



REVISTA DE LA FACULTAD DE INGENIERIA - UNIVERSIDAD NACIONAL DE COLOMBIA - BOGOTÁ

DYNA

ISSN: 0012-7353

ISSN: 2346-2183

Universidad Nacional de Colombia

Derakhti, Arman; Ramírez-Rivas, Catalina; Ramírez-Correa, Patricio E.  
Streaming or misbehavior, investigation on movie streaming or movie piracy  
DYNA, vol. 87, no. 215, 2020, October-December, pp. 102-108  
Universidad Nacional de Colombia

DOI: <https://doi.org/10.15446/dyna.v87n215.84541>

Available in: <https://www.redalyc.org/articulo.oa?id=49668129012>

- How to cite
- Complete issue
- More information about this article
- Journal's webpage in redalyc.org

UNEN 

Scientific Information System Redalyc  
Network of Scientific Journals from Latin America and the Caribbean, Spain and  
Portugal

Project academic non-profit, developed under the open access initiative

# Streaming or misbehavior, investigation on movie streaming or movie piracy

Arman Derakhti, Catalina Ramírez-Rivas & Patricio E. Ramírez-Correa

*Universidad Católica del Norte, Coquimbo, Chile, arman.derakhti@alumnos.ucn.cl, catalina.ramirez@alumnos.ucn.cl, patricio.ramirez@ucn.cl*

Received: January 13<sup>th</sup>, 2020. Received in revised form: August 11<sup>th</sup>, 2020. Accepted: September 2<sup>nd</sup>, 2020.

## Abstract

Nowadays, movie streaming is ubiquitous amongst the younger population, and it is a supposed substitute for movie piracy. Without prejudice to the previous, reasons of various kinds may cause users to download their favorite movies illicitly. The objective of this study is to identify if movie streaming increases movie piracy. For this purpose, an online survey of potential users of movie streaming services was conducted in Chile. The sample was divided into students and not students, and logit models were used to analyze the data obtained. The results indicate that, on one hand, movie streamers are intentions to engage the download movie illegally, and on the other hand, peer pressure explains movie piracy among students.

**Keywords:** movie streaming; movie piracy; logit regression model; peer pressure; Chile.

# Retransmisión o mal comportamiento, investigación sobre retransmisión o piratería de películas

## Resumen

Actualmente la retransmisión en directo de películas es omnipresente entre los jóvenes, y es un supuesto sustituto de la piratería de películas. No obstante a lo anterior, diversas razones pueden hacer que los usuarios descarguen sus películas favoritas de forma ilícita. El objetivo de este estudio es identificar si el uso de la retransmisión en directo de películas aumenta la piratería de películas. Para este propósito, se realizó una encuesta en línea de usuarios potenciales de servicios de retransmisión en directo de películas en Chile. La muestra se dividió en estudiantes y no estudiantes, y se utilizaron modelos de regresiones logísticas para analizar los datos obtenidos. Los resultados indican, por una parte, que los usuarios de retransmisión en directo de películas tienen mayor intención de involucrarse en la descarga ilegal de películas, y por otra parte, que la presión del grupo explica la piratería de películas entre los estudiantes.

**Palabras clave:** retransmisión en directo de películas; piratería de películas; modelo de regresión logística; presión del grupo; Chile

## 1. Introduction

The usage of video streaming services has grown considerably all around the world in the latest years. A video streaming service is an on-demand online entertainment source for TV shows, movies, and other streaming media. Streaming services offer updated databases that allow users to access new movies and series. Netflix is currently the world's leader in these services, this company was initially established in 1997 as an online DVD rental service and expanded into video streaming in 2010, and today has 148

million members. However, while there has been a substantial commercial advance of these services, video piracy is still occurring misbehavior within internet users [1].

Typically, video streaming services offered tiered prices concerning video quality and simultaneous watching; there is no limit on how much media the consumer can access, with new items being continuously added to their database. Video streaming services work by digitally 'renting' the media to the consumer, meaning that the user does not own the media and if they wish to watch it multiple times or want to keep it, then this might be a tempting reason to pirate the media in

**How to cite:** Derakhti, A, Ramírez-Rivas, C, and Ramírez-Correa, P.E, Streaming or misbehavior, investigation on movie streaming or movie piracy. DYNA, 87(215), pp. 102-108, October - December, 2020.

order to illegally own it. Additionally, video streaming requires a constant internet connection every time that the media is accessed, while if the media is illegally downloaded then it can be accessed every time after the initial download. This behavior can explain the user wanting to choose piracy over the price of streaming, especially if there are data charges involved. It is important to note that streaming is legal and poses no risks, while participating in piracy opens users up to multiple risks, such as viruses or legal actions against the user.

In general, both streaming and piracy have similar characteristics and allow consumers to watch their favorite movies. Additionally, the two alternatives have an extensive database; however, streaming provides an easy to access procedure that allows consumers to find their desired movies comfortably. Therefore, it is expected with the increased use of streaming services, the less illegal movie downloading. Contradictorily, it is also possible to argue that from the standpoint of a significant segment of consumers, it is believed that streaming would increase movie piracy. This belief is explained by using streaming as an efficient instrument to find out about new releases. This perception allows users to have an interchangeable behavior in regard to streaming or participating in piracy. For the more popular streaming services, their entry fee is quite affordable for most. Free alternatives to paid streaming services also exist, making the behavior of consumers towards piracy as opposed to streaming a relevant topic to be examined.

Recently, [2] studied the complementary features of music streaming and music piracy in USA students. Empirical results of these authors indicate that streamers have piracy behavior and details a group of reasons that would explain the illegal download. Considering these facts, is the same phenomenon possible in streaming video services? Is there any significant relation between movie streaming and movie piracy? This study is oriented to help answer these questions. In concrete, the objective of this study is to identify if movie streaming increases movie piracy. In order to meet the study objective, exploratory analysis is conducted in Chilean internet users based on the methodology proposed by [2]. Although this study is a methodological replication, the technology in which the study focuses as the sample characteristics give it elements of originality. Therefore, we believe that the findings of this study can serve as a basis for a more in-depth analysis of the subject in Latin America.

The rest of the paper is provided in five sections. Section two explains the theoretical framework and presents the study hypotheses. Section three describes the methodology used in the empirical study. Section four shows the result of the statistical analysis. Finally, section five provides a conclusion.

## 2. Literature review and hypotheses

Digital piracy among the younger population has been an appealing object of study for social scientists and economists [1-5]. Moreover, increasing the growth of digital services

such as movies or music streaming gives consumers more options regarding illegal behaviors. Several antecedents have been associated with this behavior, and then we review a set of them.

### 2.1. *Substitutes complement*

Consumers' awareness of comparable products and ability using digital products interchangeably, has been observed in the last years. These studies concentrated on how piracy behavior has changed from physical CDs to online movie and music piracy [2], [6-10]. Some articles have studied streaming and piracy behaviors. These studies have shown that consumers use streaming services as a powerful tool to find media that meets their interests and download it illegally later. [11] studied paid or unpaid movie consumption in two samples, 372 Chinese students and 3852 USA students. Their result showed that three-quarters of American students participated in unpaid consumption, while 14 percent of students who used unpaid services are using paid services. [1] demonstrated that music streaming enhances the chances of music piracy, in this same line, [2] implemented 1052 surveys among college students and provided evidence that music streamers are 11% more likely to pirate music than non-streamers. Considering the above, we propose the following hypothesis:

H1: Movie streaming affects the likelihood of engaging in the activity of movie piracy.

### 2.2. *Peer pressure*

The theory of planned behavior [12] helps to explain piracy behavior. Following [12], we can offer three viewpoints on behaviors. First, individual perceptions of risks and rewards and consequences of illegal behavior. Second, social perception of rewards and risks which influence upon behavior, amongst social groups. This cognition is observed regarding show braveness in social gatherings. Third, control of behavior or perception of controlling the acts which contain purposes and actions. Many researchers have used the theory of planned behavior in regards to software, music, and movie piracy [4,10,20,12-19]. Expenses and saving money are the fundamental reasons for misbehavior in software piracy [21-23]. It would be an honorable act in social relations in which consumers show their braveness by explaining their risky treatment.

The social learning theory supplements these results [24]. It proves that individuals are more likely to participate in illegal activity if they socialize with groups actively committing criminal behavior. The concept is that consumers within a criminal group are presented favorable attitudes towards the crime, and therefore replicate it as soon as possible. [25] proved that "I know lots of people who download more than I do" is strong enough to participate in illegal downloading. Also, [5,26] found that social learning variables are associated with digital piracy. [2] found that peer attitudes towards piracy increase the probability of

piracy. Considering the above, we propose the following hypothesis:

H2: Peer pressure increases the likelihood of engaging in movie piracy.

### 2.3. Risks and fines

Most consumers know the fact that movie piracy has costs, such as jail time or fines. However, younger people have a different perception of the risk, where piracy is not as same as shoplifting or stealing [17]. [27] proposed a hypothesis regarding risk aversion in which the consumers who have risk aversion, interested in legal movie downloading websites. Nowadays, internet activities are proliferating, and the age of using the internet has been decreasing, meaning that young people should be aware of penalties and fines. For instance, [28] found that 90% of participants of their survey declared illegally downloading acceptable behavior.

College students perceived moderate risk associated with illegal downloading of music, [29] found that student respondents did not believe in jail or any punishment due to illegal behavior. Moreover, other researchers found similar results considering the perception of risks and penalties [17,29-35]. Based on this literature, we propose the following hypothesis:

H3: Low perception of the risks and penalties associated with movie piracy increases the likelihood of engaging in movie piracy.

### 2.4. Perceptions about the movie industry

People have not seen punishment for pirates as same as street criminals [36]. Therefore, an ordinary perception exists among young consumers that piracy does not bother the movie industry because the movie industry is a billion-dollar business; therefore, downloading a movie will not hurt the studios [37]. These reasons are seemed enough for pirates to download their movies illegally. Based on these ideas, we propose the following hypothesis:

H4: Consumers' view of the movie industry affects the likelihood of engaging in movie piracy.

### 2.5. Online activity

According to the theory of planned behavior [12] an antecedent to act is behavioral control, which refers to controlling the procedure to be performed. [2] found that online activities influence in piracy behavior. Similarly, [38-39] studied how internet skill impacts piracy by measuring hours that consumers spend daily and they found that more hours spent meant more piracy behaviors. Besides, [24,36] used similar tools to measure the knowledge of consumers. According to these studies, we propose the following hypothesis:

H5: Online activities increase the likelihood of engaging in movie piracy.

## 2.6. Demographics

Demographic variables such as age, gender, profession, and monthly income can explain movie piracy from different points of view. For instance, the more income, the less piracy [31]. However, gender has had different results. Some researches illustrated that males are more likely to participate in piracy [2,21,37,39,40], but others have not found similar results [1,17]. Considering these ideas, we propose to explore the following hypothesis:

H6: Demographics variable, such as age, gender, profession, and monthly income, affect the likelihood of engaging in movie piracy.

## 3. Materials and methods

### 3.1. Sample

An online survey in Spanish was implemented in Chile and 145 responses were collected. In summary, downloading movies illegally was reported by 35% of participants, and the average sample age was 24 years old. For analysis, the sample was divided into two groups: students and not students.

### 3.2. Measure instrument

The questionnaire includes 21 questions, containing measures of demographic variables, for instance, age, gender, profession, and monthly income. Eight questions were conducted according to online activities, such as downloading movies and music, shopping, music, and movie streaming. Illegal downloading of music and movies was requested by four questions, which were designed by a set of 10 independent variables to be selected as personal treatments. Appendix A shows the survey instrument.

### 3.3. Statistical technique

Logit models have been applied to evaluate the influence of movie streaming services on the likelihood of piracy behavior. Moreover, consumers' cognitions have been examined in terms of risks associated with piracy, views about the industry and the peer pressure impact as which are affecting the likelihood of illegal downloading of movies. The general model is described in Eq.(1).

$$P[Z_i=1 | X] = F(\Theta_1 + \Theta_2 \text{Stream}_i + \Theta_3 D_i + \Theta_4 H_j, i + \epsilon_i) \quad (1)$$

The dependent variable  $Z$  is the dichotomy index that takes a value of 1 if subject  $i$  reported illicit downloading of movie and 0 otherwise.  $P$  is the probability or likelihood that  $Z_i$  equals 1.  $X$  represents the explanatory factors, including Streaming, which takes a value of 1 if any movie streaming

service was used in the past 30 days and otherwise 0. D is a vector of demographic variables, and  $H_{ji}$  represents factor  $j$  from the list of 10 explanatory statements for piracy. For example, if the respondent  $i$  marked item H1, then  $H_{1i}$  takes a value of 1 (see Appendix B for details on the rest of statements or arguments.).

#### 4. Results

Table 1 shows summary statistics and comparative values between those who stated they had engaged in a recent activity of illegal downloading a movie (Group 1) and those who did not (Group 2) by two-sample T-test. The average ages of groups 1 and 2 are 24 and 27 years old, respectively, and this difference in age is statistically irrelevant ( $SD=0.09$ ,  $p$ - it is not significant enough to be accepted in the test ( $SD=0.071$ ,  $p$ -value=0.077)). Table 1 provides preliminary evidence of the complementarity feature between movie streaming and piracy. The results from the logit models are represented in terms of likelihood to participate in movie piracy. We post-estimate the odds ratio that a student participates in illegally downloading movies to facilitate the interpretation of the results. The odds ratio measures the strength of association between two events (A and B) if the results of the odds ratio are one ( $A/B = 1$ ), this shows that both events are independent of each other. Results higher than one ( $A/B > 1$ ) indicate that both events are positively correlated. The odds result of the odds ratio being less than one ( $A/B < 1$ ) indicates a negative correlation between events.

Tables 2 and 3 show the main results from Eq. 1. For each model. From the results we can see that profession plays a role in the likeliness to participate in the behavior as it has a significant  $p$ -value for all models at the  $p < 0.05$  level, which indicates those students are more likely to pirate movies than non-students.

Model 1 in Table 2 indicates that streaming habits have a positive correlation between streaming and partaking in movie piracy, with the odds ratio showing that streamers are

Table 1.  
Descriptive statistics by type of individual.

Variables	Download Illegally	Not download Illegally	SD(p-value)
Observations	51	94	
Age	1.33	1.56	0.090(0.024)
Gender	0.47	0.60	0.071(0.077)
Student	0.88	0.69	0.004(0.002)
Income	1.31	1.69	0.069(0.001)
Online Shopping	0.67	0.74	0.067(0.168)
Freq. of Online Shop.	0.57	0.50	0.070(0.774)
Music Downloading	0.92	0.78	0.038(0.006)
Freq. of Music Down.	0.76	0.35	0.140(0.000)
Movie Downloading	1.00	0.49	0.020(0.000)
Movie Streaming	0.37	0.22	0.068(0.034)
Freq. of Movie Stream.	0.78	0.35	0.073(0.021)

Note: Values are means of the sample.  
Source: The Authors.

Table 2.  
The probability of illegal downloading of movie (I).

	Model1	Model2	Model3	Model4
Profession	0.898**	1.039**	1.219**	0.987**
Income	-0.124	-0.232	-0.168	-0.209
H1-Stream	1.719*			
H2-Peer Pressure-1		0.137		
H2-Peer Pressure-2			2.93*	
H4-Industry Concerns				1.76***
Pseudo-R <sup>2</sup>	0.14	0.05	0.11	0.06
Wald-Test (Prob> $\chi^2$ )	3.86	0.17	2.64	1.55
Goodness-of-fitness ( $\chi^2$ )	161.7	179.21	167.44	176.19

Note: \*, \*\*, and \*\*\* indicate statistical significance at 1%, 5%, and 10%, respectively. The Wald-Test verifies that all estimated coefficients are statistically significant predictors. The goodness-of-fitness test indicates that the Logit model fits the data reasonably well.

Source: The Authors.

Table 3.  
The probability of illegal downloading of movie (II).

	Model5	Model6	Model7	Model8
Profession	1.04**	1.049**	1.074**	0.835
Income	-0.228	-0.227	-0.300	-0.273
H1-Price-1	0.045			
H1-Price-2		0.110		
H5-Online activity-1			2.031**	
H5-Online activity-2				1.107**
Pseudo-R <sup>2</sup>	0.05	0.03	0.08	0.07
Wald-Test (Prob> $\chi^2$ )	0.11	0.21	2.14	1.86
Goodness-of-fitness ( $\chi^2$ )	179.23	179.20	174.33	175.23

Note: \*, \*\*, and \*\*\* indicate statistical significance at 1%, 5%, and 10%, respectively. The Wald-Test verifies that all estimated coefficients are statistically significant predictors. The goodness-of-fitness test indicates that the Logit model fits the data reasonably well.

Source: The Authors.

5.58 times more likely to participate in piracy than non-streamers. We can also see that this factor has a  $p$ -factor that proves that the factor is significant at the 1% level. Overall, this model has a goodness of fit of 0.112, which by being higher than 0.05, indicates that this model fits the data quite well. From model 3 we can see that the peer pressure factor of “My friends and I do it all the time” makes the person almost 18.7 times more likely to participate in this behavior, on the other hand, the other pressure factor (“We do not believe it is wrong to do it”) only increases the odds of this behavior by 1.15 times. We can also see that this peer pressure factor for model 3 is significant at the  $p < 0.1$  level and the overall model has a significant  $p$ -value for the goodness of fit (0.064), this is not the case for model 2, meaning that model 3 fits the data well, while model 2 does not. Model 4 indicates that by not having concerns about the effect of piracy on the movie industry is a significant factor in the choice of participating in this behavior and increases the odds of participating by 5.8 times. This model proves that the factor is significant at the  $p < 0.01$  level; however, since the  $p$ -value of the goodness of fit is 0.024, this model is not a good fit for the data. In Table 3, models 7 and 8 show that at higher levels of online activity, the more likely the user is to participate in the behavior, which more online activity pointing to higher odds in participating in movie piracy.

Table 4.

The probability of illegal downloading of movie with stream.

	Model9	Model10	Model11	Model12
Profession	0.905***	1.071**	0.852***	0.917***
Income	-0.121	-0.055	-0.111	-0.174
H1-stream	1.725*	1.756*	1.660*	1.628*
H1-Price-2	0.202			
H2-Peer Pressure-2		3.09*		
H4-Industry Concerns			1.27	
H5-Online activity-1				1.61***
Pseudo-R2	0.14	0.20	0.15	0.16
Wald-Test (Prob> $\chi^2$ )	3.86	2.57	3.70	1.59
Goodness-of-fitness ( $\chi^2$ )	161.54	150.78	160.17	158.64

Note: \*, \*\*, and \*\*\* indicate statistical significance at 1%, 5%, and 10%, respectively. The Wald-Test verifies that all estimated coefficients are statistically significant predictors. The goodness-of-fitness test indicates that the Logit model fits the data reasonably well.

Source: The Authors.

Of these models, both factors are significant at the  $p < 0.5$  level; however, the goodness of fit test indicates that neither model is a good fit for the data. Taking the streaming factor from Model 1 into consideration, Table 4 shows the regression models for all hypotheses when considering streaming as a factor. From these results, we can see that from the demographic factors profession is a predicting factor, as also seen in Tables 2 and 3.

Regarding the hypotheses, we can reject H2, the effect of price on the behavior, and H4, the effect of concerns for the industry as a predicting behavior. We can reject these since they did not provide statistically significant results in order to validate their effect on a prediction model. From model 10, we can see that H3, peer pressure, is a significant factor in predicting the behavior ( $p < 0.01$ ) and the presence of this peer pressure makes the person 21.9 times more likely to participate in piracy, which is much higher odds ratio than H5. Online activity, which is also statistically significant ( $p < 0.1$ ) albeit not to the same level, and increases the odds of piracy behavior by 4.990. We can also see that from both these models, H3 has a much higher level of goodness of fit than the alternative, meaning that this model can account for the piracy behavior better than the other models obtained.

## 5. Conclusion

This study aims to identify if movie streaming increases movie piracy. For this purpose, we implemented a survey with 145 respondents to make a methodological replication of [2] study; Since we expected some differences because of distinct people and different tastes, most of our results are consistent with their study findings. The main point is that the core idea was preserved: Movie streamers intentions to engage in downloading movies illegally. However, there is a more significant and valuable conclusion that displays the effect of peer pressure as a determining behavior among Chilean students.

Finally, there are two opinions from the study results. First, movie piracy and streaming influence each other

interchangeably. This fact implies that emphasis should be placed on educational policies that explain the damage of piracy and how it should be combated. Second, this study supports the idea that the main reasons for digital piracy are based on social behavior. We believe that this line of work should be deepened, with an analysis of the social networks of both the consumer and the pirate user.

## References

- [1] Borja, K., Dieringer, S. and Daw, J., The effect of music streaming services on music piracy among college students. *Computers in Human Behavior*, 45, pp. 69-76, 2015. DOI: 10.1016/j.chb.2014.11.088
- [2] Borja, K. and Dieringer, S., Streaming or stealing?. The complementary features between music streaming and music piracy. *Journal of Retailing and Consumer Services*, 32, pp. 86-95, 2016. DOI: 10.1016/j.jretconser.2016.06.007
- [3] Gopal, R.D., Sanders, G.L., Bhattacharjee, S., Agrawal, M. and Wagner, S.C., A behavioral model of digital music piracy. *Journal of Organizational Computing and Electronic*, 14(2), pp. 89-105, 2004. DOI: 10.1207/s15327744jocel402\_01
- [4] d'Astous, A., Colbert, F. and Montpetit, D., Music piracy on the web - How effective are anti-piracy arguments?. Evidence from the theory of planned behaviour. *Journal of Consumer Policy*, 28(3), pp. 289-310, 2005. DOI: 10.1007/s10603-005-8489-5
- [5] Morris, R.G. and Higgins, G.E., Criminological theory in the digital age: the case of social learning theory and digital piracy. *Journal of Criminal Justice*, 38(4), pp. 470-480, 2010. DOI: 10.1016/j.jcrimjus.2010.04.016
- [6] Rob, R. and Waldfogel, J., Piracy on the high C's: music downloading, sales displacement, and social welfare in a sample of college students. *Journal of Law and Economics*, 49, pp. 29-62, 2006. DOI: 10.3386/w10874
- [7] Andersen, B. and Frenz, M., Don't blame the P2P file-sharers: the impact of free music downloads on the purchase of music CDs in Canada. *Journal of Evolutionary Economics*, 20(5), pp. 715-740, 2010. DOI: 10.1007/s00191-010-0173-5
- [8] Waldfogel, J., Music file sharing and sales displacement in the iTunes era. *Information Economics and Policy*, 22(4), pp. 306-314, 2010. DOI: 10.1016/j.infoecopol.2010.02.002
- [9] Aguiar, L. and Waldfogel, J., Streaming reaches flood stage: does spotify stimulate or depress music sales?. *International Journal of Industrial Organization*, National Bureau of Economic Research, Working Paper, No.21653, 2015. DOI: 10.3386/w21653
- [10] Urbanavicius, S., Dikcius, V., Adomaviciute, K. and Urbanavicius, I., Movie piracy: how novelty-seeking relates to illegal downloading. *EuroMed Journal of Business*, 14(1), pp. 21-30, 2018. DOI: 10.1108/EMJB-03-2018-0016
- [11] Bai, J. and Waldfogel, J., Movie piracy and sales displacement in two samples of Chinese consumers. *Information Economics and Policy*, 24, pp. 187-196, 2012. DOI: 10.1016/j.infoecopol.2012.08.002
- [12] Ajzen, I., The theory of planned behavior. *Organizational Behavior and Human Decision Process*, 50(2), pp. 179-211, 1991. DOI: 10.1016/0749-5978(91)90020-T
- [13] Peace, A.G. and Galletta, D.F., Software piracy in the workplace : a model and empirical test. *Journal of Management Information Systems*, 20(1), pp. 153-177, 2003. DOI: 10.1080/07421222.2003.11045759
- [14] Al-Rafee, S. and Cronan, T.P., Digital piracy: factors that influence attitude toward behavior. *Journal of Business Ethics*, 63(3), pp. 237-259, 2006. DOI: 10.1007/s10551-005-1902-9
- [15] Levin, A.M., Dato-on, M.C. and Rhee, K., Money for nothing and hits for free: the ethics of downloading music from Peer-to-Peer Web Sites. *Journal of Marketing Theory and Practice*, 12(1), pp. 48-60, 2004. DOI: 10.1080/10696679.2004.11658512
- [16] Levin, A.M., Dato-on, M.C. and Manolis, C., Deterring illegal downloading: the effects of threat appeals, past behavior, subjective norms, as attributions of harm. *Journal of Consumer Behavior*, 6(2-3), pp. 111-122, 2007. DOI: 10.1002/cb.211

- [17] Shanahan, K.J. and M.R., Hyman, motivators and enablers of SCOURing: a study of online piracy in the US and UK. *Journal of Business Research*, 63(9-10), pp. 1095-1102, 2010.
- [18] Ma, L., Montgomery, A.L., Singh, P.V. and Smith, M.D., An empirical analysis of the impact of pre-release movie piracy on box office revenue. *Information System Research*, 25(3), pp. 590-603, 2014. DOI: 10.1287/isre.2014.0530
- [19] Herz, B. and Kiljański, K., Movie piracy and displaced sales in Europe: evidence from six countries. *Information Economics and Policy*, 43, pp. 12-22, 2018. DOI: 10.1016/j.infoecopol.2018.02.001
- [20] Huang, C., File sharing as a form of music consumption. *International Journal of Electronic Commerce*, 9(4), pp. 37-55, 2005. DOI: 10.1080/10864415.2003.11044343
- [21] Gopal, R.D. and Sanders, G.L., Preventive, and deterrent controls for software piracy. *Journal of Management Information Systems*, 13(4), pp. 29-47, 1997. DOI: 10.1080/07421222.1997.11518141
- [22] Cheng, H.K., Sims, R.R. and Teegen, H., To purchase or to pirate software: an empirical study. *Journal of Management Information Systems*, 13(4), pp. 49-60, 1997. DOI: 10.1080/07421222.1997.11518142
- [23] Harrington, S.J., Why people copy software and create computer viruses. *Information Resources Management Journal*, 2(3), pp. 28-38, 1989. DOI: 10.4018/irmj.1989070103
- [24] Higgins, G.E. and Makin, D.A., Does social learning theory condition the effects of low self-control on College Students' Software piracy? *Journal of Economic Crime Management*, 2(2), pp. 1-22, 2004.
- [25] LaRose, R. and Kim, J., Share, steal, or buy?. A social cognitive perspective of music downloading. *CyberPsychology Behavior Journal*, 10(2), pp. 267-277, 2007. DOI: 10.1089/cpb.2006.9959
- [26] Akers, R., Social learning and social structure: a general theory of crime and deviance, 1st ed., Routledge, New York, 2009. DOI: 10.4324/9781315129587
- [27] Ryu, S. and Park, B., Do I want to pay to download movies: factors affecting acceptance of legal movie download services. *Journal of Information, Communication and Ethics in Society*, 16(1), pp. 45-60, 2017. DOI: 10.1108/JICES-03-2017-0019
- [28] Ingram, J.R. and Hinduja, S., Neutralizing music piracy: an empirical examination. *Deviant Behavior*, [online]. 29(4), pp. 334-366, 2008. Available at: <http://www.tandfonline.com/loi/udbh20>
- [29] Pryor, A., Dalenberg, D., Mccorkle, D., Reardon, J. and Wicks, J., Buy or burn?. Empirical tests of models of crime using data from a general population. *The Social Science Journal*, 45(1), pp. 95-106, 2008. DOI: 10.1016/j.soscij.2007.12.007
- [30] Ang, S.H., Cheng, P.S., Lim, E.A.C. and Tambyah, S.K., Spot the difference: consumer responses towards counterfeits. *Journal of Consumer Marketing*, 18(3), pp. 219-233, 2001. DOI: 10.1108/07363760110392967
- [31] Coyle, J.R., Gould, S.J., Gupta, P. and Gupta, R., To buy or to pirate': the matrix of music consumers' acquisition-mode decision-making. *Journal of Business Research*, 62(10), pp. 1031-1037, 2009. DOI: 10.1016/j.jbusres.2008.05.002
- [32] Nandedkar, A. and Midha, V., Computers in human behavior it won't happen to me: an assessment of optimism bias in music piracy. *Computers in Human Behavior*, 28(1), pp. 41-48, 2012. DOI: 10.1016/j.chb.2011.08.009
- [33] Mccorkle, D., Reardon, J., Dalenberg, D., Pryor, A. and Wicks, J., Purchase or pirate: a model of consumer intellectual property theft. *Journal of Marketing Theory and Practice*, 20(1), 73-86, 2014. DOI: 10.2753/MTP1069-6679200105
- [34] Cordell, V.V., Wongtada, N. and Kieschink, R.L., Counterfeit Purchase intentions. Role lawfulness attitudes and product traits as determinants. *Journal of Business Research*, 35(1), pp. 41-53, 1996. DOI: 10.1016/0148-2963(95)00009-7
- [35] Williams, M., Virtually criminal: discourse, deviance and anxiety within virtual communities. *International Review of Law, Computers & Technology*, [online]. 14(1), pp. 95-104, 2000. Available at: <http://www.tandfonline.com/loi/cirl20>
- [36] Hinduja, S., Trends and patterns among online software pirates. *Ethics and Information Technology*, 5, pp. 49-61, 2003. DOI: 10.1023/A:1024910523384
- [37] Yar, M., The global 'epidemic' of movie 'piracy': Crime-wave or social construction?. *Media, Culture & Society*, 27(5), pp. 677-696, 2005. DOI: 10.1177/0163443705055723
- [38] Manski, C.F., Economic analysis of social interactions. *Journal of Economic Perspectives*, 14(3), pp. 115-136, 2000. DOI: 10.1257/jep.14.3.115
- [39] Rochelandet, F. and Guel, F.L.E., P2P music sharing networks: why the legal fight against copiers may be inefficient. *Review of Economic Research on Copyright Issues*, 2(2), pp. 69-82, 2005. DOI: 10.2139/ssrn.810124
- [40] Sinha, R.K., and Mandel, N., Preventing digital music piracy: the carrot or the stick? *Journal of Marketing*, 72(1), pp. 1-15, 2008. DOI: 10.1509/jmkg.72.1.1

**A. Derakhti**, has a MSc. in Management Information and Technology at the School of Engineering, Universidad Católica del Norte Coquimbo campus, Chile. Also, he obtained a BSc. Eng. in Industrial Engineering from Azad University South Branch in Tehran, Iran. His current research interest is the investigation of customer's behavior regarding social science and marketing. ORCID: 0000-0001-8781-7977

**Ramírez-Rivas C.**, received a BSc. in Computer Science and Psychology in 2016, from the Auckland University, New Zealand. Also, she has a MSc. in Management Information and Technology from the Catholic University of the North, Chile. ORCID: 0000-0002-2843-7816

**Ramírez-Correa, P.E.**, received a BSc. Eng in 1993, an MSc. in Business in 1997 from the Pontifical Catholic University of Valparaíso, Chile. Also, he has a PhD. in Business in 2005, from Seville University, Spain. He worked since 2008 for the Catholic University of the North. Author of more than 40 publications in international indexed journals in the field of information systems, learning and ICT. He has published his work in journals such as *Journal of Theoretical and Applied Electronic Commerce Research*, *Computers & Education*, *Telematics and Informatics*, and *Journal of Research in Interactive Marketing*. He is currently an Associate Professor of Engineering at the Catholic University of the North, Chile. ORCID: 0000-0001-7089-1505

## Appendix A.

### Survey

All surveys are anonymous. Please do not include your name on the survey. Your participation is strictly voluntary and confidential.

1-Nationality \_\_\_\_\_

2-Age \_\_\_\_\_

3-Male \_\_\_\_\_ Female \_\_\_\_\_

4-Job \_\_\_\_\_

5-Your Approximately Monthly Income:  
Under\$500 \_\_\_\$500-\$1000 \_\_\_\$1000-1500 \_\_\_\$1500-\$2000 \_\_\_ \$2000-  
\$25000 \_\_\_\$2500-\$3000 \_\_\_ More than \$3000

6-Do you have internet service available at your home/residence?  
Yes \_\_\_ No \_\_\_

7-Do you shop on the internet or have you made any kind of purchase online? (Amazon, eBay, retail store, etc.)? Yes \_\_\_ No \_\_\_

8-If yes, how many times in the past 30 days?  
0 \_\_\_ 1-5 \_\_\_ 6-10 \_\_\_ more than 10 \_\_\_

9-Have you ever downloaded music off the internet? Yes \_\_\_ No \_\_\_

10-If yes, How many times in the past 30 days?  
0 \_\_\_ 1-5 \_\_\_ 6-10 \_\_\_ more than 10 \_\_\_

11-What percentage of music do you downloaded without a payment (but it required a payment), that is, illegal download of music? 0% \_\_\_ 1-  
25% \_\_\_ 26-50% \_\_\_ 51-75% \_\_\_ 76-99% \_\_\_ 100% \_\_\_

12-Do you use any video streaming services? Yes \_\_\_ No \_\_\_

13-If yes, how many times in the past 30 days?  
0 \_\_\_ 1-5 \_\_\_ 6-10 \_\_\_ more than 10 \_\_\_

14-Select which video streaming service you use the most (you can select more than one)  
Netflix \_\_\_ Amazon Prime video \_\_\_ Hulu \_\_\_ Kanopy \_\_\_ Pluto  
TV \_\_\_ Sony Crackle \_\_\_ Tubi TV \_\_\_ LIBRARY \_\_\_

Cuevana2 \_\_\_\_\_ Xumo \_\_\_\_\_

15- Have you ever purchased any movies through an online service (Netflix, Amazon prime video, etc.)? Yes \_\_\_\_\_ No \_\_\_\_\_

16- If yes (purchasing movie through an online service), how many times in the past 30 days? 0 \_\_\_\_\_ 1-5 \_\_\_\_\_ 6-10 \_\_\_\_\_ more than 10 \_\_\_\_\_

17- What (average) price did you pay per movie? \_\_\_\_\_

18- Have you ever downloaded movie or series over the internet? Yes \_\_\_\_\_ No \_\_\_\_\_

19- If yes, how many times in the past 30 days? 0 \_\_\_\_\_ 1-5 \_\_\_\_\_ 6-10 \_\_\_\_\_ more than 10 \_\_\_\_\_

20- What percentage of movies do you download without making a payment (but it required payment), that is, illegal download of music? 0% \_\_\_\_\_ 1-25% \_\_\_\_\_ 26-50% \_\_\_\_\_ 51-75% \_\_\_\_\_ 76-99% \_\_\_\_\_ 100% \_\_\_\_\_

21- For what reason(s) have you downloaded movie off the internet without making a payment, but it required payment?

A- It is too expensive to purchase \_\_\_\_\_

B- I could not afford to purchase all the videos I would want to download \_\_\_\_\_

C- The producers are successful enough that it will not hurt them \_\_\_\_\_

D- The movie industry makes enough profits that it will not hurt the industry \_\_\_\_\_

E- We do not believe it is wrong to do it \_\_\_\_\_

F- My friends and I do it all the time \_\_\_\_\_

G- I can conveniently and quickly do it \_\_\_\_\_

H- I do not believe there is a high risk of getting caught \_\_\_\_\_

I- I do not believe the consequences are very severe if I do get caught \_\_\_\_\_

J- I do not want to support the companies \_\_\_\_\_

K- Other reason \_\_\_\_\_