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Abstract	The launch of several movie streaming services has raised new questions about how online consumers deal with both legal and illegal options to obtain their desired products. This paper investigates the factors influencing consumers' intentions to subscribe to online movie streaming services. These services have challenged the dramatic growth in their illegal counterpart in recent years. Taking the theory of planned behavior as a starting point, we extended existing models in the literature by incorporating factors that are specific to consumer behavior in this particular field. A quantitative survey was conducted for the Italian market, and structural equation modeling was used for data analysis. Attitudes, involvement with products, moral judgement and frequency of past behavior were found to be the most important factors in explaining the intention to pay for movie streaming services. The paper provides insights for policy makers and industry managers on the marketing communication strategies needed to minimize the risk of digital piracy.

1 # Lowering the pirate flag: a TPB study of the factors
2 # influencing the intention to pay for movie streaming
3 # services

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5 **Gianmaria Bottoni[2]**

6

8 **Abstract**
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21 cation strategies needed to minimize the risk of digital piracy.

22 **Keywords** Streaming services · Subscription intention · Movie industry · Digital
23 piracy · Structural equation modeling

24 ## 1 Introduction

25 Digital piracy has been threatening the software, music and movie industries
26 for decades [15, 81]. Peer-to-peer sharing, illegal downloads and streaming still
27 represent a convenient alternative to DVDs or subscription-based premium TV

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28 services. From 2011 to 2015, while file sharing has remained at the same level,
29 internet video traffic has grown by 176% globally [19, 20]. Both video streaming
30 and file sharing platforms (such as torrent platforms), however, have been primar-
31 ily used to avoid the payment of movies, thus resulting in the infringement of
32 copyrights, as demonstrated in several studies [30, 39].

33 The emergence and popularity of movie streaming services, i.e. an alternative
34 business model in which consumers pay a small fee for the right to temporar-
35 ily access a set of movies (without possessing physical files on their devices),
36 represents an interesting challenge from both the perspective of consumer behav-
37 ior and e-commerce technology. The global diffusion of online providers of on-
38 demand streaming media, such as Netflix, has in fact boosted the legal market and
39 rekindled the business and academic debate around digital piracy and purchasing
40 behavior [14, 18, 47, 82].

41 The literature has usually tackled this issue from the side of illegal download-
42 ing or streaming [69, 88], by focusing only on the factors that influence this dis-
43 honest behavior. In addition, legal sanctions seem to have had little impact on
44 reducing digital piracy [24, 28, 29, 70]. It is thus more effective to find alterna-
45 tive ways to encourage purchases, rather than discouraging the illegal acquisition
46 of media products. Extending our knowledge of consumers' shopping activities
47 on the Web, i.e. subscription-based streaming services, is therefore likely to be a
48 more effective way of dealing with digital piracy.

49 While the literature has highlighted the need to further explore the interac-
50 tion between legal and counterfeit products [17, 21], there is a marked paucity
51 of literature on the intention to pay for streaming media services while taking
52 into account the availability of illegal alternatives [14, 23]. Such scarcity is likely
53 to negatively affect the ability of policy makers and practitioners to change con-
54 sumer attitudes and behaviors toward digital piracy. Poort et al. [70, p. 391] sug-
55 gest that policy makers and industry managers should focus "on removing any
56 legal or practical obstacles for comprehensive and attractive legal online models
57 […]. Researchers could support this by studying the dynamics between the ade-
58 quacy of legal supply and file sharing".

59 This paper thus examines the determinants of consumer intentions to pay for
60 online movie streaming services in the context of the multiple alternatives avail-
61 able online, both legal and illegal. In fact, purchasing such services can be seen
62 as a kind of ethical behavior [16, 72]. In other words, the willingness to pay for
63 these services is deemed to be in opposition to the illegal acquisition, namely the
64 downloading or streaming of pirated files, rather than to not purchasing. Recent
65 studies seem to confirm that once an individual is willing to enjoy music or mov-
66 ies on the Internet, they have two main alternatives: to buy or to steal [82]. These
67 two options are not totally mutually exclusive and can overlap, even in terms of
68 the same specific consumption decision: one could decide first to get a pirated
69 movie and then to pay for it on the Internet; however the opposite is rarely consid-
70 ered. Although these actions can coexist, they represent two possible outcomes of
71 a particular consumption decision, and they are not independent of each other at
72 all. This study is thus grounded in behavioral models and examines the intention

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73   of online subscription to movie streaming services in the context of two opposing
74   alternative behaviors that can also occur simultaneously.

75   Using the theory of planned behavior [1], this paper examines concurrently the
76   attitudes, the impact of the social acceptance of unauthorized copying of movies
77   and the influence of familiarity with online shopping (interpreted as past behavior)
78   on the intention to pay for online streaming services. However, this standard model
79   has been extended considering the specific nature of the investigated behavior—that
80   is the online purchase of digital entertainment products. Thus, we consider both the
81   involvement with the product and the interference of the illegal shortcut to get these
82   same products for free (i.e. moral judgement on digital piracy).

83   The structure of the paper is as follows. Section 2 explains the conceptual frame-
84   work and Sect. 3 presents the associated research hypotheses. In Sect. 4 we discuss
85   the methodological choices and report on the analytical procedures used. We then
86   provide the main research findings (Sect. 5) and lastly, we discuss the implications
87   of our findings (Sect. 6) and provide future research directions (Sect. 7).

2 Conceptual background

89   Online consumer behavior has traditionally been approached from a social psychol-
90   ogy perspective. Generally, an individual's decision to engage in a specific behav-
91   ior (e.g. subscribing to a streaming service) is often determined by an individual's
92   evaluation (i.e. attitude) of how that behaviour is likely to affect her/him. An attitude
93   is a person's tendency to evaluate a certain object with some degree of favor–disfa-
94   vor [9, 31] and as such, it can have both a cognitive (e.g. good–bad evaluation) and
95   affective nature (e.g. reactions reflecting enduring happy–sad or pleasant–unpleasant
96   affective states toward an object). Thus, in order to understand consumer subscrip-
97   tion behavior in relation to a legal online streaming service and go beyond its ran-
98   dom components, it is essential to consider peoples' attitudes. However, over the
99   years, several researchers have pointed out that attitudes alone are not sufficient to
100   explain and predict why people act in a certain way: specific attitudes can be truly
101   predictive only when they refer to spontaneous behaviors [3, 38], when people act
102   on the spur of the moment.

103   The theory of reasoned action (TRA) [2], and its extension, the theory of planned
104   behavior (TPB) [1] account for deliberate behaviors and specify further systematic
105   determinants beyond attitudes. TRA and TPB are well-established models used to
106   study behavior in online settings [55, 61]. TRA takes into account attitudes and sub-
107   jective norms as the fundamental predictors of intention to perform a certain behav-
108   ior. In addition, TPB also considers perceived behavioral control as an antecedent of
109   behavioral intention. Specifically, subjective norms indicate the agreement of a ref-
110   erence group with a certain behavior, and the perceived behavioral control includes
111   the confidence (based on availability of resources or lack of opportunities) of an
112   individual in her/his abilities to perform that behavior [1].

113   As reported in George [36], there is a long tradition of TPB application both in
114   information systems and in Internet purchasing studies. In the last decade, the TPB
115   model has been successfully adopted (in its original form or in a modified version)

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116 to explain a large number of intentions related both to online purchasing and to
117 online access to different products/services, such as Internet banking [77], online
118 bookstores [89], digital music [53], online specialty food [54], pirated digital con-
119 tent [69], and use of social media for transactions [41].

120 In this study, we focus on the intention to legally (rather than illegally) access
121 movies online, using a TPB approach.

122 A fundamental premise is that paying for movie streaming services is a form of
123 ethical behavior, since it implies that consumers judge a legal subscription as being
124 a more valuable option than its illegal counterpart. TPB thus provides a strong con-
125 ceptual framework for evaluating how attitudes relate to the willingness to perform
126 a certain purchasing behavior online, especially when judgements regarding ethics
127 and privacy are central [36, 69, 85, 88].

128 In order to fully adapt TPB to the exploration of subscription intention of online
129 movie services, we examined other constructs that affect this specific behavior. TPB,
130 as a general theory of behavior, does not highlight the particular beliefs associated
131 with the target behavior, so that it is generally left to the researcher to determine
132 what beliefs underpin the attitudes [36]. Firstly, involvement, intended as the level
133 of interest an individual has in a particular product category (or, in wider terms,
134 as the level of arousal triggered in a subject by a product category) [43, 65, 67] is
135 purported to be a very influential aspect of movie consumption behavior in online
136 settings [23], due to its impact on attitude development [71]. More interestingly,
137 involvement seems to be independent of the legal or illegal acquisition of movie
138 services [23], and thus perfectly fits our assumptions. Secondly, we specify the role
139 of moral judgement, as TPB has been frequently accused of neglecting the role of
140 internal moral tension [58], by emphasizing the impact of external inputs on the
141 intention to perform a specific behavior. In fact, several papers have shown that
142 moral equity should play an important role in digital piracy practices [57, 79] and in
143 the acquisition of legal alternatives.

144 Both involvement and moral judgement are thus added as integrating factors in
145 our extended TPB conceptual model (see Fig. 1).

146 All the relationships between the constructs are specified in order to have a full
147 picture of the determinants affecting subscription intention in purchasing movie
148 streaming services.

3 Hypotheses development

150 As already stated, attitudes refer to the feeling towards a behavior and are a func-
151 tion of the beliefs regarding the consequences of performance and the evaluation of
152 those consequences [27]. Previous studies have shown that attitudes play an essen-
153 tial role in explaining the online purchase of films and TV series, as well as illegal
154 access to these products [22, 69]. Hence, we firstly state:

155 **H1** The intention to pay for movie streaming services is influenced by the attitude
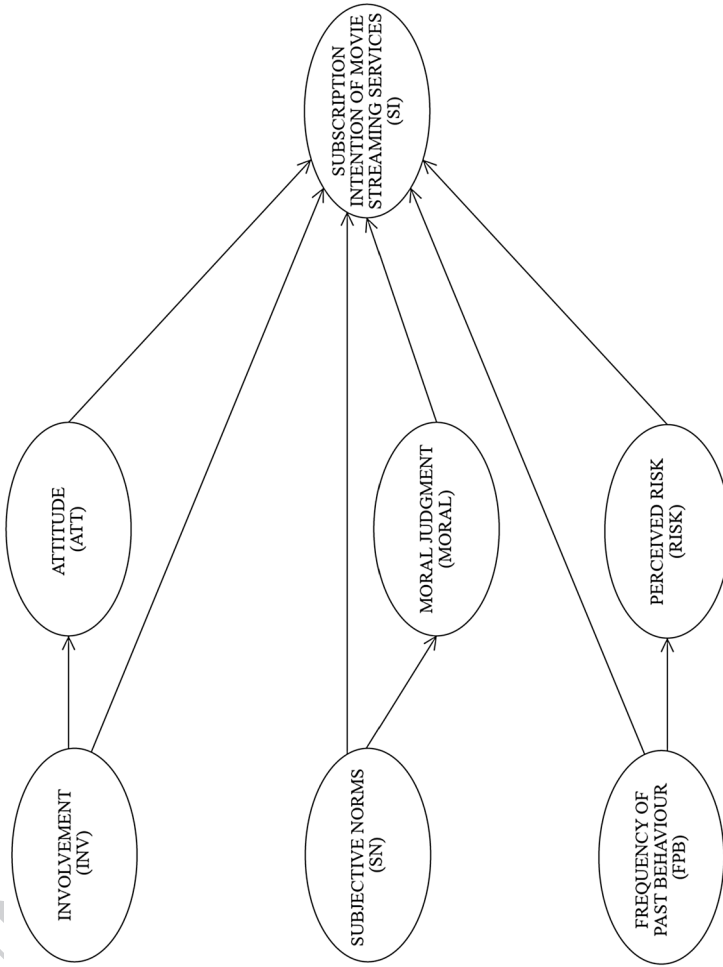156 toward this type of purchasing.

Fig. 1 Conceptual model

157 Consumer's willingness to spend money on their desired movies, which are easily
158 available (even if illegally), is deemed to be directly influenced by their involvement
159 in the movie category [43], which has been relatively neglected in the literature on
160 digital piracy [23].

161 Involvement is an enduring state of emotional attachment that is intrinsically
162 motivated by the congruence between the product and the individual's self-image,
163 or by the pleasure gained from thoughts concerning the product and its use [43].
164 Previous studies on traditional media products have shown that involvement could
165 have a direct influence on the purchasing effort [71]. In particular, highly involved
166 consumers in movies are more likely to distinguish the quality of files, thus prefer-
167 ring copyrighted to pirated files [23]. We thus infer that greater consumer involve-
168 ment with the movie category could also lead to attributing an associated monetary
169 value. Hence, we propose that the involvement in films and TV series could directly
170 increase the intention to buy online.

171 **H2** Involvement in movies positively influences the intention to pay for movie
172 streaming services.

173 At the same time, highly-involved consumers tend to value the reliability and
174 variety offered by the subscription-based streaming services more positively, espe-
175 cially when such services are compared to other channels that provide access to
176 movie products. These positive attributes are also less likely to suffer from nega-
177 tive evaluations concerning the price. Increased interest in movies as a whole should
178 also enhance the amount of cognitive elaboration regarding the distribution channels
179 of this product and thus lead to a positive evaluation of those channels that ensure a
180 better quality [68]. The role of involvement as an antecedent of the attitude forma-
181 tion of purchase-decision engagement has been also confirmed by Mittal and Lee
182 [62]. Therefore, we propose that:

183 **H3** Attitude mediates the impact of involvement on the intention to pay for movie
184 streaming services.

185 Although the original TPB model includes the regulatory power of external
186 inputs from social interactions, it neglects to explain the role of internalized ethical
187 values in leading behavioral intention [58], especially for acts involving moral ten-
188 sion [11]. Previous studies on digital piracy have also shown that low moral equity
189 and beliefs, as well as the low awareness of the social costs of digital piracy (e.g.
190 on the work of authors and producers) play a role in increasing the propensity to
191 illegally acquire media products [17, 57, 79]. Thus, given that subscription to online
192 streaming services is frequently considered as just one option among many (often
193 illegal) possibilities offered by the Web to get films and TV series, shopping itself
194 can be regarded as an ethical behavior [16, 72]. Moral judgement may thus play an
195 essential role in persuading decision makers to reject illegal channels and opt for
196 online buying [42]. The ethical evaluations we are interested in are those regarding
197 digital piracy and not online shopping, as the latter behavior does not generate any

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198 moral dilemma. Rejecting piracy should increase the likelihood of a user paying for
199 movie streaming services. Therefore, we state that:

200 **H4** Moral judgement regarding the illegal acquisition of movies influences the
201 intention to pay for movie streaming services.

202 Subjective norms are the result of the evaluation of peers regarding the behav-
203 ior and importance that individuals attribute to these opinions [1, 2]. Digital piracy
204 may be sensitive not only to internal ethical evaluations, but also to social sanction
205 [22, 24]. Hence, in the context of our study, subjective norms are interpreted as peer
206 rejection of the illegal acquisition of movies, which is a deviant behavior compared
207 to online purchasing. It is supposed that the higher the evaluation of perceived sub-
208 jective norms (important others have a negative opinion towards the behavior), the
209 greater the intention to subscribe to a movie streaming service. This hypothesis is
210 corroborated by Lin et al. [56] who showed the significant effect of subjective norms
211 on the intention to subscribe to fee-based online music services. Following this rea-
212 soning, we thus propose that:

213 **H5** Subjective norms regarding the illegal acquisition of movies influence the inten-
214 tion to pay for movie streaming services.

215 Peers' rejection of digital piracy constitutes an external normative framework in
216 which the individual is embedded and it is also expected to affect the strength of
217 the moral judgements that the individuals themselves are going to form. In other
218 words, the external normative influence of peers is internalized by the subject, thus
219 constituting a direct antecedent of the internal moral judgement [6]. This mediated
220 relationship means that TPB can be integrated with moral assessments. We consider
221 an extended normative framework which includes external and internal(ized) norms
222 together as potentially inspiring controversial actions [90]. Therefore, we propose
223 that:

224 **H6** Moral judgements mediate the influence of subjective norms regarding the ille-
225 gal acquisition of movies on the intention to pay for movie streaming services.

226 TPB also aims to explain behaviors that are not completely under volitional con-
227 trol and for which subjects do not entirely perceive themselves as able to act as they
228 would like to. This type of behavior makes it necessary to also include perceived
229 behavioral control as a predictor of the intention and of the behavior [1], also in the
230 case of digital piracy [69].
231 However, we aim to specify what it means to perceive control in subscribing to
232 an online streaming service, in order to identify the relevant dimensions constituting
233 control perception. The increasing familiarity with digital technology and the diffu-
234 sion of user-friendly e-commerce systems have drastically flattened the e-shopping

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235 learning curve, usually considered as a problematic behavior.[1] In fact, movie stream-
236 ing services usually offer consumers a "free" option (with some limitations) or a
237 free trial period. However, the subscription is still problematic, in the sense that it
238 is not under the complete control of the user. It might be hindered by the risk of not
239 getting a fair deal or by the general unwillingness to share personal and financial
240 data [4]. Thus, the behavioral control is mainly represented by the degree of concern
241 regarding the uncertainty of the process, which might end in fraud, an undesired
242 product or also the anxiety derived from the sharing of data. In our study, we argue
243 that that these concerns are primarily summarized by the perceived risk and by the
244 familiarity with online buying, proxied by the frequency of past purchases of media
245 products and contents [66].

246 **H7** Intention to pay for movie streaming services is influenced by the past fre-
247 quency of online purchasing of media products.

248 **H8** Intention to pay for movie streaming services is negatively influenced by the
249 perceived risk of online purchasing.

250 Lastly, we need to define the relationship between these two aspects of perceived
251 behavioral control. Previous online shopping experience is not only a strong posi-
252 tive predictor of online purchase intention for digital products but is also negatively
253 related to perceptions of product and financial risks [25]. It is therefore likely that
254 the more a consumer is used to buy online using e-commerce systems, the less she/
255 he is likely to perceive a risk in using it [35].

256 **H9** The frequency of the previous purchasing of media products negatively influ-
257 ences the perceived risk of online purchasing.

258 These hypotheses elicit a nomological network of relationships that explains the
259 variations in online subscription to movie streaming services intentions in the con-
260 text of the distinct alternatives that consumers are aware of. As we have shown, the
261 constructs included in the model take into account the choices available to consum-
262 ers. Thus the whole model reflects the connections between the main forces driving
263 consumers in their acquisition choices and ultimately their intentions to subscribe to
264 streaming services.

1FL01 [1] Both the theory of trying (TT) [8] and the model of goal-directed behavior (MGB) [66] have consid-
1FL02 ered problematic behaviors, perceived as goals by the decision makers. However, although TT and MGB
1FL03 represent an expansion of TPB, they fit better with performances involving some kind of learning or
1FL04 trial-and-error process, which may truly make it reasonable to distinguish between intention to try and
1FL05 intention to use (as TT does) or between desire and intention to act (as MGB does). Likewise, a further
1FL06 specification of an attitude (e.g. toward the successful achievement of the goal or toward the failure as in
1FL07 the theory of trying), it is reasonable only for actions connected to a goal and to an arduous trial period.
1FL08 This does not appear to be the case of the subscription of movie streaming services (with the awareness
1FL09 of the easy alternative, i.e. illegal channels).

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265   Lastly, we propose that the overall model may vary on the basis of the amount of
266 media consumption, i.e. level of exposure to different media [51]. In fact, both mov-
267 ies and the online channels through which movies are made available, can be consid-
268 ered as media products. In addition, according to Google Consumer Barometer (over
269 130,000 respondents around the world in 2014/15) 56% of people use other media
270 devices (radio, computer, smartphone, games console, etc.) in parallel to watching
271 videos online, while 44% only watch streaming video online. Therefore, light and
272 heavy media users should display different behavioral patterns [76], both in their
273 film/TV series consumption and in their purchase/download preferences.

4 Methodology

274

4.1 Survey instrument

275

276 The survey instrument was developed using established scales from the pre-existing
277 literature on TPB (Table 1). Subscription intention was the fundamental criterion
278 variable and was conceptualized as the likelihood to choose the legal alternative to
279 obtain movies, through subscription to an online on-demand streaming service, also
280 being aware of the possibility to obtain them illegally and for free. All of the items
281 were measured using a self-designating 11-point scale ranging between "Strongly
282 disagree" (0) and "Strongly agree" (10).[2] However for the items concerning atti-
283 tude and subscription intention, a semantic differential scale was used, anchored by
284 two opposite adjectives (e.g. bad/good, likely/unlikely, etc.). The frequency of past
285 online purchasing was measured with a 6-point Likert scale (ranging from "never"
286 to "very often") concerning the purchase of films, TV series and music. We used
287 media consumption as the control variable for the multiple group SEM analysis.
288 This variable was measured through a six-point frequency scale ("never", "less than
289 30 min", "about 1 h", "about 2–3 h", "about 3–4 h", "more than 4 h") concerning
290 the daily use of different media (TV, radio, newspapers, magazines, Internet, etc.).
291 The points of the scale were chosen sufficiently wide to enable participants to col-
292 locate themselves with sufficient precision, while at the same time limiting biases in
293 recall. After averaging individual scores across the media types, each subject was
294 classified as either a "light media user" or "heavy media user", depending on the
295 average score being below/equal to three (corresponding to a maximum of 1 h of
296 media consumption per day) or above. Thus, measuring media consumption on a
297 scale with an even number of items also enabled us to split the score range in half
298 in relation to classifying the subjects into light and heavy media users. The survey
299 included questions on basic demographics (gender, age, education level, occupation

---

2FL01   [2] The use of a 11-point scale is justified by the need to produce continuous measurements that are more
2FL02 appropriate for the maximum likelihood estimator used in our research (implemented as MLR in Mplus)
2FL03 [45] and are better suited to the socio-cultural context of our research (Italy) in which individuals are
2FL04 quite familiar with this type of scale since they represent the grading system used in the Italian school
2FL05 system.

Table 1 Measurement model

Constructs	Unstandardized (SE)/ standardized (SE) factor loadings	Composite reliability (CR)	Average variance extracted (AVE)	Main source
Subscription intention (SI): Think about a website offering you a subscription-based on-demand service of movie streaming, with an unlimited archive of films, TV series, etc. from the 1950s to the present day. An example is Netflix. Such a service would cost about 8 euros per month. Even being aware of free but illegal alternatives, would you consider paying for such a service?		.908	.714	[60]
It's unlikely that I'd buy it/It's likely that I'd buy it	1.000 (–) 0.806 (0.029)			
It's really not like me to buy it/It's typical of me to buy it	1.026 (0.044) 0.908 (0.020)			
There is no way I'd buy it/I'd buy it for sure	0.983 (0.049) 0.929 (0.020)			
It's too expensive/It's a fair price	0.777 (0.056) 0.719 (0.032)			
Attitude toward the subscription of movie streaming services (ATT): Buying films or TV series on websites (such as Amazon, Netflix, etc.) instead of getting them illegally is …		.862	.611	[2]
Foolish/wise	1.000 (–) 0.720 (0.038)			
Unsatisfying/satisfying	0.921 (0.067) 0.731 (0.035)			
Disadvantageous/advantageous	1.177 (0.095) 0.786 (0.029)			
Useless/useful	1.273 (0.086) 0.880 (0.020)			

Table 1 (continued)

Constructs	Unstandardized (SE)/ standardized (SE) factor loadings	Composite reliability (CR)	Average variance extracted (AVE)	Main source
Involvement with the movie category (INV): Films and TV series …		.918	.789	[43]
Are an integral part of my life	1.000 (–) 0.842 (0.020)			
Are fascinating to me	0.919 (0.035) 0.933 (0.016)			
Move me	0.870 (0.036) 0.887 (0.017)			
Perceived subjective norms about digital piracy (SN): How much do you agree with the following statements?		.748	.599	[2]
My friends do not approve of download/sharing films and TV series' without paying for them	1.000 (–) 0.726 (0.059)			
Digital piracy is not looked kindly upon by my friends	1.255 (0.189) 0.819 (0.067)			
Moral judgement about the illegal acquisition of movies (MORAL): It is well known that there are different ways to watch movies through the Internet, for example by torrents, streaming, p2p (peer-to-peer). How much do you agree with the following statements?		.745	.525	[42]
Watching movies illegally harms the authors and producers	1.000 (–) 0.676 (0.052)			
Downloading movies (without paying) is dishonest	1.540 (0.180) 0.990 (0.050)			
Digital piracy is fair, because it allows everyone to freely enjoy cultural products (Reversed)	0.550 (0.086) 0.372 (0.057)			

Table 1 (continued)

Constructs	Unstandardized (SE)/ standardized (SE) factor loadings	Composite reliability (CR)	Average variance extracted (AVE)	Main source
Perceived risk in online buying (RISK): By purchasing movies on the Internet …		.903	.756	[4]
I put my financial data at risk (credit card, prepaid card, etc.…)	1.000 (–) 0.848 (0.030)			
I run the risk of fraud	1.097 (0.043) 0.933 (0.020)			
Hackers could infiltrate my computer	0.946 (0.055) 0.824 (0.035)			
Frequency of past behavior (FPB): How often have you purchased online each of the following products?		.767	.534	[62]
Films	1.000 (–) 0.793 (0.038)			
TV series	0.970 (0.081) 0.847 (0.038)			
Music	0.647 (0.082) 0.507 (0.053)			

In the unstandardized solution the first indicator of each factor is constrained to 1 to set the measurement scale of the latent factor

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300 and location). On the basis of the above-mentioned elements, a self-administered
301 questionnaire was prepared and delivered through a web-based survey service.

302 ## 4.2 Sample

303 Given the research objective, the population of interest is made of the Italian Inter-
304 net users that are virtually willing to subscribe a streaming on-demand service. As it
305 is impossible to determine the entire Internet population, we had defined a sampling
306 frame of online communities [63]. The rationale behind this choice is the need to
307 evaluate attitudes and intentions of people who still have knowledge of the legal/ille-
308 gal pros and cons in this industry in Italy. By using the keywords "forum film serie
309 tv" and inspecting the first three pages of SERP results, we identified four Italian
310 communities (out of 14) which met the relevance, activity, interactivity, substantial-
311 ity, heterogeneity and richness criteria [52]. Data were collected between May and
312 October 2015. A total of 539 responses were obtained. The survey data were then
313 checked to eliminate incomplete forms leaving 453 questionnaires for the analysis.
314 The gender ratio of the respondents was 49.3% male and 50.7% female. All eligi-
315 ble respondents were aged between 15 and 63 with an average of 30 (36.7% aged
316 between 15 and 24; 39.7% between 25 and 34; 12.4% aged 35–44 and 11.2% over
317 45 years old). Approximately half (49.5%) of the respondents had completed high
318 school and about one-third had a university degree. The basic demographics of these
319 respondents were consistent with the active population using the Internet in Italy,
320 especially with people who have the highest Internet usage rates [49].

321 The sample size was in line to what Stevens [84] recommends for structural equa-
322 tion modeling, i.e. a sample size of at least 400 to prevent model misspecification. In
323 addition, the sample size is above the minimum requirement of 435 (87 free param-
324 eters of the measurement model), resulting from the 5:1 ratio of sample size to num-
325 ber of free parameters [12], and is also above the Marsh and Bailey's [59] suggestion
326 of at least 200 observations, given an indicators to latent variables ratio of 3. Hair
327 et al. [40] indicate different factors (e.g. multivariate normality, model complexity,
328 average error variance of the indicators, etc.) that need to be considered when decid-
329 ing sample size. They recommend a rough ratio of 10:1 of respondents to items.
330 Taking all of these factors into account, our sample size can be deemed appropriate.

331 # 5 Findings

332 ## 5.1 Measurement and structural model

333 Because of the complexity of the general model proposed, we first developed a
334 measurement model to identify the latent constructs by a confirmatory factor analy-
335 sis (CFA). The preliminary CFA helps us to support the validity and reliability of
336 proposed constructs by evaluating the measurement model and the properties of
337 the observed indicators that measure these constructs. The measurement model
338 was then extended to include the structural relations between the latent dimensions

Table 2 Correlations among constructs

	ATT	SI	INV	RISK	MORAL	FPB	SN
ATT	*0.78*						
SI	0.46	*0.84*					
INV	0.16	0.25	*0.89*				
RISK	− 0.13	− 0.16	− 0.2	*0.87*			
MORAL	0.28	0.24	− 0.02	0.03	*0.72*		
FPB	0.35	0.39	0.34	− 0.23	0.06	*0.73*	
SN	0.18	0.05	− 0.23	0.14	0.37	− 0.03	*0.77*

On-diagonals are square roots of AVE

previously measured. All the analyses, conducted in Mplus 7, were performed on a covariance matrix using MLR estimator [7], which is a maximum likelihood estimator with robust standard errors, adjusted for non-normality.

The goodness of fit of the models was assessed using the MLR Chi square statistic, that is asymptotically equivalent to Yuan–Bentler [91] T_2 test statistic, the comparative fit index (CFI) [13] and the root mean square error of approximation (RMSEA) [83].

The measurement model proposed has seven continuous latent factors measured by 22 items in total. Subscription intention (SI) is measured by a scale of four items as well as attitude (ATT), involvement (INV), moral judgement (MORAL), perceived risk in online purchasing (RISK), and frequency of past behavior (FPB) constructs are measured by three items; finally, the subjective norms (SN) construct is measured by two items.

Although the Chi square was significant—χ^2 (N = 453) = 351.474, df = 188, $p < .001$—all the other indices pointed to a good fit (RMSEA = .044; CFI = .959; TLI = .950). In addition, all the standardized factor loadings were significantly different from zero ($p < .01$) (see Table 1).

To assess the convergent validity of the measurement model we considered the average variance extracted (AVE) and the composite reliability (CR). All the AVE (ranging from .525 to .789) and CR values (from .745 to .918) were above the recommended cut-off point [10, 40], thus suggesting a good internal consistency of the measurement model. To assess discriminant validity, Fornell and Larcker [34] suggest that the factors underlying the constructs should share a greater amount of variance with their items than with the other constructs in the model. Therefore, the square root of the AVE for each factor should be greater than the correlation with other constructs. For all the constructs, the levels of the square root of AVE were greater than the correlation involving the constructs, thus suggesting a good discriminant validity of the measurement model (Table 2).

To this measurement model, we added the casual paths to test the hypotheses presented above. Figure 2 shows the structural model with four endogenous latent factors (SI, ATT, MORAL, RISK), three exogenous latent factors (INV, SN, FPB), and 22 observed variables. The structural model shows a good fit [44, 46]: χ^2 (N = 453, df = 197) = 423.547, RMSEA = .050, CFI = .944 and TLI = .934.
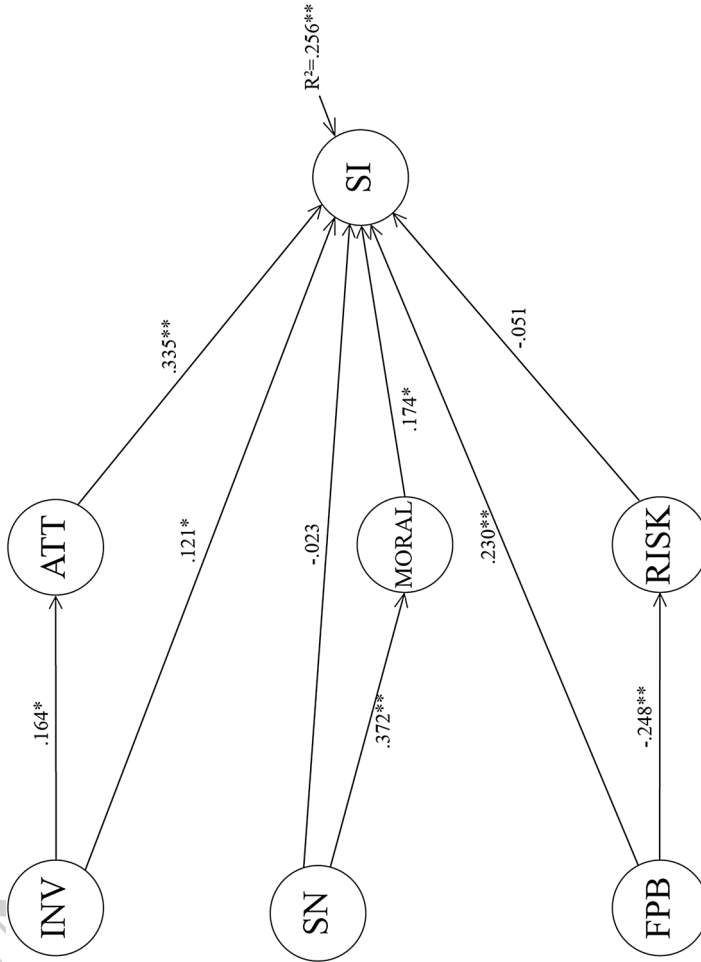
Fig. 2 Structural model (standardized coefficients). *Significant at $p < .05$; **significant at $p < .001$

Table 3 Structural model (standardized coefficients)

	Estimate	T value	Two-tailed p value
SI on			
ATT	0.335	5.409	0.000
MORAL	0.174	3.036	0.002
RISK	-0.051	-0.848	0.396
INV	0.121	2.015	0.044
SN	-0.023	-0.349	0.727
FPB	0.230	3.267	0.001
ATT on INV	0.164	2.741	0.006
MORAL on SN	0.372	5.968	0.000
RISK on FPB	-0.248	-4.121	0.000

372 All the structural regression coefficients are significant ($p < 0.05$), except for
373 those of RISK and SN on SI (see Table 3).

374 SI is predicted by attitude, moral judgment, involvement and frequency of
375 past behavior. More specifically, attitude (ATT) seems to be the best predictor
376 of the intention to pay for a movie streaming service ($\beta = .335$). In turn, ATT is
377 predicted by the involvement (INV) ($\gamma = .164$). In addition, the frequency of past
378 behavior (FPB) exerts a positive effect ($\gamma = .230$) on SI as well as moral judg-
379 ment (MORAL) ($\beta = .174$) and involvement (INV) ($\gamma = .121$).

380 The perceived risk in online purchasing (RISK) and the subjective norms
381 (SN) however do not show a significant influence on SI. The social pressure
382 component of the model, measured by the construct SN, positively affects the
383 general moral judgment regarding illegal downloading ($\gamma = .372$) which in turn
384 influences SI ($\beta = .174$). Finally, as expected, the frequency of past behavior
385 (FPB) negatively influences the perceived risk in online purchasing (RISK)
386 ($\gamma = -.248$).

5.2 Multiple group analysis

388 We performed a multiple group analysis to evaluate the model described above
389 in terms of two distinct groups based on different levels of media consumption.

390 To compare structural coefficients among different groups, the measurement
391 model needs to be the same in the groups identified and the items need to be
392 measured on the same scale across groups [26]. To evaluate the measurement
393 invariance of the model, we constrained the factor loadings to be equal across
394 groups (low media consumption and high media consumption). The multiple
395 group measurement model shows a good fit: χ^2 (total N = 453, low N = 192 and
396 high N = 261, df = 392) = 565.729, RMSEA = .044, CFI = .958 and TLI = .950,
397 suggesting that the measurement model is invariant.

Table 4 Multiple group model (standardized coefficients)

	Estimate	T value	Two-tailed *p* value
Light media users			
SI on			
ATT	0.222	2.377	0.017
MORAL	0.174	2.142	0.032
RISK	− 0.037	− 0.427	0.669
INV	0.301	3.221	0.001
SN	0.101	0.941	0.347
FPB	0.183	1.623	0.105
ATT on INV	0.178	2.049	0.040
MORAL on SN	0.296	3.748	0.000
RISK on FPB	− 0.322	− 4.415	0.000
Heavy media users			
SI on			
ATT	0.425	5.453	0.000
MORAL	0.167	2.130	0.033
RISK	− 0.051	− 0.669	0.504
INV	0.024	0.325	0.745
SN	− 0.084	− 0.961	0.337
FPB	0.288	3.326	0.001
ATT on INV	0.157	1.955	0.051
MORAL on SN	0.447	6.187	0.000
RISK on FPB	− 0.203	− 2.317	0.021

5.2.1 Light media users

The multiple group structural model fits the data well: RMSEA is .051, CFI is .941 and TLI is .933 with the $\chi^2 = 655.471$ (total N = 453, low N = 192 and high N = 261, df = 410). Regarding the group with a low media consumption ($R^2 = .255$), all the coefficients are significant ($p < 0.05$) except SN and RISK on SI, exactly like in the previous model (see Table 4).

However, the frequency of past behavior becomes a non-significant predictor factor of subscription intention ($\gamma = .183$). In the group with a low media consumption, the best predictor of SI becomes the direct effect exerted by INV ($\gamma = .301$). Instead the influence of ATT is lower than in the general model ($\beta = .222$). With reference to the normative constructs, the moral judgements of light media users' are less determined by subjective norms ($\gamma = − .296$), when compared to the general sample. Lastly, FPB negatively influences the perceived risk in online purchasing ($\gamma = − .322$) to a greater extent, while positively influencing to a lesser extent the intention of subscription to movie streaming service ($\gamma = .183$). The other parameters remain almost unvaried (Fig. 3).
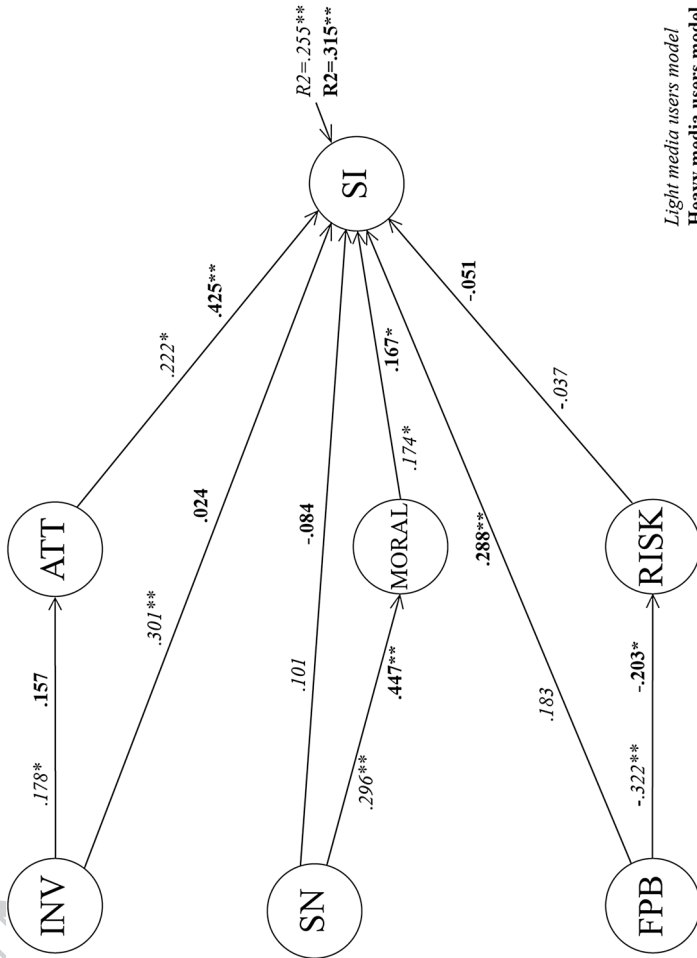
Fig. 3 Multi group structural model (standardized coefficients). *Significant at $p < .05$; **significant at $p < .001$

5.2.2 Heavy media users

In the group with a high media consumption ($R^2 = .315$), all the coefficients are significant ($p < 0.05$) except for SN and RISK on SI. In addition, the effect exerted by the involvement on ATT is very slightly non-significant ($p = .051$), while the direct effect of INV on SI disappears, becoming a non-significant predictor of this intention. The major predictor of SI is attitude ($\beta = .425$; general model $\beta = .335$, low model $\beta = .222$). SN affects the general moral judgment about the illegal downloading ($\gamma = .447$) to a greater extent than the general model and the light media users model. Finally, frequency of past behavior appears to have a greater influence on RISK ($\gamma = -.203$), than the general model and the light media users' model. At the same time, heavy media users show a stronger direct impact of FPB on SI ($\gamma = .288$). All other parameters remain almost unvaried (Fig. 3).

6 Discussion and implications

The results of this study show the high significance of attitude toward online purchasing in influencing this specific buying behavior (*H1 supported*). This is in line with studies analyzing the intention to subscribe to music streaming services [17] and also studies focused on digital piracy intention [69]. More interestingly, product involvement seems to play a role in influencing the subscription intention of movie streaming services both directly and indirectly (*H2 and H3 supported*). However, this pattern appears to be slightly different when evaluated among light and heavy media users respectively. Subscription intention by people with low media consumption is influenced more by their involvement in the movie category than by their attitude toward online shopping. Interestingly, the opposite happens among people with a strong media consumption, as their subscription intention is mainly influenced by the attitude toward online shopping, whilst a direct relationship between involvement and intention is nearly non-existent. This suggests that light media users, who are less used to the online environment, rely more on external motivations—namely, their involvement with films and TV series—to stimulate behavioral intention. Conversely, among heavy media users, attitude toward online shopping is a much more immediate antecedent of intention to actually engage in purchasing. The fact that they were involved or not in the movie category is irrelevant to their propensity to buy online.

This implies that the movie industry and media companies should focus on sources of consumer involvement, especially those related to product characteristics that lead to differentiation and may increase interest, such as Netflix's micro genre classification and associated personalized experiences. Stressing consumer involvement should be particularly effective among light media consumers, since, by enjoying the experience of movies more, they could develop a greater propensity to subscribe to a streaming service.

The normative framework regarding digital piracy was also found to have a positive influence on subscription intention (*H4 supported*). Unlike traditional TPB conceptualizations, this study highlights that subjective norms have almost no direct

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456 impact on behavioral intention (*H5 not supported*). This finding is in line with other
457 studies employing TPB models (regarding online shopping or digital piracy) which
458 found the influence of subjective norms on behavioral intentions to be insignificant
459 [22, 55]. The influence of external social norms is instead mediated by the internal-
460 ized ethical norms regarding digital piracy (*H6 supported*). While subjective norms
461 contribute to the moral judgement of the individual, they only indirectly affect
462 behavioral propensity. As Internet use and online shopping is mainly a private affair
463 [78], it is understandable that the perceived acceptance of digital piracy by peers can
464 lead to rejecting this behavior only if public disapproval succeeds in changing the
465 individual's mind first. In addition, perceived social sanctions exert a greater effect
466 in generating an internalized censure toward illegal downloading/streaming in heavy
467 media users than in the people with a low media consumption. It could be that the
468 emulation of heavy users inherent in using media, entails a more automatic inter-
469 nalization of their peers' inputs. In a sense, parasocial interactions, which people
470 exhibiting massive media use are exposed to [37, 75], lead to a need to seek out
471 social influence and follow peer behaviors [32, 50].

472 The fact that moral judgment is mainly explained by subjective norms could sug-
473 gest that policy makers should give much more emphasis to strategies to prevent
474 illegal downloads or streaming. They should show that unethical conduct has been
475 progressively limited to a small number of individuals and that indeed most people
476 usually buy this type of product. This descriptive exposition of the declining trend in
477 digital piracy may be much more persuasive than the threat of legal action.

478 In addition, various studies [33, 80, 87] have shown that opinion leaders also tend
479 to use media to a greater extent. Thus, our study once again highlights the impor-
480 tance of marketing policies aimed at opinion leaders and taking advantage of their
481 ability to diffuse the rejection of digital piracy. Heavy media users, as potential
482 informal influencers, could be activated by some kind of social reward for intense
483 word-of-mouth activities [60]. Unlike economic rewards, social rewards (social
484 acceptance, approval, respect, prestige, etc.) are intrinsic and non-monetary in
485 nature, and act as a source of gratification for the subject. Social rewards could be
486 activated by gamifying the word-of-mouth process (through collectible badges, lev-
487 els, or trophies), by developing content-creation contests, by involving influencers in
488 advertising, or even by simply thanking users for their engagement.

489 Lastly, the frequency of the previous online purchasing of digital entertainment
490 services is significant in explaining subscription intention (*H7 supported*), and its
491 impact is bigger among heavy media users than among light media users. In fact,
492 as we have already seen for the attitude toward online shopping, the habit of online
493 shopping is more likely to translate into an actual propensity to buy when the user is
494 accustomed to the online environment.

495 From a practical standpoint, the option of creating different versions of services
496 (combining on-demand models and loyalty schemes) is consistent with the objec-
497 tive to generate familiarity in buying movies online. Perceived risk is partially
498 explained by the frequency of past online purchases (*H9 supported*), however for the
499 most part this construct has lost its significance, because it no longer seems to affect
500 e-shopping behavior (*H8 not supported*), probably due to the increasing diffusion of
501 e-commerce. This suggests that the media and telco companies could both stimulate

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502 the first purchase, after the usual free trial periods, and create opt-out subscription-
503 based programs, commonly reputed to be more risky.

504 Since the results of the multiple group analysis highlight the lower sensitivity of
505 light media users' behavioral intention to attitude, habit and social norms, it is also
506 more important to enable this type of consumer to become accustomed to movie
507 streaming services, by offering them economic rewards, such as vouchers (also com-
508 binable ones) and gift awards for the subscription.

509 Marketing actions addressed at heavy and light media users could thus com-
510 plement each other. On the one hand, marketers need to reach and mobilize heavy
511 media users through social rewards, pushing them to be advocates of the streaming
512 service, on the other, firms should motivate light media users by means of differen-
513 tiation, personalization and interactivity of the service, and by providing them with
514 instrumental benefits for making a subscription.

7 Conclusions, limitations and further research

516 The consumption of illegal copies of digital movies has been a significant threat to
517 the movie industry since the late 1990s. Despite the entertainment industry's efforts
518 to mitigate this practice, the issue is still important. The typical countermeasures of
519 illegal download/streaming of digital services have often been ineffective [70, 86].

520 We contribute to the literature by focusing on the factors influencing a user's
521 intention to subscribe to a movie streaming service. To the best of our knowledge,
522 no research has focused on this behavioral intention within a framework that explic-
523 itly incorporates the availability of illegal channels of movie acquisition.

524 The fundamental structure of the proposed model is based on the TPB, and was
525 chosen because it effectively classifies antecedents of behavioral intention into sig-
526 nificant dimensions, applicable to any type of behavior. This paper thus gives partial
527 confirmation to previous studies [69, 85, 88] in showing that TPB is appropriate
528 in investigating the purchasing behavior of digital entertainment services. We have
529 adapted and extended this theory to make it more effective in explaining conduct in
530 online contexts when ethical concerns play a major role. The insignificant influence
531 of subjective norms on intention further corroborates this effort to extend the origi-
532 nal model. In fact, the specificity of online subscription downsizes the role of per-
533 ceived social norms, while highlights that internal moral judgements are prominent
534 for this type of behavior [5]. Social norms can affect behavioral intention only to the
535 extent that they induce private acceptance in the individuals and not simply public
536 compliance. In addition, we distinguish two components of perceived control of the
537 subscription behavior, namely the perceived risk and the frequency of past behavior.
538 The former has been found to have a little impact on the actual intention, while the
539 latter counts most. This result outlines that the increasing competences of online
540 users has corroded previous generalized concerns about privacy and safety.

541 In addition, this pattern of relationships between the variables in this nomological
542 network seems stronger by dividing users regarding their media consumption. The
543 greater explained variance of subscription intention in the model of heavy media
544 users shows that for this type of consumers, subscribing to a legal streaming service

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545 is more deliberate, involving a strong attitudinal preference and familiarity with the
546 Internet environment. Instead, for light media users, the attitudes and frequency of
547 previous past behavior are still important predictors of behavioral intention, but not
548 as strong as for heavy media users. In fact, for light media users, the involvement of
549 consumers in the movie category takes on much greater importance than for heavy
550 media users. When consumers are less interested in media consumption, they engage
551 in the subscription of a streaming service in a more unsystematic way, and the most
552 important determinant of their behavioral intention appears to be their interest in the
553 movie category. It would thus be interesting for future research to look at the direct
554 relationship between attitude beliefs and the actual behavior, without the mediation
555 of behavioral intention.

556   One limitation of this study lies in its use of a sample from a single country
557 (Italy) where the largest services of on-demand streaming media were launched less
558 than three years ago and levels of digital piracy are still quite high [48]. Both cross-
559 cultural and longitudinal research is needed as the illegal consumption of films is
560 a global issue which constantly changes over time. The model developed for this
561 research can be further refined and applied to other industries (e.g. music and pub-
562 lishing) that are still having to deal with the significant impact of digital piracy and
563 in which distribution models based on streaming or other forms of temporary access
564 can help to mitigate this phenomenon.

565   Further research is thus warranted to substantiate the link between the moral
566 judgment (and associated social norms) on digital piracy and the legal purchasing
567 of films and TV series. It would be equally interesting to gain a better understanding
568 of the antecedents of purchasing attitudes, especially the consumer involvement in
569 products.

570   The present research gives also some indications on employing different para-
571 digms in studying the willingness to pay for streaming services. One promising
572 direction of research would be investigating this phenomenon through the lens of the
573 cognitive dissonance framework [73]. This means to further explore how the need
574 to reduce the conflict between personal values (i.e. beliefs of inappropriateness of
575 piracy behaviour) and individual benefits derived from piracy behaviour affects the
576 intention to subscribe legal streaming services. In particular, streaming-based piracy
577 practices provide new instantiations of the techniques of neutralization that the digi-
578 tal pirates adopt in order to reduce the cognitive dissonance arising from their mis-
579 behavior [74]. Future research could also shed light on the stage in which these self-
580 justification processes come into place (i.e. before engaging in digital piracy or after
581 committing the act), and how policy makers can contrast them.

582   From a managerial perspective, our study suggests that the "conversion" of digi-
583 tal pirates into online buyers should be stimulated by both government policy and
584 marketing communications which focus on offering better value for consumers than
585 illegal downloads or streaming. This is in line with recent contributions [28, 70],
586 who recommend strategies that provide a superior quality of alternatives than previ-
587 ously based coercion. Lastly, the significance of past behavior combined with the
588 above-mentioned factors also highlights the need to further analyze the effectiveness
589 of both social and economic rewards, also considering the differences between light
590 and heavy media users.

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