden, J. R. (2006). Impact of legal threats on online music sharing activity: An analysis of music industry legal actions. *Journal of Law and Economics*, 49, 91–114.
- Browne, M. W., & Cudeck, R. (1993). Alternative ways of assessing model fit. In K. A. Bollen & J. S. Long (Eds.), *Testing structural equation models* (pp. 136–162). Thousand Oaks, CA: Sage.
- Cronan, T. P., & Al-Rafee, S. (2008). Factors that influence the intention to pirate software and media. *Journal of Business Ethics*, 78(4), 527–545.
- Elliot, F. (2008). *Internet users could be banned over illegal downloads*. The Times. <http://technology.timesonline.co.uk/tol/news/tech_and_web/the_web/article3353387.ece>.
- Engelfriet, A. (2008). *De thuiskopie in het Nederlands auteursrecht* [The home copy in Dutch copyright]. <<http://www.iusmentis.com/auteursrecht/nl/thuiskopie/>>.
- Hilbert, M., & López, P. (2011). The World's technological capacity to store. *Communicate and Compute Information Science*, 332, 60–65.
- Holbert, R. L., & Stephenson, M. T. (2002). Structural equation modeling in the communication sciences, 1995–2000. *Human Communication Research*, 28(4), 531–551.
- Hoyle, R. H., & Panter, A. T. (1995). Writing about structural equation models. In R. H. Hoyle (Ed.), *Structural equation modeling: Comments, issues, and applications* (pp. 158–176). Thousand Oaks, CA: Sage.
- Hu, L.-T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling*, 6(1), 1–55.
- Intel Digital Inclusion Index. (n.d.). <<http://www.intel.com/intel/worldahead/>>.
- Johnson, M. E., McGuire, D., & Willey, N. D. (2008). The Evolution of the Peer-to-Peer File Sharing Industry and the Security Risks for Users. In *Proceedings of the 41st Annual Hawaii International Conference on System Sciences (HICSS 2008)*.
- LaRose, R., & Eastin, M. S. (2004). A social cognitive theory of Internet uses and gratifications: Toward a new model of media attendance. *Journal of Broadcasting & Electronic Media*, 48(3), 358–377.
- LaRose, R., & Kim, J. (2007). Share, steal, or buy? a social cognitive perspective of music downloading. *CyberPsychology & Behavior*, 10(2), 267–277.
- LaRose, R., Lai, Y.-J., Lange, R., Love, B., & Wu, Y. (2005). Sharing or piracy? An exploration of downloading behavior. *Journal of Computer-Mediated Communication*, 11(1).
- Oberholzer, F., & Strumpf, K. (2004). *The effect of file sharing on record sales: An empirical analysis*. Unpublished manuscript. Cambridge, Mass: Harvard Business School.
- Oberholzer-Gee, F., & Strumpf, K. (2010). File sharing and copyright. *Innovation Policy and the Economy*, 10(1), 19–55.
- Organisation for Economic Co-operation and Development. (2010). *Fixed (wired) broadband penetration and population densities*. Source OECD. <<http://www.oecd.org/dataoecd/21/60/39574903.xls>>.
- Peters, O. (2007). *Social psychological determinants of mobile communication technology use and adoption. A comparison of three models to explain and predict mobile communication technology behavior*. Doctoral dissertation. Enschede: University of Twente.
- Taylor, S. A., Ishida, C., & Wallace, D. W. (2009). Intention to engage in digital piracy: A conceptual model and empirical test. *Journal of Service Research*, 11(3), 246–262.
- Van Dijk, J. A. G. M. (1999). *The network society: Social aspects of new media*. Thousand Oaks, CA: Sage.
- Williams, P., Nicholas, D., & Rowlands, I. (2010). The attitudes and behaviours of illegal downloaders. *Aslib Proceedings*, 62(3), 283–301.
- Yar, M. (2005). The global 'epidemic' of movie 'piracy': Crime-wave or social construction? *Media, Culture and Society*, 27(5), 677–696.