



# **On-Demand Music Streaming and Its Effects on Music Piracy**

Mariana Freixo Nunes

Dissertation written under the supervision of  
Professor Fernando Machado

Dissertation submitted in partial fulfillment of the requirements for the  
International MSc in Management at the Universidade Católica Portuguesa,  
September 2018

## Abstract

**Title:** On-Demand Music Streaming and Its Effects on Music Piracy

**Author:** Mariana Freixo Nunes

In the late 1990's, music industry revenues began to decline, mostly due to the proliferation of the Internet which enabled consumers to easily pirate music. Record companies and artists began fighting legal battles and investing in educational campaigns in an attempt to teach young people the value of intellectual property. However, the times are now starting to change. In 2016, US retail revenues from recorded music grew 11,4%, the biggest increment since 1998. Streaming revenues have now surpassed income from the sale of traditional formats. Nevertheless, there is still a big player in the market worth paying attention to: music piracy. This thesis seeks to investigate the impact on-demand streaming services have been having on illegal downloading and uncover young music consumers' habits and preferences. Through an online survey, the study used a conjoint analysis to uncover consumers' preference structure. It also included direct questions to assess music consumers' characteristics and habits. The results show that ethics and perceived risk negatively influence the decision to pirate music. On the other hand, higher ethics and involvement are associated with the propensity to pay for streaming services. Also, as age increases the propensity to pay for streaming rises and the tendency to pirate decreases. Even though consumers are price sensitive, price is not always the main decision factor. Finally, we observe that streaming did in fact help to reduce the incidence of music piracy among young music consumers.

*Keywords:* Music Industry; on-demand streaming, music piracy, Millennials, Generation Z, conjoint analysis

## Resumo (Português)

**Título:** Streaming de Música ‘On-Demand’ e os seus Efeitos na Pirataria de Música

**Autor:** Mariana Freixo Nunes

No final dos anos 90, as receitas da indústria da música começaram a diminuir, principalmente devido à proliferação da Internet, que permitia aos consumidores piratear música facilmente. Discográficas e artistas começaram a travar disputas jurídicas e a investir em campanhas educacionais na tentativa de ensinar aos jovens o valor da propriedade intelectual. No entanto, os tempos estão a mudar. Em 2016, a receita associada à música cresceu 11,4%, o maior incremento desde 1998. As receitas de *streaming* já ultrapassaram as receitas dos formatos tradicionais. No entanto, ainda há um grande *player* no mercado ao qual vale a pena prestar atenção: a pirataria. A presente tese procura investigar o impacto que os serviços de streaming têm tido na pirataria de música, e compreender os hábitos e preferências dos jovens consumidores de música. Num questionário *on-line*, o estudo recorreu a uma análise *conjoint* para desvendar a estrutura de preferências dos consumidores. Também incluiu perguntas que permitiram avaliar as características e hábitos dos consumidores. Os resultados demonstram que a ética e o risco influenciam negativamente a decisão de piratear música. Por outro lado, maior ética e envolvimento estão associados a uma maior propensão a pagar por streaming. Além disso, à medida que a idade aumenta, a propensão a pagar por streaming aumenta, e a tendência para piratear diminui. Apesar dos consumidores serem sensíveis ao preço, este nem sempre é o principal fator de decisão. Finalmente, observamos que o streaming ajudou a reduzir a incidência da pirataria entre os jovens consumidores de música.

*Palavras-chave:* Indústria da Música; streaming ‘on-demand’, pirataria de música, Millennials, Geração Z, análise *conjoint*

## List of Tables

<b>Table 1</b> Attributes and Attribute Levels.....	26
<b>Table 2</b> Music Piracy and Streaming Consumption.....	30
<b>Table 3</b> Binary Logistic Regression Analysis' Parameter Estimates .....	32
<b>Table 4</b> Conjoint Analysis' Results .....	33
<b>Table 5</b> Estimated Willingness to Pay for Streaming .....	34
<b>Table 6</b> Market Simulation.....	36

## Contents

Abstract.....	1
Resumo (Português).....	2
List of Tables .....	3
Contents .....	4
Acknowledgements.....	6
1 - Introduction .....	7
1.1 Background .....	7
1.2 Problem Statement .....	8
1.3 Scope of Analysis.....	8
1.4 Academic and Managerial Relevance .....	9
1.5 Dissertation Outline.....	9
2 - Literature Review .....	10
2.1 The Music Industry .....	10
2.1.1 Overview .....	10
2.1.2 Music Acquisition and Consumption .....	11
2.2 Digital Music Piracy.....	13
2.2.1 Definition.....	13
2.2.2 Factors that influence the Decision to Pirate .....	13
2.2.3 Measures against Digital Piracy .....	15
2.3 On-Demand Music Streaming Services .....	16
2.3.1 Definition.....	16
2.3.2 Types of On-Demand Streaming Services .....	17
2.3.3 The Effects of Music Streaming.....	17
2.3.4 Stream Ripping.....	18
3 - Research Questions.....	20
4 - Methodology.....	21
4.1 Qualitative Research Procedures.....	21
4.1.1 Purpose .....	21
4.1.2 Procedure .....	21
4.1.3 Results .....	21
4.1.4 Conclusions .....	24
4.2 Quantitative Research Procedures.....	25
4.2.1 Purpose .....	25

4.2.2 Method.....	25
4.2.3 Procedure.....	27
5 – Results.....	30
5.1 Portuguese Sample Analysis.....	30
5.1.1 Sample Characterization and Segmentation.....	30
5.1.2 The Influence of Demographic and Psychographic Variables.....	31
5.1.3 The Weight of Price on Music Acquisition Choices.....	32
5.1.4 The Willingness to Pay for a Streaming Service.....	34
5.1.5 Market Simulation.....	35
5.1.6 The Effect of Different Appeals in Reducing Piracy Behaviour.....	37
5.2 Non-Portuguese Sample Analysis.....	37
6 – Discussion.....	39
6.1 Influence of Demographic and Psychographic Variables on Music Consumption.....	39
6.2 Price as a Decision Variable.....	39
6.3 Streaming Effects on Music Piracy.....	39
6.4 Effective Appeals in Reducing Music Piracy.....	40
7 - Conclusions and Limitations.....	41
7.1 Conclusions and Managerial Implications.....	41
7.1.1 Conclusions.....	41
7.1.2 Managerial Implications.....	42
7.2 Limitations and Future Research.....	43
Appendix.....	44
Appendix 1: In-Depth Interviews Guidelines.....	44
Appendix 2: Summary of Results from the In-Depth Interviews.....	46
Appendix 3: Online Survey.....	50
Appendix 4: Scales' Reliability.....	58
Appendix 5: Full Sample Demographics.....	59
Appendix 6: Segments Profiling (Portuguese Sample).....	61
Appendix 7: Logistic Regressions.....	64
Appendix 8: Impact of Legal and Educational Conditions on the results of the Conjoint ..	67
Appendix 9: Attributes' Relative Importance.....	68
Appendix 10: Market Simulation.....	69
Appendix 11: Portuguese versus Non-Portuguese Music Consumption Habits.....	71
References.....	74

## Acknowledgements

First and foremost, I would like to express my sincere gratitude to my thesis advisor, Professor Fernando Machado, for his availability, patience, useful insights and enthusiasm over the course of this study. His input was critical to define my ideas more clearly and to achieve better results.

Second, I would like to thank my family, who have supported me throughout the entire process, keeping me sane and happy when times seemed the hardest to overcome.

Also, I would like to acknowledge the support of my friends. The feedback they provided me with through the whole process greatly benefited this research.

Lastly, I would like to show my appreciation for everyone who took some of their personal time to answer my questionnaire. Thank you for making this dissertation possible.

## 1 - Introduction

### 1.1 Background

Since the late 1990's, with the rise of the digital era, the music industry has suffered a major shift, showing continuous declining revenues, a trend that has been unequivocally associated with the proliferation of online piracy. The music industry was the first to be exposed to the consequences of digital disruption, having to completely change its business model. During the 2000's, the industry introduced what was thought to be an effective solution for the piracy problem: Digital Rights Management. However, later in that decade a new trend arose when some major music sellers began offering DRM-free music. According to Sinha, Machado, & Sellman (2010) this strategy had the potential to convert some pirates into paying consumers and, in addition, to boost both consumer and producer welfare "by increasing demand for legitimate products as well as consumers' willingness to pay for these products". Nevertheless, contrary to what might be expected, currently, all on-demand music services include some sort of DRM and all forms of digital radio (for instance, Pandora) are encrypted.

Steve Jobs once said: *"You'll never stop piracy. What you have to do is compete with it"* (Danaher *et al.*, 2010). Indeed, the most recent advance in the music industry was the introduction of on-demand streaming services has a way to provide consumers with legitimate alternatives to music piracy.

The *Recording Industry Association of America* 2016 report estimated that retail revenues from recorded music in the United States grew 11,4% to \$7.7 billion, the biggest increment since 1998. The major driver of growth was attributed to the doubling of paid streaming music subscriptions. Thanks to a considerable growth in subscribers mainly in Spotify and Apple Music, music streaming has passed the milestone of 100 million paying subscribers worldwide. In 2016, for the first time ever, streaming music platforms generated most of the US music industry's revenues (IFPI, 2017a). In 2017, the global recorded music market grew by 8.1%. Streaming is now the most significant format in the music industry, including revenues from streaming radio, subscription and ad-supported on-demand streaming services. Especially due to paid subscription audio streaming, which has grown 45.5%, digital revenues now account for 54% of the global recorded music market. Streaming, whose revenues have grown 41.1%, became the largest revenue source, accounting for 38% of the global recorded music revenues. By the end of 2017, there were 176 million users of paid subscription accounts globally, with 54 million having been added during the same year (IFPI, 2018).



On the contrary, in 2016, sales of digital tracks declined faster than ever before and the total value of shipments of physical products (e.g. CDs) decreased 16% comparing to 2015 (Friedlander, 2016). As the years go by, consumers are buying more and more access to digital music. In 2016, U.S. consumers streamed 431 billion songs on demand (Nicolaou, 2017). In its most recent report on the Music Industry, Goldman Sachs (2016) projected that global recorded music industry will grow into a nearly \$41 billion by 2030, mostly due to streaming. Streaming is not only a high-margin but a more sustainable business model for the record labels. Instead of owning and selling physical products, these platforms provide access to a “digital music fortress” (Nicolaou, 2017).

In a 2016 study, researchers found that those who stream music are 11.4 percent more likely to engage in piracy, “corroborating the premise that pirates use streaming services to obtain easy access to new artists and hits of the day.” (Borja & Dieringer, 2016). However, if streaming services do in fact reduce piracy remains relatively underexplored. This dissertation aims to investigate the impact on-demand music streaming services on online music piracy, specifically among young music consumers.

## **1.2 Problem Statement**

The purpose of this dissertation is to study whether the rise of on-demand music streaming services has been able to effectively reduce online music piracy. In addition, this study employs qualitative and quantitative research procedures with the purpose of understanding the reasons behind engaging in music piracy and/or music streaming, as well as what makes users switch from illegally downloading music to streaming or even, use both channels.

## **1.3 Scope of Analysis**

This study focuses on the impact on-demand music streaming services have had in the proliferation of online music piracy. Even though it would be interesting to study the behaviour of individuals from all ages ranges, the main target of this study were individuals between 15 (teenagers) and 34 years old (young adults), since Millennials and Generation Z are not only more digital savvy, but also more likely to engage in illegal downloading (Sinha and Mandel, 2008). This dissertation aims to understand how music consumption has changed in the past few years and, how these changes are affecting digital piracy.

## **1.4 Academic and Managerial Relevance**

Until the birth of Napster, in 1999, piracy was not a real threat to the music industry. Only then it was possible for online users to upload and download music files. Even though Napster was extinct by court order in 2002, other sharing platforms arose and consequently, the industry's profits began to decline. Recently, streaming has been regarded as the solution to this problem.

This dissertation will provide valuable information to whether streaming can be thought as the solution to online music piracy, and therefore, be the most effective and viable strategy for the music industry to follow. Additionally, even though the topic in question has been subject to recurring studies, there are no studies, to the author's knowledge, that analyse the recent effects of on-demand music streaming services on online music piracy, as proposed in the present dissertation. The issues in question have been a common topic of discussion among journalists, in newspapers and magazines but have not yet been empirically studied.

## **1.5 Dissertation Outline**

The proposed dissertation will be split into five key chapters. The first chapter will serve as an introduction to the topic. It will start by covering the research topic background and its relevance for the study itself. Chapter 2 will cover the literature review of the topics in study, derived from the problem statement. Then, Chapter 3 will go in depth regarding the research questions and corresponding hypothesis. Chapter 4 will include the methodology behind the study and a description of the data collection method. Chapter 5 comprises the interpretation and analysis of the data collected. Finally, in the concluding chapter, the main takeaways from the study will be presented as well as its limitations. Furthermore, some suggestions for future research will be uncovered.

## 2 - Literature Review

### 2.1 The Music Industry

#### 2.1.1. Overview

Traditionally, the typical business model for musicians consisted on selling concert tickets and recorded music, meaning that the demand for one format would stimulate demand for the other (Papies & van Heerde, 2017). Since then, technology has been shaping the music industry as a whole, challenging this traditional demand spiral model (Eliashberg *et al.*, 2016 ; Shugan, 2004).

Recently, in a study conducted for more than 6 years in the world's third largest music market, Germany, it was stated that factors like piracy, unbundling and artist characteristics affect dynamic cross-format elasticities between record demand and concert demand (Papies & van Heerde, 2017).

Illegal file-sharing, or as it is frequently labelled, piracy, is the process by which “individuals who do not own and have not purchased a particular song or movie can nevertheless obtain that song or movie from unknown third parties” (Liebowitz, 2006). It seems to be common agreement among different authors that piracy strongly affects recorded music sales, therefore, leading to a decrease in revenues (Browne, 2012, Liebowitz, 2016). A recent study also showed that “as piracy increases, the impact of concert demand on record demand decreases” (Papies & van Heerde, 2017). This has to do with the fact that, in the past, cross-buying was the basis for the industry's business model: consumers would buy a record because they had had a positive concert experience (Kumar, George, & Pancras, 2008). Then, in the era of file-sharing, this need might be satisfied by downloading music from a file-sharing network, thus this “cross-buying behaviour is inhibited by piracy” (Papies & van Heerde, 2017).

Peer-to-peer networks are often seen as harmful to the industry's business model since consumers tend to go for the cheapest and easiest way to obtain music, ending up downloading it illegally (Alexander, 2002). The birth of file-sharing and the very large decline in CD sales that followed immediately is a powerful piece of evidence on its own”. Additionally, it has been empirically proved that in the post-P2P era, except for albums that debut high on the music charts, associated with major record labels or launched by superstars, chart survival has been significantly reduced.

Adding to illegal file sharing, another important development is unbundling. The unbundling of music allows firms to “offer individual products that were previously sold as part of bundles”

(Elberse, 2010). Consumers are allowed to choose precisely the songs they wish to listen to. Elberse (2010) studied the effect of unbundling on music sales and concluded that “revenues decrease significantly as digital downloading becomes more prevalent”. However, it was found that “bundles with items that are more equal in their appeal and bundles offered by producers with a strong reputation suffer less from the negative impact of the shift to mixed bundling<sup>1</sup> in online channels” (Elberse, 2010). Also, since attending a concert might increase sales of recorded music, now that consumers can easily access only the songs they appreciate the most, cross-buying will still occur but will not be so preeminent. Therefore, “as unbundling increases, the impact of concert demand on record demand decreases” (Papies & van Heerde, 2017)

During the 2000’s, the music industry tried to find strategies to fight against music piracy and the answer seemed to rely on systems which made it almost impossible for consumers to reproduce or distribute copies of legally bought music tracks and albums: Digital Rights Management. However, later in that decade, some major music sellers began offering DRM-free music. In a study of more than 2000 students, Sinha, Machado and Sellman (2010) proved this strategy had the potential to convert some pirates into paying consumers and, in addition, boosts both consumer and producer welfare “by increasing demand for legitimate products” therefore, reducing the propensity to pirate, as well as “increasing consumers’ willingness to pay for these products”. Similar results were held by Vernik, Purohit and Desai (2011) but, additionally, it was assessed that “a decrease in piracy does not guarantee an increase in firm profits and that copyright owners do not always benefit from making it harder to copy music illegally”. Nevertheless, contrary to what might be expected, currently, all on-demand music services as Spotify, Apple Music, Google Play Music (among others) include some sort of DRM.

In 2016, US recorded music experienced its biggest increase in retail revenues since 1998, growing by 11,4% to \$7.7 billion (Friedlander, 2016), mainly due to the twofold of paid streaming music subscriptions. Currently, streaming platforms generate most of the US music industry’s revenues and take 59% of the industry’s digital revenues (IFPI, 2017a).

### ***2.1.2. Music Acquisition and Consumption***

According to Lacher and Mizerski (1994) consumers can experience music in one of two ways: they can either listen to a recorded version of a song or attend a live concert. In the present day, consumers can use and combine various music platforms which allow them to listen to music

---

<sup>1</sup> When a firm sells both the bundle and (all) the products separately

both online or offline (Weijters *et al.*, 2014). There are also several different ways to acquire music: legal and illegal, free or paying. These include buying and copying CDs, downloading MP3 files, peer-to-peer (P2P) file sharing and on-demand music streaming. According to Weijters and Goedertier (2016) buying CDs is still quite popular, however copying CDs is not that widespread anymore. Streaming of songs and music videos is quite prevalent, and illegal downloading is a significant acquisition mode for many music consumers, even more than legal downloading.

In a study by Krueger (2005) it was concluded that even though the music industry has suffered severe losses, the market for live performances seems to be growing at a fast pace. In the late 90's, the importance of complementary products like CDs started to decrease and ticket prices began to rise. Musicians began replacing their lost revenues from record sales with revenues from live concerts.

The appearance of the Internet enabled a complete change in the way music is distributed and consumed. Consumers combined use of different music platforms is influenced by variables as motivation (music involvement, price consciousness), ability (Internet expertise), and demographics (age, gender) (Weijters & Goedertier, 2016). According to Styvén (2010) music involvement and music consumption are positively correlated in all formats. Additionally, price consciousness may negatively affect willingness to pay, thus explaining illegal downloading (Papies *et al.*, 2011).

The attitude towards legally/illegally downloading music has also been studied. According to a research on the current music consumption preferences, it has been shown that consumers from all ages prefer legal and ethical options when available, however price sensitivity plays a great role. While middle-aged adults are more open and willing to pay for ad-free platforms, youngsters are more prone to accept advertising and, even though they appear less law-abiding this seems to be justified by monetary reasons and not by ethical values (Weijters *et al.*, 2014).

The *International Federation of the Phonographic Industry*, concluded that, even though 40% of consumers still access unlicensed music, 96% of internet users do it legally (this percentage rises to 98% among 16-24-year olds). From 2016 to 2017, the percentage of consumers listening to music through audio streaming has increased from 37% to 45% (22% free streaming and 23% paid streaming), but video streaming still makes up more than half of the demand for streaming services. Furthermore, 85% of 13-15-year olds stream music, either in an audio or video format, and 38% are paying for music downloads. Additionally, 90% of the subscribers of premium paid streaming services listen to music on a smartphone (IFPI, 2017b).

Moreover, Millennials (born between the early 1980s and mid 1990s/early 2000s) and Generation Z (born between the mid 1990s and mid 2000s) are more receptive and the primary users of music streaming subscription services (92% of Generation Z and 91% of Millennials use Audio Streaming to listen to music, compared with 77% of the 35 or older)(Lister, 2017). In the U.S., 72% of all weekly stream on Spotify are Millennials (Cummings, 2016). Streaming is also transforming Gen Z's relationship with music, instead of listening to albums, 74% say they mainly listen to single tracks or playlists (Mulligan, 2017).

## **2.2 Digital Music Piracy**

### **2.2.1. Definition**

Digital piracy entails the “consumer practice of illegally downloading files, such as music, movies, software, etc., from the Internet” (Kos Koklic *et al.*, 2016). It also covers “the unauthorised duplication of digital material” (Goode, 2012).

According to a report by the International Chamber of Commerce's BASCAP (Business Action to Stop Counterfeiting and Piracy), in 2015, it is estimated that the commercial value of digital piracy in music was \$29 billion. Furthermore, streaming seems to have had a negative impact on music piracy since it satisfies consumers' needs for convenient and cheap, if not free, access to music. Between 2013 and 2015, there was a drop of almost 22% in the number of illegal downloads via P2P file sharing (Frontier Economics, 2016).

### **2.2.2. Factors that influence the Decision to Pirate**

Downloading copyright infringing data is illegal in most countries in the World, being considered a deviant and criminal behaviour. A common statement among researchers is that consumers who engage in illegal downloading possess weaker or even a lack of ethical (Robertson *et al.*, 2012 ,Chaudhry *et al.*, 2011, Gopal *et al.*, 2004) and moral standards (Jambon & Smetana, 2012, Simpson *et al.*, 1994). Some individuals don't even consider downloading copyright infringing data to be an ethical transgression (Jacobs *et al.*, 2012, Hinduja & Higgins, 2011, Bonner & O'Higgins, 2010). In a study focused on the software and media piracy, Cronan & Al-Rafee, (2008) concluded that moral obligation was negatively correlated with the intention to engage in digital piracy.

Consumers' propensity to pirate might also be influenced by guilt and embarrassment, which in turn, is related to an individual's ethical and moral standards. Freestone & Mitchell (2004) found that Millennials saw digital piracy as an acceptable behaviour since they believed the

music sellers were not being directly harmed. In a study by Sinha & Mandel (2008), the level of embarrassment associated with getting caught listening to a copyright infringing song did not have a significant impact on a consumer's propensity to pirate. However, it was also concluded that consumers are more likely to pirate a song if it is to be consumed privately and that "public consumption increases willingness to pay for downloads".

Consumers' past piracy behaviour has also been studied to influence the intention to pirate. According to Sinha & Mandel (2008) the more frequent is this behaviour, the greater the intention to pirate music. Also, as consumers' perceived risk of getting caught increases, the probability of pirating digital songs decreases (Dilmperi, King, & Dennis, 2017; Sinha & Mandel, 2008).

Additionally, consumers' perceived behavioural control and subjective norms have also been proved to influence the intention to pirate digital materials (Cronan & Al-Rafee, 2008). Ajzen (1991) defined Perceived Behavioural Control as the "people's perception of the ease or difficulty of performing the behaviour of interest". According to a study by Schaller & Malhotra (2015), people who find a behaviour to be easy to perform are more likely to engage in it. A subjective norm is "the individual's perception of social pressure to perform or not perform the behaviour" so, the higher the evaluation of subjective the greater the intention to pirate digital goods (Cronan & Al-Rafee, 2008).

The quality of the legal alternative is also an important factor to consider (Dilmperi et al., 2017; Sinha & Mandel, 2008). According to Sinha & Mandel (2008), when the participants in the study were presented with an alternative to piracy, such as a legal and paid Website which "offered features such as extensive music catalogues and the availability of extras, such as rare recordings, live concerts, and downloadable ringtones and videos", all participants stated they would be less likely to pirate.

Furthermore, findings on the relationship between gender and piracy are inconclusive (Robertson et al., 2012). Even though some authors find women to be less likely to pirate (S Bhattacharjee et al., 2003; Madden & Lenhart, 2003; Rochelandet & Le Guel, 2005), others state this relationship is not substantial (Borja & Dieringer, 2016; Shanahan & Hyman, 2010).

On the other hand, age has been intrinsically related with the propensity to pirate. It has been studied that the older you are the more likely are you to pay for music, thus less predisposed to illegally download music (Sinha and Mandel, 2008).

### ***2.2.3. Measures against Digital Piracy***

In order to reduce digital piracy, some measures concerning “technological innovation, educational campaigns, legislation, and legal digital alternatives” have been implemented (De Corte & Van Kenhove, 2017).

Regarding legal action, in an attempt to frighten the general public into not copying music, the *Recording Industry Association of America* began suing file-swappers and imposed enormous penalties (e.g. fines of \$750 per copyright infringement) (Barker, 2004). Even though the legal strategy is consistent with the theory that an immediate and harsh punishment will reduce criminal behaviour (Williams & Hawkins, 1986), Sinha and Mandel (2008) exposed that this strategy might increase the likelihood to pirate among consumers with higher tolerance to risk.

However, the music industry continues to stress the importance of having well-established copyright laws, and collaborates with Internet intermediaries as “advertising, payment providers and mobile app platforms” in the fight against digital piracy (IFPI, 2015). Currently, there is a system known as “notice and takedown” already implemented in several countries, where rights’ owners discover where music has been illegally uploaded online and then warn the host to remove that content from the Internet. In 2016, from a total of 1.6 million videos and streams reviewed, 500 000 illegal files were found and removed (IFPI, 2017a). Website blocking has also been increasingly accepted as an effective way to fight against copyright infringement. The legal authorities of many countries around the world have already ordered Internet Service Providers to block consumers’ access to certain copyright infringing websites. From 2012 to 2014, since a robust number of leading sites were blocked in the UK, a decline of 45 per cent in visitors from the UK to all *BitTorrent* sites was reported (IFPI, 2015). Search engines also play an important role when it comes to influencing users about how and where to obtain content. In fact, there is evidence that reducing the appearance of pirated links in search engines can be an effective measure to tackle intellectual property theft (Sivan, Smith, & Telang, 2014).

A different and smoother approach to tackle this problem might be through an educational strategy. This strategy aims to influence the behaviour of music consumers, increasing their awareness regarding the harm piracy can cause to the industry, its stakeholders and in the end, to consumers (Chiu *et al.*, 2008). Several studies suggest that an educational campaign would be more effective in tackling digital piracy (Jeong & Khouja, 2013; Gopal *et al.*, 2004; De Corte & Van Kenhove, 2017).



Since consumers seem to care less about the impact digital piracy has on well-known performers and wealthy corporations (d'Astous, Colbert, & Montpetit, 2005; Taylor, Ishida, & Wallace, 2009), it has been studied that campaigns against digital piracy should focus on the consequences this behaviour might have on small independent artists and companies (Harris & Dumas, 2009) and also, provide solid data that would make invalid all the arguments used by pirates to justify their conduct (Kos Koklic et al., 2016).

According to De Corte & Van Kenhove (2017), the educational strategy is more effective when it comes to lowering pirating intentions than the legal strategy. Despite this, it is crucial to acknowledge that digital piracy is in permanent evolution, and that new forms of illegally accessing music such as distribution of music through social media (Twitter and Tumblr), BitTorrent file-sharing, stream ripping and unlicensed cyberplaces are emerging (IFPI, 2015). Therefore, these strategies might not have the desired impact to solve the problem of decreasing revenues in the music industry. The solution might rely on a business model adjustment (Bhattacharjee *et al.*, 2006) based on legal alternatives and technological innovation.

## **2.3 On-Demand Music Streaming Services**

### **2.3.1. Definition**

Streaming audio, more precisely music, is a form of distributing sound files without the need to download them from the Internet. Even though music has been streamed since the invention of radio, nowadays, subscription services offer a wider variety of consumption choices since users can control when and where to access music.

As the years go by, consumers are buying more and more access to digital music. In 2016, U.S. consumers streamed 431 billion songs on demand (Nicolaou, 2017). Launched in Sweden in 2008, Spotify is probably the most outstanding development in the streaming era, having more than 157 million Monthly Active Users and 71 million Premium Subscribers (S.A., 2018).

Streaming is now the most significant format in the modern music industry, including revenues from streaming radio, subscription and ad-supported on-demand streaming services. It grew from just 2.7% of the global industry revenues in 2010 to 38% of the market in 2017 (IFPI, 2018), and it is not only a high-margin but a more sustainable business model for the record labels (Nicolaou, 2017).

### ***2.3.2. Types of On-Demand Streaming Services***

On-demand streaming can be split into two types of services: free of charge, supported by advertising (i.e. YouTube and ad-supported Spotify) versus a paid subscription service.

Free streaming services consist of ad-supported platforms with limited access to music. Consumers are subject to advertising breaks, and streaming mobility is either non-existent or severely restricted. Even though it is already possible to stream music freely on several devices, such as computers, tablets and mobile phones, there are still several user restrictions (e.g. impossibility to choose specific songs from a playlist, limited song skipping and restricted repeated listening) that prevent free users from easily accessing music on mobile devices (Aguar, 2017).

On the other hand, premium streaming services (i.e. Spotify Premium and Apple Music) are not only ad-free, but also offer additional benefits as offline listening and unrestricted access to tracks on fixed and mobile devices (Friedlander, 2016). Premium subscribers pay a monthly fixed fee to have unrestricted access to the platform's content.

Paid streaming services were the category which registered the greatest growth, both in dollar and percentage basis, with revenues increasing by 114% in 2016, accounting for 1/3 of the U.S. recording industry revenues. This growth was driven by an increase in the number of paid subscriptions, from 10,8 million in 2015 to 22.6 million in 2016. When it comes to revenues from ad-supported on-demand streaming services, it is estimated that, in 2016, more than 200 billion songs were streamed only in the US and, that in the same year, revenues from these services grew 26%, to \$469 million (Friedlander, 2016).

Increasing competition is one key factor explaining this overall market growth. Streaming services' providers are trying to differentiate themselves to capture consumers with different music preferences and distinct music consumption habits, trying to appeal to all music fans.

### ***2.3.3. The Effects of Music Streaming***

Individuals relationship with music has been shifting since the rise of the digital era. Several studies have covered the effects of music streaming on recorded music sales and consumption. Streaming is often perceived as a product discovery tool for sampling or exploring music (Datta et al., 2017; Wlömert & Papies, 2016; Danaher 2014; Nguyen et al., 2014). However, it can also be regarded as an alternative method of music consumption, therefore, negatively

affecting piracy and music sales. This issue has made some artists remove their work from streaming platforms since royalties were considered to be excessively low (Aguiar, 2017).

The cannibalization effect has been extensively studied by recent papers. Consumers who adhere to streaming (either free or paid) purchase significantly less recorded music (Wlömert & Papies, 2016). For example, it has been concluded that even though using Spotify increases overall music consumption, it cannibalizes the consumption of music on iTunes (Datta *et al.*, 2017)

To fully understand the impact of streaming, it is important to analyse free and paid streaming services separately. In general, the impact of paid streaming has been remarked as having a positive effect on market revenue, while the net effect of free streaming services on revenues is only positive for consumers who were inactive or did not spend money on music before subscribing to streaming platforms (Wlömert & Papies, 2016, Aguiar, 2017). Therefore, it seems logical to conclude that paid streaming services' subscribers have little or no incentives to consume music online through other channels, which has implications both on digital sales and piracy (Aguiar, 2017). According to Nguyen *et al.* (2014), "free music streaming has no significant effect on CD sales and positively affects live music attendance, but only for national or international artists who are more likely to be available on streaming services". Also, due to its restrictions, free streaming can lead to music consumption through different channels as unlicensed downloading (Aguiar, 2017). In a study by Wlömert & Papies (2016), a panel of more than 2500 consumers were observed during more than a year with the objective of determining the effect of streaming, both paid and free, on the music industry revenue. The results showed that "the negative effect of free streaming on industry revenue is offset by the positive effect of paid streaming", therefore the overall effect of streaming on industry revenue is estimated to be positive.

These findings indicate that music labels, artists and the rest of the industry should pay special attention to paid streaming. According to Wlömert & Papies (2016), since artists' royalties will diminish with the increase of streaming's popularity, these should "negotiate contracts in which the growing relevance of streaming is adequately reflected".

#### **2.3.4. Stream Ripping**

Stream Ripping "is the process of 'ripping' or creating a downloadable file from music that is available to stream online" (IFPI, 2017a). According to the IFPI, music piracy is still alive but in the form of stream ripping, now the most common way to illegally download music (IFPI,

2017a). Between 2014 and 2016, users accessed stream-ripping 141.3% more, surpassing all other illegal music acquisition methods (Savage, 2017).

These websites enable music fans to convert streaming platform's songs (e.g. Spotify) and YouTube videos into mp3 music files, that can be accessed offline and on other equipment, free of charge and without advertisements (Savage, 2017). The companies that provide unlicensed streaming services earn money selling advertising space on their websites, and do not share any returns with the rights' holders of the music they make available (IFPI, 2017a).

In 2016, a research by IPSOS showed that 30% of all Internet users had engaged in stream-ripping during the last six months of the research period (this percentage increases to 49% when dealing with 16 to 24 year olds) (IFPI, 2017a). Also, a research conducted in the UK revealed that 25% of the individuals who engage in stream-ripping believe these websites had the permission to rip and enable the download of music content, and 20% indicated they did not feel they were doing something illegal (Intellectual Property Office, 2017). The need to listen to music online and on the move, as well as financial constraints together with the feeling that official music content is overpriced seem to be the main reasons why people engage in stream-ripping (Intellectual Property Office, 2017; Savage, 2017).

Stream-ripping is mainly attracting younger audiences, with half of 16 to 24 year olds using stream-ripping websites. Among internet users polled across 13 countries, 35% admitted to having accessed copyright-infringing music over the past 6 months, while 30% did so by ripping streamed music (IFPI, 2017b).

In 2016, Youtube-mp3.org, the German-based website which was once the largest stream-ripping platform, with more than 60 million users a month, was shut down due to legal action from record companies in the UK and in the U.S. Despite this, stream-ripping is still seen as a threat to the music industry, with an estimated 416 million visits to stream ripping sites in January 2018. Artists and record labels are expected to continue to take action against this type of services (Blewett, Castaldo, & Lamy, 2017; Savage, 2017).

### 3 - Research Questions

After reviewing the existent literature on music consumption habits, digital piracy and music streaming services, the following research questions were formulated.

**RQ1:** How can young music consumers be differentiated regarding their music consumption habits? Which demographic and psychographic variables influence the preference for piracy?

First, we were interested in segmenting music consumers regarding their music consumption habits. Demographics as age and gender were hypothesized to influence the way people consume music, specifically through piracy and paid streaming. Secondly, we were interested in understanding whether psychographic characteristics, as music involvement, ethics, past piracy behavior and perceived risk (Cronan & Al-Rafee, 2008; Sinha & Mandel, 2008) would influence young consumers' decision to pirate or to stream music.

**RQ2:** To what extent are consumers willing to pay for a streaming service? How heavily does price weight on individuals' decision to subscribe to a streaming service?

Second, it was hypothesized that price could be a significant decision-making variable (Papies et al., 2011; Weijters & Goedertier, 2016) however, it was expected that it would not significantly outweigh the importance of other streaming service features.

**RQ3:** What are the main effects of streaming on music piracy? Is streaming a substitute or a complement to illegal downloading?

This research question aims to perceive whether streaming and illegal downloading are substitutes or merely complementary. If these are in fact complements, streaming might not have the desired consistent impact on online music piracy. However, since paid streaming revenues have been growing at a fast pace (45.5% in 2017) (IFPI, 2018) it is hypothesized that users won't have many incentives to keep illegally downloading music, therefore streaming can become a long-term substitute to music piracy.

**RQ4:** Which appeals are more effective in reducing piracy behaviour?

To conclude, it was hypothesized that, when previously exposed to a stimulus drawing attention to the harm inflicted on artists by engaging in music piracy, individuals would be more prone to pay for music (Harris & Dumas, 2009).

## 4 - Methodology

### 4.1. Qualitative Research Procedures

#### 4.1.1. Purpose

Qualitative Research was essential not only to understand the target's involvement with the music market and their music consumption habits and preferences, but also to assess music consumers' views on on-demand streaming services. Qualitative data collection procedures were also crucial to inform the selection of streaming attributes to employ in the conjoint experiment to be conducted in the quantitative part of this study.

#### 4.1.2. Procedure

Individual in-depth interviews were conducted with a convenience sample belonging to the target of this study, individuals between 15 and 34 years old.

The interviews were semi-structured. The first section referred to the respondents' music involvement and consumption habits. Then, interviewees' opinions regarding streaming services were gathered. Respondents were not only asked to disclose which attributes they found the most important on a streaming platform but were also presented with the prices practiced by the two main streaming platforms – *Spotify* and *Apple Music* and questioned on how fair they perceived these pricing schemes to be.

Additionally, in line with the major purpose of this study, interviewees were also asked their thoughts on the impact streaming services have been having on digital music piracy.

Lastly, respondents provided personal details and were thanked for their participation.

#### 4.1.3. Results

A total of eight respondents were interviewed. The sample was composed by four participants aged 18-24, one aged 25-34 and three aged under 18. The sample was gender balanced and the interviews took an average of 30 minutes to complete (see Appendix 1 for detailed results).

***Music Consumption Habits and Involvement.*** The number of hours spent listening to music, daily, varied a lot among respondents. Nevertheless, three interviewees reported to spend around 1 or 2 hours per day listening to music, and two mentioned they usually spend 3 to 5 hours on this activity. As it was expected, only one interviewee mentioned to buy CDs and/or digital tracks, nevertheless very rarely, while the great majority of respondents mentioned to

never acquire those products. Most respondents revealed to only attend concerts once a year, and the most common favourite music genres are Rock and Pop. Also, every interviewee agreed that the experience of listening to music is mostly personal, meaning that they mostly listen to music alone. When it comes to the devices used to listen to music, all respondents mentioned the mobile phone and computer, while some mentioned the car radio and one the MP3 player. When inquired about the source of the music they usually listen to, all respondents mentioned either Youtube, on-demand music streaming platforms (Spotify or Apple Music), or both. Two of the respondents also added stream-ripping as one of the music sources. Interviewees were also asked the following: “Imagine that a friend of yours mentions a new song which you do not know. You want to listen to that song right now. Describe what would you do to do so”. Seven out of the eight respondents revealed they would search for that song directly on Youtube. One of the respondents stated that the only reason preventing her to go directly to Spotify was the fact that she only subscribed a free version of this service:

*If I'm on my phone I go straight to Youtube since the free version of Spotify doesn't allow me to choose a particular song. If I am on my computer, I go to Spotify.*

However, even though most tend to use Youtube as a ‘music discovery tool’, they do not have the habit of using this platform for long periods of time.

*Youtube is mainly a video streaming platform, therefore it doesn't allow users who are on mobile to lock their phones and continue to have access to the content just on audio. So, if I want to quickly search for a song, I'll go to Youtube, but if I want to listen to a playlist, I go to Spotify.*

Regarding the reason why respondents listen to music, most of them mentioned that they did so to relax, to feel good and to focus. Also, most respondents do not proactively search for information about upcoming albums and artists.

*I don't usually look for information on new albums and artists. I would only do it if I come across a new music from a new artist/band that I like and I want to get to know more songs.*

Additionally, most interviewees stated that music was a recurrent discussion topic with others.

**Streaming Services.** When asked to mention the first streaming platform that would come to their mind, all respondents (with one exception) mentioned Spotify, and all listen to music on streaming daily.

Four out of the eight total respondents stated to be currently paying for a streaming service. Furthermore, all the interviewees (with one exception) mentioned they would be willing to pay or continue to pay for a streaming service. The comments provided by the interviewees were helpful in uncovering views on the price of this type of service. Several respondents mentioned advertising to be the main reason why it is justifiable to pay for a premium version (when it comes to Spotify). Some even mention that advertising is more bearable on the computer than on the mobile version. Additionally, some respondents have a music streaming service included in their mobile tariff model, however, if this feature wasn't included they would still consider paying for it due to the variety of songs and other features these platforms have available.

When further asked to infer on how fair they believed Spotify's and Apple Music's price schemes were, most respondents immediately stated to be loyal to Spotify, and associated the brand with having a better reputation. Most mentioned that the fact that Spotify's free version enables them to get to know the service beforehand and, therefore, in some cases, get used to it. The main conclusion was that the prices practised are fair, however, some respondents mentioned that, even though the student and family discounts are reasonable, the standard price could be slightly less expensive.

When inquired about the benefits associated with music streaming, most respondents stated that these platforms enable users to easily access a wide variety of songs. The layout is easy to use, the platform is very organized, and users can create their own customized playlists. Moreover, going more in depth regarding the features/attributes offered by streaming services, most interviewees mentioned that being able to listen to music while not being connected to the Internet, on "offline mode", is quite important. Additionally, the ability to customize playlists and to listen to music without being subjected to ads also appears to be on the top of users' priorities. Five respondents also mentioned price as an important attribute to consider.

***Illegal Music Downloading.*** Only two out of the total eight respondents stated to often engage in illegal music downloading, while the majority rarely or never do so. When asked about their opinion on the subject most respondents revealed they used to download music illegally a lot more than they do now, mostly due to the appearance of streaming services. It was also common ground that, even though it is obvious that illegally downloading music hurts the artists and the record companies, most respondents don't feel any guilt in doing so.



*I don't think it is worth it anymore. Before I used to do it all the time [illegally downloading songs]. I felt it wasn't even an illegal behaviour. Nothing was going to happen to me. Now I just use Spotify and Youtube so there is no need for that.*

Additionally, when presented with the concept of stream-ripping, all respondents revealed they had already downloaded songs through “Youtube to Mp3 convertor” websites at some point in their lives. Nowadays, five out of the eight total respondents revealed to never or rarely engage in stream-ripping, and the ones who do, use it as the only form of illegally downloading songs. Furthermore, all respondents agreed that streaming can be a substitute to illegal downloading and the great majority does not consider stream-ripping to be a serious threat to the music industry.

#### **4.1.4. Conclusions**

The results from the interviews were informative in several aspects. First, the questions on music consumption habits, involvement and the respondents’ views on illegal downloading were important to help define the main variables which would influence the propensity to subscribe an on-demand music streaming service. The need for variety, the involvement with music, the preference for immediacy and the attitude towards illegal downloads were key in deriving individuals music consumption choices.

Second, the questions on the streaming services’ benefits and important features were valuable in selecting the streaming service attributes for the conjoint experiment. Price, the ability to customize playlists, the advertising level, the ability to listen to music online (without Internet connection) and the type of mobile access (users can listen to music on a mobile device as they do on a computer, or they can be somehow limited, as not being able to skip or choose songs) appeared as the most important attributes to study. Additionally, price was a crucial factor in decision making. Therefore, it is important to understand, whether the current streaming platform’s price scheme is the most beneficial, as well as what type of messages are the most effective in changing the behaviour of those who still illegally download music from the Internet.

Thirdly, even though most were quite aware of the harm associated with illegal downloading of music, it was interesting to see that most respondents seem to have no shame or guilt for engaging in that behaviour. None of the respondents had a problem saying they used to illegally download music a lot in the past, at least more than they do now. This led us to think that

streaming can be the cause of this behaviour change, as hypothesized in the beginning of this study.

## **4.2. Quantitative Research Procedures**

### **4.2.1. Purpose**

In line with the presented research questions, the purpose of the quantitative research procedures was to (1) understand how music consumers' characteristics influence their decision process, (2) to understand how heavily price weights on individuals' consumption process, (3) to study the main effects of streaming on music piracy and (4) to estimate the influence of certain stimuli on individuals' decision to pirate music.

### **4.2.2. Method**

Since a large amount of responses was needed in the most timely and cost-efficient manner, an online survey (written in English) was developed using *Qualtrics*. As mentioned in the beginning of this dissertation, only answers from individuals between 15 and 34 years old were considered. There were no constraints regarding nationality given that the music consumption and acquisition methods are the same across the globe. However, since only a small percentage of the sample was composed by non-Portuguese (25.6%), it was decided to run the main study using only the responses from Portuguese and, afterwards, conduct an additional analysis of the non-Portuguese survey answers. Before being launched in its final version, the questionnaire was subjected to 3 pilot tests so that minor issues were found and addressed.

### **Conjoint Analysis**

One of the most used methods in analysing consumer preferences - conjoint (Carroll & Green, 1995), enables researchers to determine the product features that drive consumer's preferences for products (Winston, 2014). Respondents are presented with controlled combinations of attribute levels (profiles), which they are asked to evaluate (rate, rank or choose) (Chrzan & Orme, 2000). Thus, this technique forces individuals to trade off competing needs, uncovering their implicit preferences (McCullough, 2002).

This study applied a *choice-based* conjoint technique. Respondents selected alternatives among experimentally controlled sets of profiles (Chrzan & Orme, 2000) composed by mutually exclusive and collectively exhaustive alternatives (Bakken & Frazier, 2006). Choice-based conjoint is considered to be superior to other conjoint techniques since it incorporates "realistic interdependencies among the attributes" (Bakken & Frazier, 2006).

Additionally, each choice set accommodated a base alternative, in this case, “unpaid downloads from the Internet”, that did not vary from one choice task to another. This alternative improves both the predictive fit and estimates for the model attributes (Haaijer, R., Kamakura, W. & Wedel, 2001).

**Attribute and attribute level selection.** The information gathered from the literature review and in-depth interviews validated the choice of the streaming service attributes and levels presented in each choice set. According to Berkman, et. al (1997), consumers tend to rely on six or fewer attributes as decision criteria. Therefore, five attributes were chosen as the most relevant for this study. Most interviewees mentioned price, the ability to listen to music while not being connected to the Internet, being able to customize playlists and to listen to music without being subjected to ads, as top priorities. Besides *Offline Access* and *Customized Playlists* which are binary, *Price* was split into 4 levels so that the options available would be the closest to the market’s reality. *Advertising* was divided into 3 levels: the one currently applied by the major ad-supported streaming platform – Spotify, which displays ads every 30 minutes, the one applied by paid streaming services – no advertising, and a worst-case scenario option where ads were displayed every 15 minutes. Also, since the increase in smartphone usage for music in 2017 is seen across all age groups from 16-54 years old (IFPI, 2017b), it was also decided to account for the type of mobile access available (users can listen to music on a mobile device as they do on a computer, or they can be somehow restricted as it occurs with Spotify Free). Therefore, the attribute *Mobile Access* was split into 3 levels, once again the closest to reality as possible. Table 1 includes the list of attributes and levels under study.

**Table 1** Attributes and Attribute Levels

Attribute	Attribute Levels
Price	11€, 7€, 3€, Free
Offline Access	Yes, No
Customized Playlists	Yes, No
Advertising	30 sec ad every 15 min, 30 sec ad every 30 min, None
Mobile Access	Only song skipping, Only ability to choose songs, Both

**Preference model and data collection method.** The present study adopted a *randomized design*, where respondents are randomly selected to receive different versions of the predefined choice sets. More precisely, a *Balanced Overlap* technique was applied since this proved to be the fairest option to measure main and high-order effects. Respondents are shown products as

a bundle of all attributes and profiles are orthogonal within respondents (Chrzan & Orme, 2000).

***Stimulus set construction.*** The full factorial design consisted of 144 concepts. Three orthogonal designs with 16 profiles were developed. Each design was split in half. From those 8 profiles, 6 conditions were developed. Each condition englobed 4 choice sets with 2 choice options, plus a third choice named “Unpaid downloads from the internet” (See Appendix 3, Section 5).

Respondents were randomly presented one set and confronted with all attribute levels at least once. This setting is realistic since nowadays, as it was comprehended by the qualitative research, most music consumers only take into consideration two methods for acquiring music: streaming and illegal downloading.

***Stimulus presentation.*** The concepts were introduced beforehand through verbal descriptions. The order of the attributes was the same in each choice option, as to not make the task difficult to comprehend. In the pre-test experiment, respondents did not tend to over focus in any of the attributes, so there was no need to randomize the attribute’s order.

#### ***4.2.3. Procedure***

The questionnaire began with qualifying questions on respondents’ music consumption habits and preferences. According to the information derived from the literature review and qualitative procedure, the propensity for variety and immediacy, involvement and consumers’ attitudes towards music, were important factors in music consumers distinction.

It was hypothesized that consumers who sought more variety and, thus, were more involved with music, were more prone to use streaming. To measure the variety seeking tendency, this study used five reflective items frequently used to assess propensity for variety (Olsen *et al.*, 2016), selected from the *Change Seeking Index Scale* (Steenkamp & Baumgartner, 1995). Then, the *Involvement with the Product Scale* by Traylor & Joseph (1984) was used to evaluate music involvement since it is regarded as a reliable scale (Voss *et al.*, 2003) (refer to Appendix 4 for details).

Even though there is still no literature on the topic, during the in-depth interviews, most respondents stated that it was not necessarily the ease or difficulty of pirating songs (*Perceived Behavioural Control* (Ajzen, 1991) that led them to reduce their pirating frequency. Above all, it was a sense of impatience, of wanting to have access to music in a matter of seconds. Since

there are no existing scales on this subject, to assess respondents' preference for immediacy, we relied on a method that is commonly used to estimate respondent's discount rates, the rate at which money and goods are traded today for money and goods in the future (Harrison, Lau, & Williams, 2002). Participants were presented with two dichotomous questions, each with different choice levels (see Appendix 3, Section 2). The way respondents answered the first question would influence the second. The assumption was that people with high discount rates (less predisposed to wait to obtain some sort of compensation) would not have the patience to illegally download music from the Internet due to the time and effort involved in doing so, thus, would more easily engage in streaming.

Additionally, research suggests that an individual's general ethical evaluation doesn't necessarily apply to digital piracy (Lysonski & Durvasula, 2008). Thus, since there were no specific scales to study neither ethics, nor other important variables in the context of music piracy (e.g. perceived risk), a scale on the general attitudes towards illegal downloading was developed. After an exploratory factorial analysis, it was decided to retain only two variables for the subsequent analysis: *Ethics* (composed by two scale items) and *Perceived Risk* (one scale item) (see Appendix 4 for detailed results).

In the second section, participants were presented with a definition of on-demand streaming and inquired about their habits and preferences regarding these services. Respondents were asked to rank a set features of streaming platforms which were derived from the information gathered in the qualitative part of this study.

In the third section, respondents were assigned one of three conditions. In the control condition, participants were not provided with any stimulus and continued to the next section of the survey. In the other two conditions (legal or educational message), they were provided with a stimulus which consisted of two fictional newspaper articles on the topic of copyright infringement. Many authors agree that, to lower pirating intentions, an educational strategy is more effective than a legal strategy (De Corte & Van Kenhove, 2017), and that campaigns against digital piracy should focus on the consequences this behaviour might have on small independent artists and companies (Harris & Dumas, 2009). Also, individuals are more "likely to be influenced by descriptive norms when the setting in which those norms are formed is comparable to the setting those individuals are currently occupying" (Goldstein *et al.*, 2008). Therefore, each article was written taking into consideration the information provided

previously. The goal was to check whether priming respondents on different stimuli influenced their views on piracy and streaming.

In the fourth section, participants went through the conjoint experiment. They were randomly assigned to one of six conditions. In each set, participants were presented with 4 different profiles, each with 3 different choice levels (two streaming service options and a “free download from the Internet” option). Then, they were asked to choose one alternative in each of the profiles.

In the fifth section, respondents were presented with the concept of stream-ripping and asked whether they had already engaged in it and if so, at which frequency. Finally, the sixth section asked for socio-demographic information.

## 5 – Results

The online survey was open for 10 days and recorded 556 responses. The target for this dissertation were individuals between 15 and 34 years old therefore, 20 participants were eliminated for not complying with this criterion. 83 were eliminated for not completing the survey and a further 31 for responding to specific questions in an un-logical manner. The final sample was left at 425 valid and complete responses. Due to the considerably larger number of Portuguese in the sample, it was decided to analyse the two populations separately thus, having two different samples: one composed by 316 Portuguese, and another with 109 Non-Portuguese.

### 5.1 Portuguese Sample Analysis

#### 5.1.1 Sample Characterization and Segmentation

Due to the current pricing schemes offered by streaming services (students are given the option to pay a subscription of 3.49€, instead of the regular 6.99€) the most realistic way to segment the sample was to use age and occupation as selection criteria, and then profile each segment using other relevant variables. This segmentation yielded five segments: respondents Under 18 years old, Students and Non-Students between 18 and 24 years old, as well as Students and Non-Students between 25 and 34 years (refer to Appendix 6 for details).

**Table 2** Music Piracy and Streaming consumption

	Students (<18)	Students (18-24)	Non-Students (18-24)	Students (25-34)	Non-Students (25-34)	Full Sample
<b>Monthly spending</b>						
<5€	84.4%	78.7%	67.6%	20%	13.6%	62.7%
5-10€	15.6%	17.6%	24.3%	70%	79.7%	32.9%
<b>Music Video Streaming</b>	73.4%	73.5%	75.7%	55%	47.5%	67.7%
<b>Audio Streaming</b>						
- Free Streaming	64.1%	59.6%	54.1%	35%	13.6%	49.7%
- Paid Streaming	25%	32.4%	32.4%	65%	84.7%	42.7%
- None	10.9%	8.1%	13.5%	-	1.7%	7.6%
<b>% of Pirates</b>	46.9%	30.9%	27%	10%	3.4%	27.2%
<b>Audio Streaming and Piracy</b>						
- Free Streamers and Non-Pirates	23.4%	39%	29.7%	25%	11.9%	28.8%
- Free Streamers and Pirates	40.6%	20.6%	24.3%	10%	1.7%	20.9%
- Paid Streamers and Non-Pirates	20.3%	23.5%	29.7%	65%	83%	37.3%
- Paid Streamers and Pirates	4.7%	8.8%	2.7%	-	1.7%	5.4%
- Exclusively Pirates	1.6%	1.5%	-	-	-	0.9%
- None	9.4%	6.6%	13.5%	-	1.7%	6.6%

It is a common trend across all segments to buy physical/digital albums less than once a year, as well as to spend less than three hours per day listening to music. Also, the incidence of individuals who are exclusively *Pirates* is minimal, if not non-existent across the segments. Listening to music on Youtube seems to be more common in the younger segments. However, according to the information gathered in the qualitative research, this service cannot be directly compared to audio streaming services nor to illegal downloading since it is mainly used as a music discovery tool, rather than as a platform used to listen to music for long periods of time.

On average, students *Under 18* and those between 18 and 24 years old, tend to spend less than 5 euros/month in music, which can justify the considerable number of *Pirates* and/or *Free Streamers* in these segments. Also, these tend to listen to music both on mobile and on the computer a lot more than the 25 to 34 years old segments.

The *Under 18* segment reports the highest proportion of *Pirates* (46.9%). However, more than half are *Free Streamers* (64.1%). Even though college students can take advantage of a discount offered by most music streaming services, the percentage of *Free Streamers* among students between the ages of 18 and 24 years old, is still considerably high (59.6%). Also, 20.6% of respondents in this segment are *Free Streamers* and *Pirates*. The main difference between *Students* and *Non-Students* between the ages of 18 and 24, relies on their monthly expenditure on music. *Non-Students* tend to spend more on music since they cannot take advantage of any price discount.

Respondents between 25 and 34 years old (*Students* and *Non-Students*), tend to spend 5 to 10€/month on music, piracy is low and the few pirates that exist are also streamers. Paid Streaming is the most common streaming source in both segments. It is important to stress that *Non-Students*, between 25 and 34 years old report the highest Ethics, Involvement, Perceived Risk, Impatience and Variety Seeking scores across the sample, which matches the fact that 83% of the respondents in this segment are Paid Streamers and Non-Pirates (refer to Appendix 6 for profiling data).

### ***5.1.2 The Influence of Demographic and Psychographic Variables on Paid Streaming and Piracy Habits***

To study the influence of demographic (age, gender) and psychographic variables (ethics, perceived risk, impatience, variety seeking, involvement) on Paid Streaming and Piracy, a Binary Logistic Regression (Forward Conditional) was run. To simplify the analysis,



*Occupation* and *Income Level* were not considered in the regressions since their effects are likely to be captured by the variable *age*.

**Table 3** Binary Logistic Regression Analysis' Parameter Estimates

Independent Variables	Dependent Variables	
	Piracy	Paid Streaming
Under 18y	-	-1.176*** (.41)
25-34y	-2.285*** (.55)	1.602*** (.40)
Gender	-	1.184*** (.32)
Ethics	-.695*** (.20)	.776*** (.20)
Perceived Risk	-.516*** (.20)	-
Involvement	-	1.954*** (.32)
Constant	2.106*** (.54)	-10.379*** (1.4)
N	316	316
Nagelkerke R Square	.271	.520

Note: Standard errors are between parentheses; coefficients with an asterisk are statistically significant with  $p < .05$  (\*),  $p < .01$ (\*\*) or  $p < .001$  (\*\*\*)

For a significance level of 0.05, Piracy is significantly negatively affected by *ethics*, *perceived risk* and *age*, meaning that individuals belonging to the 25 to 34 age group, tend to pirate less than younger respondents. Furthermore, the subscription of a Paid Streaming service is significantly and positively influenced by *ethics* and *involvement* with music. Moreover, *age* also plays an important role since respondents under 18 tend to use Paid Streaming less and, on the contrary, the ones belonging to the 25-34 age group are more prone to pay for this service. Surprisingly, even though there is no indication of this result in the qualitative research, nor in the literature, *gender* is positively associated with Paid Streaming, meaning that males tend to be more prone to pay for streaming. As the relationship between gender and piracy is still uncertain and under study, the same might apply for the relationship between gender and streaming use (refer to Appendix 7 for details).

### 5.1.3 The Weight of Price on Music Acquisition Choices

The conjoint model was run for the full sample and each segment. The utility function of the conjoint model can be given by Equation 1.

$$U_m = \alpha \cdot \text{Free\_Downloads} + \beta \cdot \text{Price} + \gamma \cdot \text{Playlists} + \delta \cdot \text{Offline} + \theta_{\text{No\_Adv}} \cdot \text{No\_Adv} + \theta_{\text{Adv\_30m}} \cdot \text{Adv\_30m} + \rho_{\text{Choose}} \cdot \text{Choose} + \rho_{\text{Choose\_Skip}} \cdot \text{Choose\_Skip} \quad (m=1 \dots M) \quad (1)$$

Where:

$\alpha, \beta, \gamma, \delta, \theta, \rho$  are the utilities (part worths) associated with each attribute (of each service  $m$ )

*Free\_Downloads* is the alternative option to on-demand music streaming

*Price* is the monthly subscription cost of an on-demand music streaming service ( $m$ )

*Playlists* indicates whether users can customize/create personal playlists

*Offline* refers to whether users can stream music without Internet connection

*No\_Adv* indicates whether users are not subjected to ads while listening to music

*Adv\_30m* indicates if users are subjected to ads every 30 minutes

*Choose* refers to whether users can manually choose whatever song they wish to hear

*Choose\_Skip* indicates whether users can choose and skip any song

*Free\_Downloads, Playlists, Offline, No\_Adv, Adv\_30m, Choose and Choose\_Skip* are binary variables that take the value of 1 if the corresponding attribute level is present and 0 otherwise

The conjoint parameters were estimated by using the conditional logistic regression method (*clogit*) available in *Stata*. The results are presented in Table 4.

**Table 4** Conjoint Analysis' Results

Independent Variables	Full Sample	Segments				
		Students (<18)	Students (18-24)	Non-Students (18-24)	Students (25-34)	Non-Students (25-34)
Free Downloads	3.49*** (.23)	3.95*** (.56)	3.46*** (.35)	3.39*** (.52)	5.86*** (1.46)	4.16*** (.60)
Price	-.46*** (.02)	-.62*** (.08)	-.57*** (.04)	-.55*** (.06)	-.46*** (.11)	-.27*** (.04)
Offline	1.15*** (.14)	1.07*** (.35)	.83*** (.22)	1.02** (.33)	2.43** (.88)	2.35*** (.35)
Playlists	1.81*** (.15)	2.60*** (.42)	2.20*** (.25)	1.77*** (.36)	1.93* (.77)	1.77*** (.31)
No Ads	1.66*** (.18)	1.19*** (.43)	2.15*** (.29)	1.55*** (.43)	3.33** (1.11)	1.50*** (.42)
Ads every 30 min	1.04*** (.19)	.78*** (.48)	1.35*** (.31)	.93* (.46)	1.36 (1.01)	1.06* (.44)
Ability to choose songs	2.24*** (.17)	1.77*** (.42)	2.29*** (.26)	2.37*** (.41)	4.19*** (0.99)	2.42*** (.37)
Ability to choose + skip songs	3.10*** (.18)	3.20*** (.46)	3.16*** (.29)	2.83*** (.41)	7.08*** (1.24)	3.62*** (.39)
N	316	64	136	37	20	59
Log Likelihood	-1651.83	-292.63	-687.18	-179.27	-73.02	-296.99

Note: Standard errors are between parentheses; coefficients with an asterisk are statistically significant with  $p < .05$  (\*),  $p < .01$  (\*\*) or  $p < .001$  (\*\*\*)

As expected, the younger the respondents, the more price sensitive they tend to be. The segment *Non-Students between 25 and 34 years old* is the less price sensitive mostly because it is the

one which reports the highest income level. From these coefficients <sup>2</sup>, which represent the part-worth utilities, the relative importance of each attribute was computed (see Appendix 10 for details). We observe that, when segmenting the sample, *Price* was the most important attribute for the *Under 18* and *Non-Students between 25 and 34 years old* segments. The results suggest that consumers who are not able to take advantage of student discount offers tend to be more price sensitive. Moreover, as expected, *Non-Students between the ages of 25 and 34* are the least price sensitive among those who are required to pay full price. *Mobile Access* is the most important attribute for *Students between 18 and 24*, as well as for *Students and Non-Students between 25 and 34 years old*. Furthermore, the ability to listen to music offline is the least preferred attribute since, as concluded in the qualitative analysis, most young people have a high volume of mobile data included in their mobile service plan.

#### 5.1.4 The Willingness to Pay for a Streaming Service

Using the Conjoint estimates and the characteristics of music streaming services currently offered in the market, we were able to compute the utilities of each service (Paid Streaming, Ad-Supported Streaming and Music Piracy) for the full sample and for each segment. Table 5 displays the estimated willingness to pay - the maximum amount of money an individual is willing to pay for a premium streaming service.

**Table 5** Estimated Willingness to Pay for Streaming

Willingness to Pay	Students (<18)	Students (18-24)	Non-Students (18-24)	Students (25-34)	Non-Students (25-34)	Full Sample
WTP for Paid Streaming	4.95€	5.59€	5.50€	17.30€	16.80€	7.29€

Since the utility of the Ad-Supported service is higher than the utility of Piracy across all segments, it is reasonable to assume the WTP closest to reality is the one which compares Paid and Ad-Supported streaming (see Appendix 11). Therefore, as an example, respondents under 18 are willing to pay an extra of 4.95€ relative to what they would pay for the Ad-Supported Service (which is free). The average WTP for the total sample is quite close to the price of a regular streaming subscription (p=6.99€). It is important to stress that the older segments show a significantly higher WTP for Paid Streaming since these segments are substantially less price sensitive (especially *Non-Students, between 25 and 34 years old*).

<sup>2</sup> Due to the small proportion of the *Students, between 25 and 34 years old* segment (6.3%), its attributes' coefficients might be slightly biased, thus affecting the estimated utilities for each service.

### 5.1.5 Market Simulation

To illustrate how streaming has affected the music industry, we built a simplified market simulation and computed consumer's utility and willingness to pay per music consumption source, as well as tried to estimate its respective market shares. The following rule was used to estimate the share of each service:

$$\text{Market Share}_{e_m} = \frac{(\text{Utility}_m)^\alpha}{\sum_{k=1}^n (\text{Utility}_k)^\alpha}$$

$m$  is the type of music service (Paid Streaming, Ad-Supported Streaming or Music Piracy)

So that each service gets a predicted share as close as possible to the observed share, an estimate of alpha ( $\alpha$ ) was obtained by minimizing the sum of squared deviations between the observed and predicted market shares.

As most respondents revealed their main sources of music were Free Internet Downloads, as well as, Free and Paid Streaming, a decision was made to limit the market to these services (refer to Appendix 11). Moreover, it makes absolute sense to exclude physical and digital albums from the simulation since most consumers revealed to buy physical/digital albums less than once a year, thus representing a small fraction of the market (see Appendix 6 for details). Furthermore, music video streaming (e.g. Youtube) was also excluded since, as supported by the qualitative part of this study, it is not perceived as a mean of listening to music *per se*, but more as a music discovery tool. However, it is important to stress that Paid Streaming's market share needs to be split among several competing brands such as Spotify, Apple Music, Google Play Music, Amazon Music, among others. Additionally, respondents who are both pirates and streamers were accounted as pirates since it would make less sense to view them as only streamers. Therefore, the market shares of streaming (especially Ad-Supported Streaming) might be higher than reality.

It is also important to note that streaming's utility is higher among students since these benefit from a student discount (subscription price of 3.49€, instead of 6.99€). Also, since the sample segments' weights were not realistic, we estimated these using data from demographic census (refer to Appendix 11). Table 6 illustrates the simulation's results.

**Table 6** Market Simulation

	Estimated Shares					Total
	Students (<18)	Students (18-24)	Non-Students (18-24)	Students (25-34)	Non-Students (25-34)	
Paid Streaming	30.5%	39.8%	31.3%	45.6%	41.8%	39.3%
Ad-Supported Streaming	37.6%	34.3%	36.7%	28.7%	30.2%	32.7%
Music Piracy	31.9%	25.9%	32%	25.7%	28%	28%
<b>WTP Paid Streaming</b>	4.95€	5.59€	5.50€	17.30€	16.80€	7.29€

Piracy has an estimated share of 28%, which increases as piracy gains importance across the younger segments. The same occurs with Ad-Supported Streaming except for students between the ages of 18 to 24 who can enjoy a student discount.

The model can be used to simulate various changes in market conditions, such as changes in service features or in prices. Three alternative scenarios were analysed (see Appendix 11, Scenario 1,2 and 3).

**Scenario 1: No Ad-Supported (Free) Streaming.** Since Ad-Supported Streaming represents a big portion of the market (32.7% in the simulation) and probably is the biggest substitute of piracy, we wanted to understand what would occur if this service was not available (see Appendix 11 for details). In this case, Paid Streaming would take up most of the market (58.2%), however, Piracy would increase at a slightly higher rate (49.2%) than Paid Streaming, which stresses the importance of Ad-Supported Streaming as an effective method for gaining market share.

Even though the maximum amount consumers are willing to pay for Paid streaming is higher than when Ad-supported streaming is an option (9.31€ and 7.29€, respectively), it is difficult to say with certainty if consumers would be actually willing to pay that amount. However, this is a clear indicator that consumers tend to prefer streaming to piracy.

**Scenario 2: Ad-Supported Streaming with the same features on mobile and PC.** As mentioned before, Spotify is the only platform in the market with a free version of its premium streaming service. However, this version has different characteristics whether the user is listening to music on a computer or on mobile. In the mobile version, users cannot skip or choose songs and are limited to listening to music on shuffle mode. On the contrary, on a computer, the only difference between the premium and free services is the display of ads every 30 minutes. As expected, in the scenario where these differences are non-existent, the share corresponding to ad-supported streaming increases by 15,4% due to an equal decrease in paid streaming and piracy's shares. Additionally, the willingness to pay for paid streaming decreases

substantially. Once more, the decrease in piracy's share demonstrates that consumers tend to prefer streaming to illegal downloading.

**Scenario 3: Student discount extended to students under 18.** We wanted to understand what would occur if the student discount was to be available to all students (and not only to university ones). As expected there was an increase (2.8%) in Paid Streaming's market share, followed by a decrease in Ad-Supported Streaming and Piracy's market shares (refer to Appendix 11).

### **5.1.6 The Effect of Different Appeals in Reducing Piracy Behaviour**

It was hypothesized that, when exposed to an educational message focused on the harm caused by music piracy, pirating intentions would be lower. Therefore, a Conjoint Analysis was run for three different groups, two exposed to a stimulus and the control group. The utility of 'Free Downloads' (meaning Piracy) decreased both when a Legal and an Educational message were shown compared to the Control Group. However, the effect of the Educational message revealed to be substantially higher, as expected. To test this in detail, two additional analysis were performed to study the interaction between the messages and the utility of 'Free Downloads'. Once more, both messages had a negative effect on the utility of Piracy and the Educational message revealed to hold the most impact (see Appendix 9 for details).

## **5.2 Non-Portuguese Sample Analysis**

To understand whether these results would be somewhat similar to the ones previously obtained for Portuguese, a comparison analysis between Portuguese and Non-Portuguese music consumption habits was made<sup>3</sup> (refer to Appendix 12).

In general, Non-Portuguese respondents tend to buy music in a physical format less than once a year, however, acquiring digital songs or albums is slightly more common. Monthly expenditure on music is considerably higher, with more than 70% of the respondents spending between 5€ and 15€ per month in music. On the other hand, the time spent listening to music, as well as the devices used to do so remain the same in both samples (mainly the mobile phone and computer).

As it occurs with the Portuguese, on average, Non-Portuguese respondents indicate that downloading music illegally used to be a lot more common than it is now. The percentage of Pirates in the Non-Portuguese sample is slightly higher than the one of Portuguese, however,

---

<sup>3</sup> Segmentation by occupation and age was not used due to the small size of the Non-Portuguese sample.

Paid Streaming's penetration is considerably higher (60.6%) which is intrinsically associated with the expenditure on music. Half of the Non-Portuguese sample reveals to have engaged in stream-ripping, however, 70.2% used it once or less than once a year. 90.7% of the time this is their only source of free music downloads, meaning that music piracy is now heavily associated with stream-ripping. Furthermore, there are no significant differences between Portuguese and Non-Portuguese scores on variables as Involvement, Variety Seeking, Ethics, Perceived Risk and Impatience.

Thus, if a larger sample of Non-Portuguese was available, and the same analysis was conducted, the expected results would be similar to the ones obtained in this study, with the exception that the Paid Streaming's share and respective willingness to pay would be higher.

## 6 – Discussion

### 6.1 Influence of Demographic and Psychographic Variables on Music Consumption

Age, gender, music involvement (Weijters & Goedertier, 2016), ethics (Robertson et al., 2012), past piracy behavior (Sinha & Mandel, 2008) and perceived risk (Dilmperi et al., 2017) were regarded in the literature as variables which impact music consumption. Hence, in the context of this study, we hypothesized that these variables would also influence an individual's propensity to engage in piracy or to pay for streaming. The results suggest *ethics*, *perceived risk* and *age* significantly affect the tendency to pirate. Furthermore, *ethics*, *involvement*, *age* and *gender* tend to be associated with the propensity to pay for a streaming service.

### 6.2 Price as a Decision Variable

According to Weijters & Goedertier (2016), price consciousness plays an important role in consumers' decision of how to consume music. Therefore, it was hypothesized that *price* would be the main significant decision-making variable when deciding whether to subscribe to a paid streaming service. However, it was expected that *price* would not significantly outweigh the importance of other streaming service attributes. In fact, overall, *mobile access* revealed to be the most important attribute in a streaming service, followed by *price*. Additionally, the ability to stream offline was the least important attribute which, according to information gathered in the qualitative part of this study, might be because cell phone communication plans now include large mobile data plans, so people don't actually have to spend any additional money to have Internet access all day. However, for segments as *Students Under 18* and *Non-Students between 18-24* *price* is, in fact, the most important attribute since both these segments are price sensitive and are obliged to pay the full price to have access to the premium service.

Next, we set off to study how much were consumers willing to pay for a premium streaming service. As expected, the average WTP of the total sample (7.29€) was consistent with the price of a regular streaming subscription (p=6.99€).

### 6.3 Streaming Effects on Music Piracy

Paid streaming revenues have been growing at a fast pace, thus it was hypothesized that users don't have many incentives to keep illegally downloading music, therefore streaming is becoming a long-term substitute to music piracy. In fact, the results of the simulation indicate that streaming (Paid or Ad-Supported) is currently the preferred music consumption method, which also explains why only less than 30% of the respondents (in the Portuguese and Non-



Portuguese samples) were pirates. Furthermore, in the case where Ad-Supported Streaming has the same features in its mobile and PC version, as well as when the student discount is extended to students under 18, consumers who were pirates would switch to streaming, which indicates these people do not use streaming, not because they don't like its concept, but probably because they are too price sensitive. However, in the case of Ad-Supported (Free) streaming being taken out of the market, music piracy would increase at a slightly higher rate than Paid Streaming (49.2% and 48% respectively). As expected, piracy would increase the most among those who cannot take advantage of the student discount offered by streaming services.

Therefore, the Ad-Supported Service is an important tool for gaining market share and a premium subscriber acquisition channel since it operates as a sampling mechanism. According to Spotify's latest report, the Ad-Supported Service serves as a funnel, driving more than 60% of Spotify's total gross added Premium Subscribers and represents nearly 10% of its annual revenues (S.A., 2018). Also, as observed, it reduces piracy quite significantly.

#### **6.4 Effective Appeals in Reducing Music Piracy**

Finally, we sought to understand whether exposing music consumers to a stimulus focused either on the harm inflicted by piracy on artists, or the legal consequences of engaging in this behaviour, would affect illegal downloads' utility. Following De Corte & Van Kenhove (2017) argument, we expected that an educational strategy would be more effective when it comes to lowering pirating intentions than a legal strategy. Results showed that both stimuli were effective, however, as expected, the educational message produced a larger effect in reducing piracy's utility.

## 7 - Conclusions and Limitations

### 7.1 Conclusions and Managerial Implications

#### 7.1.1 Conclusions

This study aimed at exploring the music market among young people aged between 15 and 34. The goal was to understand how the introduction of streaming services affected music acquisition. We set out to analyse consumers music consumption habits. It was discovered that individuals belonging to this age range rarely buy either physical or digital albums. Therefore, it can be concluded that nowadays, the music market is mainly composed by streaming (ad-supported or paid) and music piracy. Then, we wanted to understand which demographic and psychographic characteristics would influence the decision to choose music piracy or paid streaming. We concluded that age<sup>4</sup>, ethics and perceived risk negatively influenced the decision to pirate music. On the other hand, consumers who paid to access a streaming service were, in general, more involved with music and scored higher on the ethics scale. Additionally, age and gender also play an important role when it comes to the decision to pay for streaming. As age increases, the propensity to pay for streaming rises, and males seem to be more prone to pay for streaming.

Through a conjoint experiment, we concluded that consumers are price sensitive (especially *Students under 18* and *Non-students between 18 and 24*), but ultimately care for other streaming attributes just as strongly, meaning that, in general, price is an important but not a dominant decision variable. Additionally, the estimated maximum amount consumers are willing to pay for Paid Streaming was only 4% higher than the price set by the main competitors in the market which provides robustness to the simulation.

Finally, it was concluded that streaming did in fact reduce music piracy among young music consumers. Nowadays, young people rarely buy albums or songs, thus, if streaming was not available, they would resource to piracy, as they did in the past. This result goes in accordance with the fact that, in 2016, the proliferation of streaming helped retail revenues from recorded music in the United States grow 11,4%, the biggest increment since 1998 (Friedlander, 2016).

---

<sup>4</sup> Individuals aged between 25 and 34 are less prone to pirate.

### **7.1.2 Managerial Implications**

Would streaming providers and consequently, the music industry be better off if specific streaming features were changed? There are several options that need to be further studied for a consensus to be reached. We have shown that, under the present conditions, the maximum estimated willingness to pay (WTP) (7.29€) is close to the 6.99€ practiced by the major streaming platforms. A price reduction to 4.99€ (closer to *Students Under 18's* WTP) would need to be studied in more detail, considering revenues and profitability levels. Since Ad-Supported Streaming only represents around 10% of Spotify's revenues (S.A., 2018), Spotify's major intent is that consumers subscribe to a paid account. Thus, according to our findings, one strategy which would persuade not only free streamers but also pirates to adhere to a paid subscription was to extend the student discount to students under 18 (Appendix 10, Scenario 3).

Additionally, the possibility of ending Ad-Supported Streaming seems to be particularly relevant. Spotify could then adopt the same strategy as its closest competitor - Apple Music - providing a 3 months trial version. However, the company would need to study whether the revenue stream earned by this new strategy would surpass the 10% barrier currently earned by Ad-Supported Streaming. However, as it was estimated, this strategy would contribute to a substantial increase in music piracy (Appendix 10, Scenario 1). One approach to this problem would be to use the right communication strategies to persuade users not to pirate and opt for legal alternatives. It was found that individuals tend to react better to educational messages which focus on the consequences of piracy on small independent artists and companies (Harris & Dumas, 2009) and provide solid data which makes invalid the arguments used by pirates to justify their conduct (Kos Koklic et al., 2016). As repeatedly stated during the interviews, it is also crucial that the features offered by streaming services are appealing enough to persuade users not to pirate. Streaming platforms need to be constantly upgraded and one step ahead of consumers' wants and needs.

## 7.2 Limitations and Future Research

This study faced several limitations. First, the obtained results would be more solid if the main conclusions were not limited to the Portuguese population. Also, it was decided to only retain answers from individuals between 15 and 34 years old, not only due to the small amount of answers obtained outside this age range, but also because, according to several reports on the music industry, Millennials and Generation Z are not only the most tech savvy generations, but also the ones with higher adherence to streaming. However, it would be interesting to conduct this study incorporating all age groups.

Second, despite being the most prevalent form of music piracy, especially among the considered age segment, stream-ripping is not the only form of music piracy available. Even though respondents were asked whether they used illegal downloads to obtain music (Appendix 3, Question 6), it was not clear how frequently they did so. Therefore, it was considered more reasonable to account as ‘Pirates’ individuals who reported to engage in stream-ripping from more than once a month, to once every two months. In fact, in the Portuguese sample, 40.5% of the inquired reported to engage in ‘free Internet downloads’, while later in the survey, 53.8% reported to have used stream-ripping (27.2% of those were considered as Pirates). It would have been more accurate to have inquired consumers on whether they had already engaged in music piracy and, if so, which method they used and at which frequency they did so.

Third, our conjoint experiment might have placed a cognitive burden on respondents. Moreover, to limit this task, the number of profiles and choice sets were reduced, which might have limited the accuracy of the simulation. Moreover, the conjoint results are very sensitive to the set of attributes and levels used, therefore the explanatory power of the conjoint is somehow limited.

Finally, since some respondents were subjected to a stimulus before the conjoint, its results were affected by it. Even though the differences in the results of the full sample versus the group which was not subjected to any stimulus were not substantial, it would have been more reliable if the number of respondents in both groups was similar, which did not occur.

## Appendix

### Appendix 1: In-Depth Interviews Guidelines

#### IN-DEPTH INTERVIEWS | GUIDELINES

##### Warm-up

---

Thank you for participating in this interview. We are very interested in hearing your valuable opinions on today's discussion topics. These include your involvement in the music market, music consumption habits, preferences and choice process, as well as your opinions regarding on-demand streaming services. The expected duration of this interview is 40 minutes. I kindly ask your permission to record this conversation for the sole purpose of interview analysis.

Please feel free to add any comment you might find relevant as we go through the interview.

##### SECTION 1 – Music Involvement and Consumption Habits

---

We will start by discussing your music habits and preferences, such as the time you spend listening to music and the platforms you use to do so.

###### 1.1 Music Involvement

- Do you enjoy listening to music? Why?
- Do you proactively search for information about upcoming albums and artists?
- Is music a recurrent discussion topic with others?

###### 1.2 Consumption Habits

- On average, how much time do you spend listening to music on a daily basis?
- How often do you buy music records? What about digital tracks?
- How often do you go to music concerts?
- Do you usually listen to music alone or around friends?
- Which devices do you use to listen to music?
- What is usually the source of the music you listen to? (e.g. *Youtube*, Streaming, Paid/Free Downloads) Why?

##### SECTION 2 – Consumption Process

---

- Imagine that a friend of yours mentions a new song, which you do not know. You want to listen to that song right now. Describe what would you do in order to do so.
- Are you aware of the existence of other means of listening to music? If yes, why did you choose the one you mentioned above? What are the benefits in doing so?
- What is normally the way you listen to music?
- What is your opinion on illegal music downloading?

##### SECTION 3 – Opinion on Music Streaming

---

###### 3.1 Current experience with Streaming

- Are you familiarized with the concept of streaming?
- Do you know what music streaming platforms are? If yes, what is the first one that comes to your mind?
- How often do you listen to music on streaming platforms?
- What are the benefits of listening to music on streaming platforms?
- Do you pay or are willing to pay for a premium version of these services? Why?

### 3.2 Streaming Attributes Preference

- What type of attributes do you think are important in a streaming service? Why? (e.g. Price, Customized Playlists, Suggested Playlists, Offline Access, Song Skipping on mobile, Advertising, Access to Friend's Activity, Full Mobile Experience, Video – ability to watch the song's videoclip)

The price scheme to access Spotify's and Apple Music's streaming service is the following:

Spotify	Apple Music
-Free Version: 0€/month (restricted access + ads)	-Student:3,49€/month
-Student: 3,49€/month	-Individual:6,99€/month
-Individual:6,99€/month	-Family (max.6 people listening):10,99€/month
-Family (max.6 people listening):10,99€/month	

- What is your opinion on these prices? Do you consider them to be fair?

### 3.3 Stream-Ripping

This dissertation aims to investigate the impact on-demand music streaming services have been having on digital music piracy. The RIAA (Recording Industry Association of America) estimated that retail revenues from recorded music in the US grew 11,4% to \$7.7 billion, the biggest increment since 1998. The major driver of growth was attributed to the doubling of paid streaming music subscriptions. Streaming grew from just 9% of the total industry revenues in 2011 to 51% of the market in 2016.

**Stream-Ripping** is the process of 'ripping' or creating a downloadable file from music that is available to stream online".

- To what extent is streaming a substitute to illegal downloads?
- Have you ever engaged in stream-ripping? Why/why not?
- Do you consider stream-ripping to be a threat to the music industry? Why?

### SECTION 4 – Closing the interview and asking for personal details

---

Now, I kindly ask you to provide the following personal details:

**Age:** under 18, 18-24, 25-34, 35-44,45-54, over 54

**Gender:** male, female

**Nationality**

**Highest educational level:** Primary School, Secondary School, Professional Degree, Bachelor Degree, Masters Degree, PhD/Doctorate

Your personal details will only be used for the purpose of this thesis project. Thank you very much for your participation.

## Appendix 2: Summary of Results from the In-Depth Interviews

### Respondent demographics

Respondent	Gender	Age Group	Education
1	Male	Under 18	Secondary School
2	Female	18-24	Bachelor Degree
3	Male	18-24	Master's Degree
4	Male	18-24	Bachelor Degree
5	Male	18-24	Secondary School
6	Female	25-34	Master's Degree
7	Female	Under 18	Secondary School
8	Female	Under 18	Secondary School

### Music involvement

Respondent	I listen to music to...	Search for upcoming albums and artists	Is music a discussion topic with others?
1	Relax, focus, spent time	Active	Yes
2	Relax, feel good	Mostly passive	Yes
3	Feel good	Passive	Yes
4	Relax, focus, workout	Active	Yes
5	Relax, focus, workout	Passive	No
6	Relax, focus	Mostly passive	No
7	Relax, focus, feel good	Active	Yes
8	Relax, focus, feel good	Passive	Yes

### Music consumption habits

Respondent	Hours Listening to Music (per week)	CDs and Digital Tracks' Acquisition Frequency	Concert Attendance
1	<1h	Never	Twice a year
2	4h-5h	Never	Once a year
3	1h-2h	Never	Once a year
4	6h-7h	Never	Once a year
5	1h-2h	Never	Once a year
6	8h-9h	Never	Twice a year
7	1h-2h	Rarely	Once a year
8	4h-5h	Never	Twice a year

Respondent	Music Experience as personal vs social	Devices used to listen to music	Usual music source
1	Mostly personal	Phone, Computer, Car Radio	Spotify
2	Personal	Phone, Computer, Car Radio	Spotify, YouTube, YouTube Converter
3	Personal	Phone, Computer	Spotify, YouTube, YouTube Converter
4	Mostly personal	Phone, Computer	Apple Music, YouTube
5	Personal	Phone, Computer, Car Radio	Spotify
6	Personal	Phone, Computer	Spotify
7	Personal	Phone, Computer	Spotify
8	Personal	Phone, Computer, MP3	YouTube

### Music consumption process

Respondent	<i>Imagine that a friend of yours mentions a new song and you want to listen to that song right now. Describe what would you do in order to do so.</i>
1	<i>I would go directly to Spotify since it is more practical and consumes less 3G (Internet)</i>
2	<i>If I know the name of the song I go directly to YouTube. If not, I try to find the song's title on Google and then move on to YouTube.</i>
3	<i>I would go first to YouTube and then, if I like the song, I will listen to it again on Spotify. I don't listen to music on YouTube. It is not practical, especially when you are on your phone because you can't lock it and keep listening.</i>
4	<i>I would go directly to YouTube, especially when I don't know the songs' name.</i>
5	<i>I would go directly to YouTube</i>
6	<i>I would search for the song on YouTube</i>
7	<i>If I'm on my phone I would go to YouTube since the free version of Spotify doesn't allow me to choose a song. If I am on my computer I would go straight to Spotify.</i>
8	<i>I would go directly to YouTube.</i>

Respondent	<i>But are you aware of other means of listening to music? What is the way you normally listen to music?</i>
1	<i>Yes, of course but I just use Spotify because it's easier, has a wide variety of songs and consumes less Internet (when I'm on the phone).</i>
2	<i>Yes, but I don't intend to buy CDs or individual songs (it is too expensive). I usually use YouTube when someone tells me about a song and I want to look for it in the moment. On daily basis, I'm currently using Spotify because I was offered a special promotion. When it ends, I will go back to YouTube. What I do is, I choose a song and then YouTube creates a random playlist with similar songs than the one I played first. When I want to listen to music on my phone, I download them using a YouTube to mp3 converter.</i>
3	<i>Yes, but buying albums is not for me. Now that I have Spotify Premium I use this service but when I don't, I just download the music to my phone using a YouTube to mp3 website.</i>
4	<i>Yes, but YouTube has every song you can possibly imagine so I know I'm going to find what I want. However, I tend to use YouTube more to find specific songs, and Spotify or Apple Music when I want to listen for long periods of time.</i>
5	<i>Yes, but first, I don't have Spotify Premium so if I'm on my phone I can't select the song I want, second, a lot of times I want to find a certain song and I just know part of the lyrics, so I type them on YouTube because Spotify is not responsive to that. In my everyday life, I use Spotify. It doesn't make sense for me to listen to music on YouTube because it doesn't allow me to lock my phone while I'm listening.</i>
6	<i>Yes, but by going to YouTube you can quickly find whatever you are looking for, even if you don't know the specific name of the song or the artist, you can search for part of the lyrics and still find the song. However, I use Spotify Premium when I want to listen to more than one song.</i>
7	<i>Yes, if I'm on my phone I would go directly to YouTube, however, if I'm on my computer, I tend to go to Spotify, that way I can find more about that artist.</i>
8	<i>I know there are other ways of listening to music, but I tend to use YouTube because usually I listen to music in places where there is Internet access. I just pick two or three songs and then YouTube creates a playlist based on those songs. I also know Spotify but since I don't know a lot about that service, I keep using YouTube. If I listened to music on mobile more often I would consider Spotify though, because YouTube does not allow you to lock your phone while listening.</i>

Respondent	Music piracy frequency	Opinion on illegal downloading
1	Rarely	<i>Used to do it a lot more a few years ago. There were no streaming platforms, so I just downloaded them. It was really time consuming. Now I have Spotify Premium.</i>
2	Very often	<i>It's strange, even though I love music, I am not willing to pay for it since I can get it easily and for free.</i>
3	Sometimes	<i>I don't have a lot of morals since I still download music illegally. I don't really feel bad. However, I do it a lot less than I used to due to streaming.</i>



4	Rarely	<i>I just don't feel the need to do it. It takes a lot of time. You have to search for the songs and then download them one by one. And after that, move them to your phone and have free space in your phone's memory for those songs.</i>
5	Never	<i>I don't think it's worth it anymore. Before I used to do it all the time. I felt it wasn't even an illegal behaviour. Now I just use Spotify so there is no need for that. I have access to a great variety of music and don't need to worry about having free space in my phone to save them. It is just less work. You don't have to search for the songs, download them one by one and then move them to your phone.</i>
6	Never	<i>I used to do it (through YouTube ripping), so I cannot say that I am against it, I know that the artists need to make money somehow but I don't believe that downloading music hurts them as bad - it is a consequence of the evolution of technology, everything is accessible to everyone at any time and it is very hard to control.</i>
7	Sometimes	<i>I know it hurts the artists but people my age just don't think they are being hurt that much. However, nowadays I just don't do that with the same frequency I used to because the streaming platforms we have available enable us to have access to an immense variety of songs without a lot of effort.</i>
8	Very often	<i>I still do it because I like to have my favourite songs in my mp3 and that is the only way to do it for free. I know that now no one owns an mp3 but I still do. Most of my friends now listen to music on streaming though.</i>

### Current experience with streaming

Respondent	First streaming platform that comes to mind	Frequency of listening to music on streaming platforms	Benefits associated with streaming
1	YouTube	Daily	Music Quality; Customized Playlists; Song Variety; Easy Access
2	Spotify	Daily	Song Variety; Safe/No Virus; No space taken on the phone; Access to artists' info
3	Spotify	Daily	Easy Access; Song Variety; Customized Playlists
4	Spotify	Daily	Easy Access; Access to artists' info
5	Spotify	Daily	Easy Access; No space taken on the phone; Song variety
6	Spotify	Daily	Easy Access; Account in multiple devices; Offline Access; Customized Playlists
7	Spotify	Daily	Song Variety; Easy Access; Suggested songs
8	Spotify	Daily	Easy Access; Very organized; Offline Access; Customized Playlists

Respondent	Currently paying for a streaming service	Would you be willing to pay/continue to pay for a music streaming service?
1	Yes	Yes
2	No	Maybe
3	Yes	Yes
4	Yes	Yes
5	No	Yes
6	Yes	Yes
7	No	Yes
8	No	Yes

Respondent	Would you be willing to pay/continue to pay for a music streaming service? Why?
1	<i>It pays off to pay to access that content. I currently have Spotify Premium included in my mobile package, but even if I didn't, I would still pay for Premium.</i>
2	<i>I am just willing to subscribe to Premium when there is some discount. I have even created several Spotify accounts just to take advantage of Spotify's 3-month free trial.</i>
3	<i>I normally just use the free version of Spotify, but I recently subscribed to the Premium version and I'm thinking of staying with it. The ads are annoying.</i>

- 4 *I have Apple Music due to my mobile package but even if I didn't, I would pay for this service. We have access to a wide variety of songs, we can create playlists, it's a different experience, with added-value.*
- 5 *If I listened to music a lot on my phone I would consider paying. Spotify's free version is quite complete on the computer. The ads are bearable, short and less than 1-minute long. If the access on the computer was more blocked I would consider subscribing to the paid version.*
- 6 *I currently pay for the student premium version of Spotify. If I had not been able to attain the student discount, I would still pay for the full version. After using it for a couple of months, I got addicted. What drove me to Premium the first place was not that the ads were annoying, but the possibility of downloading playlists and listening to them whilst I was offline.*
- 7 *The price you pay for this service is reasonable considering the variety and features offered by these platforms. The ads are annoying.*
- 8 *I think the only thing keeping me from changing from YouTube to Spotify is the price.*

### Streaming attributes

Respondent	Important attributes in a music streaming service
1	Offline Access; Ability to choose songs; Customized Playlists
2	Offline Access; Price; Song Variety
3	Customized Playlists; Price; Song Suggestions
4	Customized Playlists; Ad Free; Offline Access
5	Price; Ad Free; Customized Playlists
6	Price; Offline Access; Ad Free
7	Songs' Suggestions; Customized Playlists; Song Skipping
8	Ad Free; Price; Offline Access

Respondent	Opinion on price scheme practiced by major music streaming platforms
1	<i>I think that if I had never tried Spotify I would not pay for this service. However, since they offer 3 free months with the premium version I sort of got addicted to it. The price is not really that high. However, the free version is quite complete and has just a few inhibitions (almost none in the computer). For those who don't listen to a lot of music, it is bearable.</i>
2	<i>The prices are bit high for me so I would always prefer Spotify since it offers a free version.</i>
3	<i>The prices are fair and accessible. Spotify also has a free version which is a plus.</i>
4	<i>The prices are fair for the service they are offering</i>
5	<i>They both practice the same prices but I would always go for Spotify since I am loyal to the brand. The prices are expensive. I would not pay 7€ but maybe 5€ would be more acceptable.</i>
6	<i>I think Apple Music would gain if they had a free version just like Spotify, however due to Spotify's "reputation" I did not consider Apple Music - I am all pro Apple and even tried the free period of Apple Music, but the only good thing it has (better the Spotify) is the possibility to watch little series/videos that are done specifically for Apple users, but it was not enough to make me change from Spotify.</i>
7	<i>Yes, I believe the prices are reasonable and fair. We easily spend that kind of money on stuff we don't need.</i>
8	<i>The difference between the student prices and the normal ones is quite high.</i>

### Stream-Ripping

Respondent	Is streaming a substitute to illegal downloads?	Have you ever engaged in stream-ripping?	Stream-ripping frequency	Do you consider stream-ripping to be a threat to the music industry?
1	Yes	Yes	Never	No
2	Yes	Yes	Sometimes	Yes
3	Maybe	Yes	Very often	No
4	Yes	Yes	Never	No
5	Yes	Yes	Never	No
6	Yes	Yes	Never	No
7	Yes	Yes	Rarely	No
8	Yes	Yes	Sometimes	No

## Appendix 3: Online Survey

Dear participant, thank you very much to take the time to answer this survey for my Master Thesis. The purpose of this survey is to understand individuals' involvement with the **music industry**, their habits, preferences and decision process regarding **music acquisition and consumption**. A special focus will be given to **on-demand streaming services**.

The survey takes a maximum of 5 minutes to complete. It is extremely important that you answer honestly to all the questions. Your answers will be strictly **anonymous, confidential**, and used solely for the purpose of this investigation.

If you have any doubts feel free to contact me. Thank you so much for your collaboration!

- Mariana Freixo Nunes – [marianafreixonunes@gmail.com](mailto:marianafreixonunes@gmail.com)

### SECTION 1

**Q1 How frequently do you buy music in a physical format? (e.g. CDs; Vinyl,..)**

- More than once a month
- Once a month
- Once every two months
- Once a year
- Less than once a year

**Q2 How frequently do you buy music in a digital format? (e.g. iTunes)**

- More than once a month
- Once a month
- Once every two months
- Once a year
- Less than once a year

**Q3 On average, how much time do you spend listening to music, on a daily basis?**

- Less than 1 hour
- 1 to 2 hours
- 2 to 3 hours
- 3 to 4 hours
- More than 4 hours

**Q4 On average, how much do you spend monthly on music (on physical, digital tracks or music services)?**

- Less than 5€
- 5€ to 10€
- 11€ to 15€
- 16€ to 20€
- More than 20€

**Q5 Which devices do you use to listen to music?**

- Mobile phone
- Computer
- Mp3
- Other

**Q6 What is usually the source of the music you listen to?**

- Albums bought at a physical store

- Albums/songs bought at an online store
- Free internet downloads
- Video Streaming (ex. Youtube)
- Free Music Streaming
- Paid Music Streaming
- Other

## SECTION 2

**Q7 To what extent do you agree or disagree with the following statements, according to the presented scale (1=Strongly Disagree; 2=Disagree; 3=Neither Agree or Disagree; 4=Agree; 5=Strongly Agree)**

	1	2	3	4	5
I am constantly seeking new ideas and experiences					
I dislike change and variety in daily routine.					
I like continually changing activities.					
I prefer a routine way of life compared to one full of change.					
I like to experience novelty and change in daily routine.					

**Q8 To what extent do you agree or disagree with the following statements, according to the presented scale (1=Strongly Disagree; 2=Disagree; 3=Neither Agree or Disagree; 4=Agree; 5=Strongly Agree)**

	1	2	3	4	5
When other people see me listening to music, they form an opinion of me.					
You can tell a lot about a person by seeing what type of music he/she listens to.					
Music helps me express who I am.					
Music is "me".					
Seeing somebody else listening to music tells a lot about that person.					
When I listen to music, others see me the way I want them to see me.					

**Q9 Now, imagine you had the possibility of winning a prize in cash. Which one would you choose?**

- A. Receive 100€ now
- B. Receive 112€ in 1 month

**Q10.a (If A was chosen in Q9) Now, which one would you choose?**

- A. Receive 100€ now
- B. Receive 120€ in 1 month

**Q10.b (If B was chosen in Q9) Now, which one would you choose?**

- A. Receive 100€ now
- B. Receive 108€ in 1 month

**Q11 To what extent do you agree or disagree with the following statements, according to the presented scale (1=Strongly Disagree; 2=Disagree; 3=Neither Agree or Disagree; 4=Agree; 5=Strongly Agree)**

	1	2	3	4	5
I proactively search for information about upcoming albums and artists					
Downloading music from the Internet (without paying) is not correct					
Music is a recurrent discussion topic with others					
I would feel bad if I downloaded music from the Internet (without paying)					
I usually listen to music alone					
Illegally downloading music is too risky					
I practically only listen to music through my smartphone					
I feel like individuals don't have a significant negative impact on the music industry when they illegally download songs					
I would rather have to deal with ads and other restrictions (like only being allowed to listen on shuffle mode) than to pay for a streaming service					
I used to download music (without paying for it) a lot more than I do now					

## SECTION 3

**Q12 Do you currently have an account in a streaming platform (e.g. Spotify, Apple Music, Google Play Music, ...)?**

- Yes, I have free version account
- Yes, I have paid version account
- No

**Q13 (If yes, in which platform?)**

**Q14 Considering on-demand streaming platforms, drag these attributes in order to rank them according to the value you assign to each (1=Highest Value and 8=Lowest Value)**

- \_\_\_\_\_ Offline Access (no need for Internet connection) (1)
- \_\_\_\_\_ Customized Playlists (2)
- \_\_\_\_\_ Access to Suggested Playlists (3)
- \_\_\_\_\_ Access to other users' playlists (4)
- \_\_\_\_\_ No Advertising (5)
- \_\_\_\_\_ Song Skipping (6)
- \_\_\_\_\_ Song Variety (7)
- \_\_\_\_\_ Live Streaming (e.g. being able to watch live concerts) (8)

## SECTION 4

**Q15 Now we would like to present you with an article on Music Piracy. Please read it carefully.**

- **LEGAL STRATEGY**

### **POPULAR MUSIC PIRACY SITE SHUTTING DOWN**

MARK HARRIS

SEP 1, 2017

**Youtube-mp3.org** is shutting down, according to a settlement filed in California courts last week. A study identified audio-ripping as the fastest growing form of piracy, with **49 percent of 16 to 24-year-olds using stream-ripping services.**

Last year, a group of **15 record labels sued the website** for copyright violation. In total, **10 house searches were conducted.** A **25 year old man** from Barcelona, a website host, **was arrested.**

The responsible for the website can be sentenced for copyright violation. The fines range from **700 to 750.000€** and/or **imprisonment from 4 months to 4 years.**

Several **end-users are under investigation** and can also be prosecuted and receive **finances that can go up to 10.000€.**

- **EDUCATIONAL STRATEGY**

### **HOW ONLINE PIRACY HURTS EMERGING ARTISTS**

MARY JENKINS

FEB 1, 2016

If you download or stream from pirate sites, think twice. Keith Schmid, CEO of the Copyright Alliance, states: "**Piracy arguably hurts independent creators who are struggling to make it – including photographers, film producers, musicians, and app developers** – more than it harms established artists."

Kimberly James, President of indie label CBM Records adds, "**What people don't realize is that this is someone's livelihood and illegally downloading music is essentially stealing their hard work**".

When you download or stream from a pirate site, pirates profit from online ads or subscriptions. So **while you are saving a few dollars, you are also effectively taking away an artist's well deserved gains and re-directing them into the coffers of pirates and criminals.**

- **CONTROL GROUP**

No article shown

**SECTION 5**

**Q16 Now, you are going to be presented with 4 different streaming service scenarios.**

They can be distinguished by following attributes:

1. **Price:** monthly subscription cost
2. **Offline Access:** users can stream music without Internet connection
3. **Customized Playlists:** users can create personal playlists with the songs they wish
4. **Advertising:** users are subjected to ads while listening to music
5. **Mobile Access:** users can listen to music on a mobile device as they do on a computer, or they can be somehow limited (not being able to skip or choose songs)
  - **Song Skipping:** When listening to a playlist, users can skip to the following song, without even having to worry about unlocking their phones.
  - **Ability to choose songs:** Users can manually choose whatever song they wish to hear.

Imagine that **the only sources of music you have available are the ones included in these choice sets.** Instead of subscribing to a streaming service you can also opt for downloading (unpaid) music files from the Internet.

**SET 1**

Among these 3 options, <b>select the one you would prefer.</b>		
Price: 11€ Offline Access: No Customized Playlists: Yes Advertising: None Mobile Access: Song Skipping Allowed + Ability to choose songs	Price: Free Offline Access: Yes Customized Playlists: Yes Advertising: 30sec ad every 15 min Mobile Access: Only song skipping allowed (no ability to choose songs)	Unpaid Downloads from the Internet
Among these 3 options, <b>select the one you would prefer.</b>		
Price: 11€ Offline Access: Yes Customized Playlists: No Advertising: 30sec ad every 30 min Mobile Access: Only ability to choose songs (no song skipping)	Price: 7€ Offline Access: Yes Customized Playlists: Yes Advertising: 30sec ad every 30 min Mobile Access: Only song skipping allowed (no ability to choose songs)	Unpaid Downloads from the Internet
Among these 3 options, <b>select the one you would prefer.</b>		
Price: 7€ Offline Access: No Customized Playlists: No Advertising: None Mobile Access: Only song skipping allowed (no ability to choose songs)	Price: 3€ Offline Access: Yes Customized Playlists: No Advertising: 30sec ad every 15 min Mobile Access: Song Skipping Allowed + Ability to choose songs	Unpaid Downloads from the Internet
Among these 3 options, <b>select the one you would prefer.</b>		
Price: Free Offline Access: No Customized Playlists: No Advertising: None Mobile Access: Only song skip ping allowed (no ability to choose songs)	Price: 3€ Offline Access: No Customized Playlists: Yes Advertising: None Mobile Access: Only ability to choose songs (no song skipping)	Unpaid Downloads from the Internet

**SET 2**

Among these 3 options, <b>select the one you would prefer.</b>		
Price: 7€ Offline Access: No Customized Playlists: No Advertising: 30sec ad every 15 min Mobile Access: Only ability to choose songs (no song skipping)	Price: 11€ Offline Access: Yes Customized Playlists: No Advertising: None Mobile Access: Only song skipping allowed (no ability to choose songs)	Unpaid Downloads from the Internet

Among these 3 options, <b>select the one you would prefer.</b>		
Price: 11€ Offline Access: No Customized Playlists: Yes Advertising: 30sec ad every 15 min Mobile Access: Only song skipping allowed (no ability to choose songs)	Price: Free Offline Access: Yes Customized Playlists: Yes Advertising: None Mobile Access: Only ability to choose songs (no song skipping)	Unpaid Downloads from the Internet
Among these 3 options, <b>select the one you would prefer.</b>		
Price: 3€ Offline Access: Yes Customized Playlists: No Advertising: None Mobile Access: Only song skipping allowed (no ability to choose songs)	Price: Free Offline Access: No Customized Playlists: No Advertising: 30sec ad every 30 min Mobile Access: Song Skipping Allowed + Ability to choose songs	Unpaid Downloads from the Internet
Among these 3 options, <b>select the one you would prefer.</b>		
Price: 3€ Offline Access: No Customized Playlists: Yes Advertising: 30sec ad every 30 min Mobile Access: Only song skipping allowed (no ability to choose songs)	Price: 7€ Offline Access: Yes Customized Playlists: Yes Advertising: None Mobile Access: Song Skipping Allowed + Ability to choose songs	Unpaid Downloads from the Internet

### SET 3

Among these 3 options, <b>select the one you would prefer.</b>		
Price: 7€ Offline Access: Yes Customized Playlists: No Advertising: 30sec ad every 30 min Mobile Access: Only song skipping allowed (no ability to choose songs)	Price: 3€ Offline Access: Yes Customized Playlists: No Advertising: None Mobile Access: Song Skipping Allowed + Ability to choose songs	Unpaid Downloads from the Internet
Among these 3 options, <b>select the one you would prefer.</b>		
Price: Free Offline Access: No Customized Playlists: No Advertising: None Mobile Access: Only song skipping allowed (no ability to choose songs)	Price: 11€ Offline Access: Yes Customized Playlists: Yes Advertising: 30sec ad every 15 min Mobile Access: Only song skipping allowed (no ability to choose songs)	Unpaid Downloads from the Internet
Among these 3 options, <b>select the one you would prefer.</b>		
Price: 11€ Offline Access: Yes Customized Playlists: No Advertising: None Mobile Access: Only song skipping allowed (no ability to choose songs)	Price: 3€ Offline Access: Yes Customized Playlists: Yes Advertising: 30sec ad every 30 min Mobile Access: Only ability to choose songs (no song skipping)	Unpaid Downloads from the Internet
Among these 3 options, <b>select the one you would prefer.</b>		
Price: 7€ Offline Access: No Customized Playlists: No Advertising: None Mobile Access: Only ability to choose songs (no song skipping)	Price: Free Offline Access: Yes Customized Playlists: Yes Advertising: None Mobile Access: Song Skipping Allowed + Ability to choose songs	Unpaid Downloads from the Internet

### SET 4

Among these 3 options, <b>select the one you would prefer.</b>		
Price: 11€ Offline Access: No Customized Playlists: Yes Advertising: None Mobile Access: Only ability to choose songs (no song skipping)	Price: 3€ Offline Access: No Customized Playlists: No Advertising: 30sec ad every 15 min Mobile Access: Only song skipping allowed (no ability to choose songs)	Unpaid Downloads from the Internet
Among these 3 options, <b>select the one you would prefer.</b>		

Price: Free Offline Access: Yes Customized Playlists: No Advertising: 30sec ad every 15 min Mobile Access: Only ability to choose songs (no song skipping)	Price: 7€ Offline Access: Yes Customized Playlists: Yes Advertising: None Mobile Access: Only song skipping allowed (no ability to choose songs)	Unpaid Downloads from the Internet
Among these 3 options, <b>select the one you would prefer.</b>		
Price: 3€ Offline Access: No Customized Playlists: Yes Advertising: None Mobile Access: Only song skipping allowed (no ability to choose songs)	Price: 7€ Offline Access: No Customized Playlists: Yes Advertising: 30sec ad every 15 min Mobile Access: Song Skipping Allowed + Ability to choose songs	Unpaid Downloads from the Internet
Among these 3 options, <b>select the one you would prefer.</b>		
Price: Free Offline Access: No Customized Playlists: Yes Advertising: 30sec ad every 30 min Mobile Access: Only song skipping allowed (no ability to choose songs)	Price: 11€ Offline Access: No Customized Playlists: No Advertising: 30sec ad every 30 min Mobile Access: Song Skipping Allowed + Ability to choose songs	Unpaid Downloads from the Internet

### SET 5

Among these 3 options, <b>select the one you would prefer.</b>		
Price: 3€ Offline Access: No Customized Playlists: Yes Advertising: 30sec ad every 15 min Mobile Access: Only song skipping allowed (no ability to choose songs)	Price: Free Offline Access: Yes Customized Playlists: Yes Advertising: 30sec ad every 15 min Mobile Access: Only ability to choose songs (no song skipping)	Unpaid Downloads from the Internet
Among these 3 options, <b>select the one you would prefer.</b>		
Price: 11€ Offline Access: No Customized Playlists: Yes Advertising: 30sec ad every 30 min Mobile Access: Song Skipping Allowed + Ability to choose songs	Price: 11€ Offline Access: Yes Customized Playlists: Yes Advertising: None Mobile Access: Only ability to choose songs (no song skipping)	Unpaid Downloads from the Internet
Among these 3 options, <b>select the one you would prefer.</b>		
Price: 7€ Offline Access: Yes Customized Playlists: No Advertising: 30sec ad every 15 min Mobile Access: Song Skipping Allowed + Ability to choose songs	Price: 7€ Offline Access: Yes Customized Playlists: Yes Advertising: 30sec ad every 30 min Mobile Access: Only song skipping allowed (no ability to choose songs)	Unpaid Downloads from the Internet
Among these 3 options, <b>select the one you would prefer.</b>		
Price: 3€ Offline Access: Yes Customized Playlists: Yes Advertising: None Mobile Access: Only song skipping allowed (no ability to choose songs)	Price: Free Offline Access: No Customized Playlists: No Advertising: None Mobile Access: Only song skipping allowed (no ability to choose songs)	Unpaid Downloads from the Internet

### SET 6

Among these 3 options, <b>select the one you would prefer.</b>		
Price: 11€ Offline Access: Yes Customized Playlists: No Advertising: None Mobile Access: Only song skipping allowed (no ability to choose songs)	Price: 3€ Offline Access: No Customized Playlists: No Advertising: 30sec ad every 30 min Mobile Access: Only ability to choose songs (no song skipping)	Unpaid Downloads from the Internet
Among these 3 options, <b>select the one you would prefer.</b>		
Price: 11€ Offline Access: No Customized Playlists: No Advertising: 30sec ad every 15 min Mobile Access: Only song skipping allowed (no ability to choose songs)	Price: 3€ Offline Access: Yes Customized Playlists: No Advertising: None Mobile Access: Song Skipping Allowed + Ability to choose songs	Unpaid Downloads from the Internet
Among these 3 options, <b>select the one you would prefer.</b>		



Price: Free Offline Access: No Customized Playlists: Yes Advertising: None Mobile Access: Song Skipping Allowed + Ability to choose songs	Price: Free Offline Access: Yes Customized Playlists: No Advertising: 30sec ad every 30 min Mobile Access: Only song skipping allowed (no ability to choose songs)	Unpaid Downloads from the Internet
Among these 3 options, <b>select the one you would prefer.</b>		
Price: 7€ Offline Access: No Customized Playlists: Yes Advertising: None Mobile Access: Only song skipping allowed (no ability to choose songs)	Price: 7€ Offline Access: No Customized Playlists: No Advertising: None Mobile Access: Only ability to choose songs (no song skipping)	Unpaid Downloads from the Internet

## SECTION 6

Stream-Ripping is the process of ‘ripping’ or creating a downloadable file from music that is available to stream online.

Stream-Ripping includes:

- the service provided by computer programs as “Sidify” (which converts music from Spotify and Apple Music into downloadable mp3 files)
- “Youtube to Mp3 Converter” websites and apps

**Q17 Have you ever engaged in stream-ripping?**

- Yes
- No

**Q18 (If Yes) How often do you download music using stream-ripping services?**

- More than once a month
- Once a month
- Once every two months
- Once a year
- Less than once a year

**Q19 (If Yes) Currently, is stream-ripping your only source of free music downloads? (for instance, if you also download music albums in the form of Torrents reply NO)**

- Yes
- No

**Q20 Which other source of free music downloads do you use? (Note: streaming services are NOT an example of free music downloads)**

## SECTION 7

**Q21 How old are you?**

- < 18 years old
- 18-24 years old
- 25-34 years old
- 35-44 years old
- 45-54 years old
- >54 years old

**Q22 Gender**

- Male
- Female
- Other
- Prefer not to say

**Q23 Nationality**

- Portuguese
- Brazilian
- German
- French
- Italian
- British
- Other

**Q24 Highest educational level**

- 9th Grade
- High school
- Bachelor Degree
- Master's Degree
- PhD
- Other

**Q25 What is your monthly personal income (€)?**

- <200€
- 201-500€
- 501-1000€
- 1001-3000€
- >3000€

**Q26 Main occupation**

- Student
- Employed
- Unemployed
- Working student
- Retired

## Appendix 4: Scales' Reliability

Most scales measuring the main constructs of the study were adapted from previous studies, therefore it seemed important to re-evaluate these scales' reliability. Thus, the Cronbach's alpha was calculated for each scale that had three or more items.

Scale	Initial number of items	Cronbach's Alpha	Cronbach's Alpha if item deleted	Items deleted	Final number of items
Variety Seeking	5	0.821	-	-	5
Music Involvement	6	0.795	-	-	6
Attitudes towards music piracy	10	0.188	0.7	7	3 <sup>5</sup>

The scales revealed good levels of internal consistency. Except for “Attitudes towards music piracy”, all scales had alpha values greater than 0.7.

### Exploratory Factorial Analysis “Attitudes towards music piracy” scale

**Rotated Component Matrix<sup>a</sup>**

	Component			
	1	2	3	4
I proactively search for information about upcoming albums and artists	.109	.742	.106	.079
Downloading music from the Internet (without paying) is not correct	<b>.747</b>	.081	-.008	.167
Music is a recurrent discussion topic with others	-.037	.825	-.064	-.112
I would feel bad if I downloaded music from the Internet (without paying)	<b>.854</b>	.006	.063	-.029
I usually listen to music alone	.167	-.127	.490	.534
Illegally downloading music is too risky	<b>.688</b>	-.010	.161	-.124
I practically only listen to music through my smartphone	-.001	-.050	.861	.010
When individuals engage in illegal music downloading, they don't have a significant negative impact on the music industry	-.307	.364	.343	-.441
I would rather have to deal with ads and other restrictions (like only being allowed to listen on shuffle mode) than to pay for a streaming ...	-.254	-.283	-.508	.007
I used to download music (without paying for it) a lot more than I do now	-.133	.064	.002	.824

### KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.596
Bartlett's Test of Sphericity	Approx. Chi-Square	385,995
	df	45
	Sig.	.000

<sup>5</sup> Concerning the “Attitudes towards music piracy” scale, the Cronbach alpha was considerably low. Therefore, after completing an exploratory factorial analysis on this scale, it was decided to keep only three of its original items. Two of those items would be used to assess *Ethics* and the other to study *Perceived Risk*. Concerning the latter, studies have shown that measures consisting of one item can be practically as effective as multi-item scales (Loo, 2002; Stanton, Sinar, Balzer, & Smith, 2002).

Component	Total Variance Explained								
	Total	Initial Eigenvalues		Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
		% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2,131	21,314	21,314	2,131	21,314	21,314	1,979	19,790	19,790
2	1,624	16,244	37,558	1,624	16,244	37,558	1,474	14,744	34,534
3	1,303	13,026	50,584	1,303	13,026	50,584	1,402	14,017	48,551
4	1,018	10,179	60,763	1,018	10,179	60,763	1,221	12,212	60,763
5	,865	8,647	69,410						
6	,816	8,164	77,573						
7	,715	7,152	84,725						
8	,615	6,148	90,874						
9	,530	5,305	96,179						
10	,382	3,821	100,000						

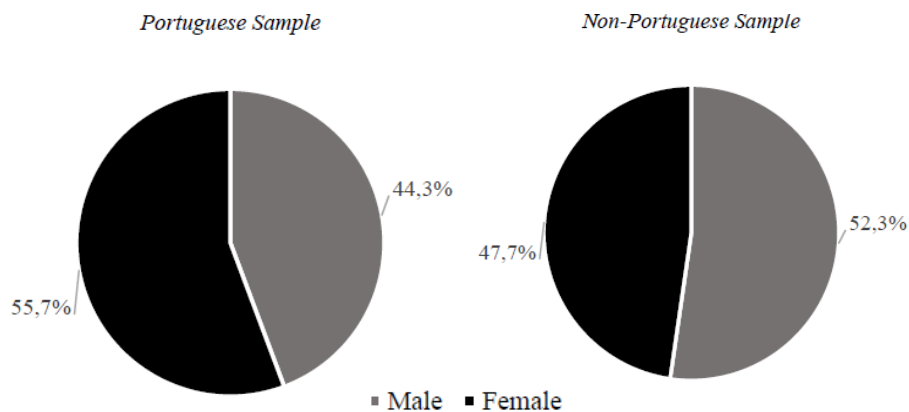
Extraction Method: Principal Component Analysis.

## Appendix 5: Full Sample Demographics

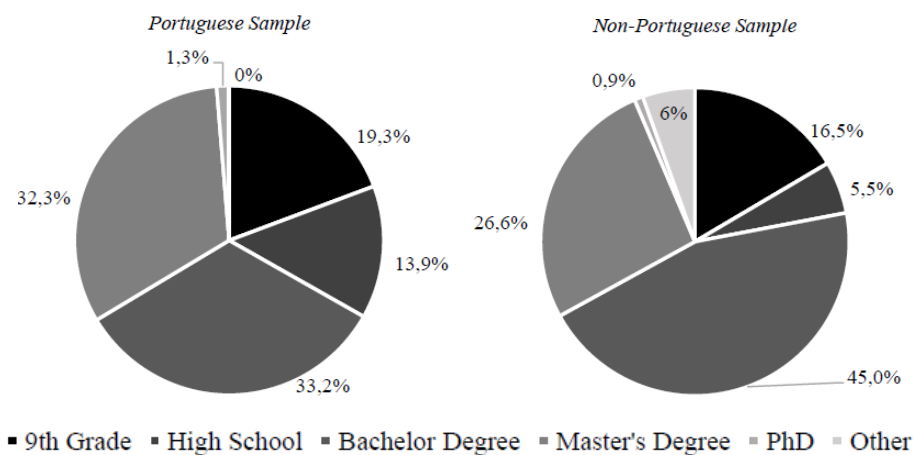
### Age

Age Group	Portuguese		Non-Portuguese	
	Frequency	Percentage	Frequency	Percentage
Under 18	64	20.3%	23	21.1%
18-24	173	54.7%	43	39.4%
25-34	79	25%	43	39.4%
Total	316	100%	109	100%

### Gender



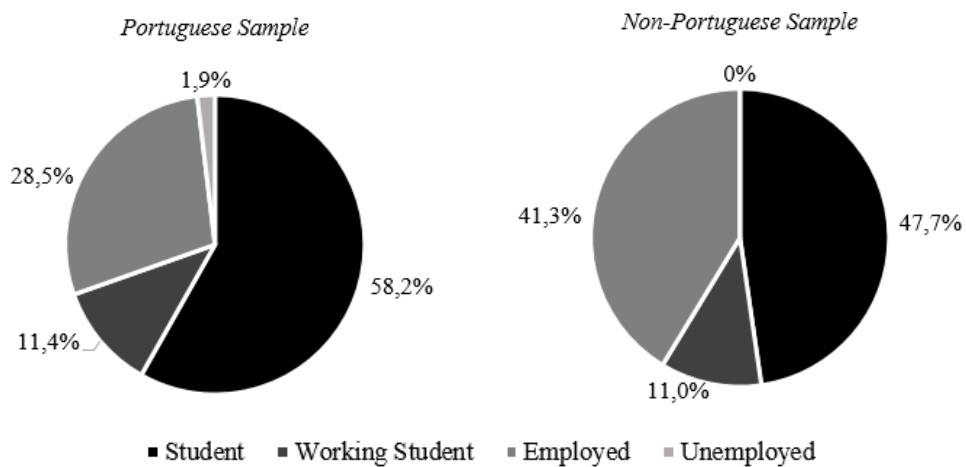
### Education Level



### Income Level

Income Level	Portuguese		Non-Portuguese	
	Frequency	Percentage	Frequency	Percentage
Missing	0	0%	5	4.6%
Under 200€	140	44.3%	23	21.1%
201-500€	49	15.5%	26	23.9%
501-1000€	48	15.2%	14	12.8%
1001-3000€	64	20.3%	37	33.9%
Above 3000€	15	4.7%	4	3.7%
Total	316	100%	109	100%

### Main Occupation

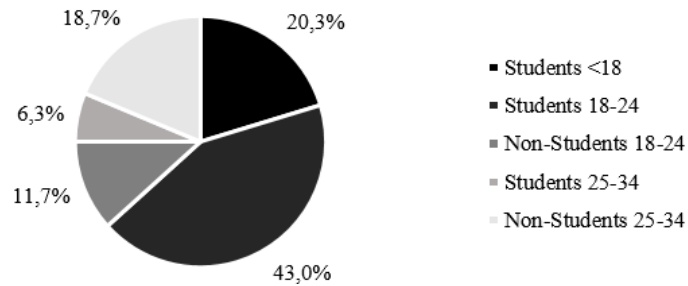


### Nationality

Nationality	Frequency	Percentage
Portuguese	316	74.4%
Brazilian	6	1.4%
German	16	3.8%
French	8	1.9%
Italian	4	0.9%
Spanish	4	0.9%
British	37	8.7%
Other	34	8%
Total	425	100

## Appendix 6: Segments Profiling (Portuguese Sample)

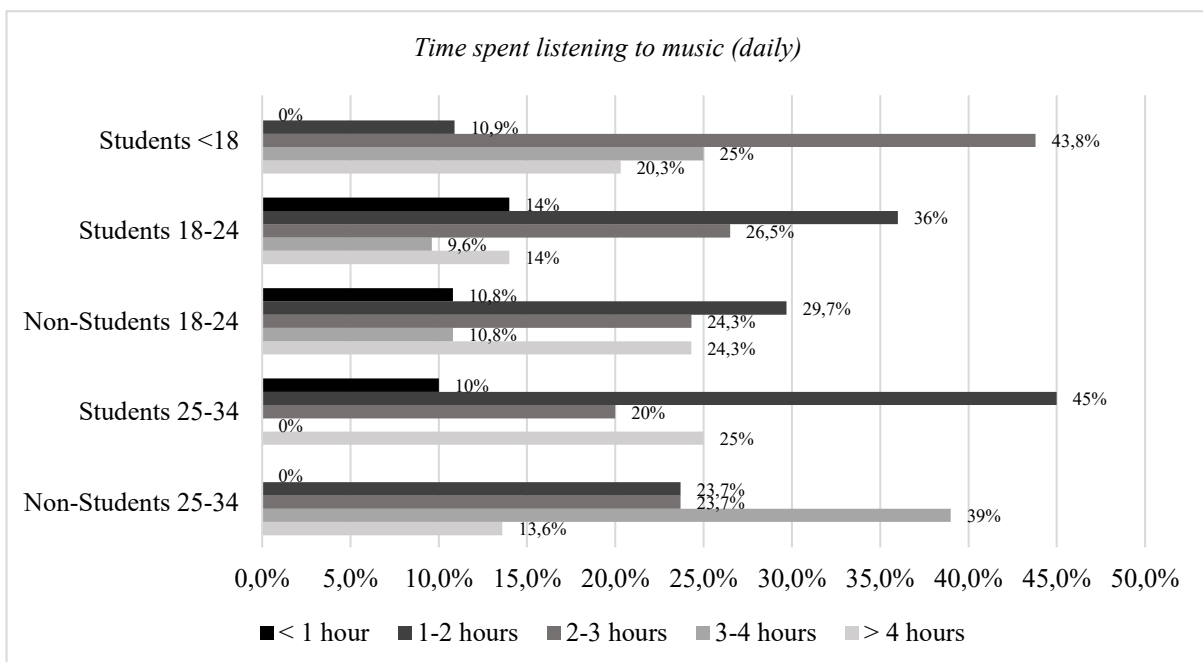
### Segments Distribution

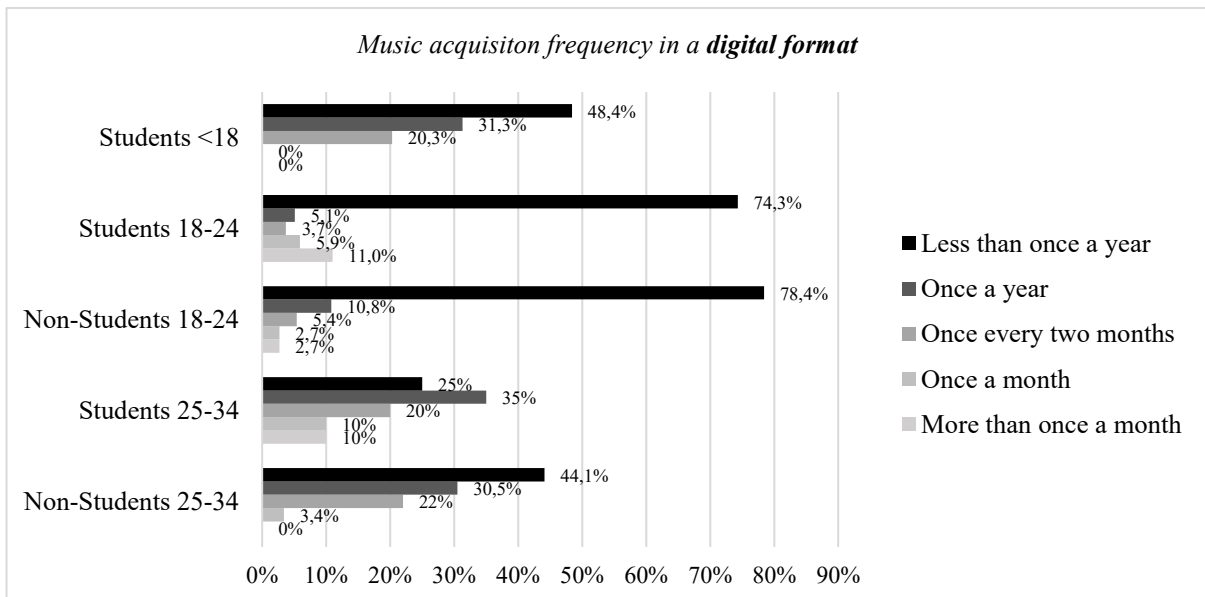
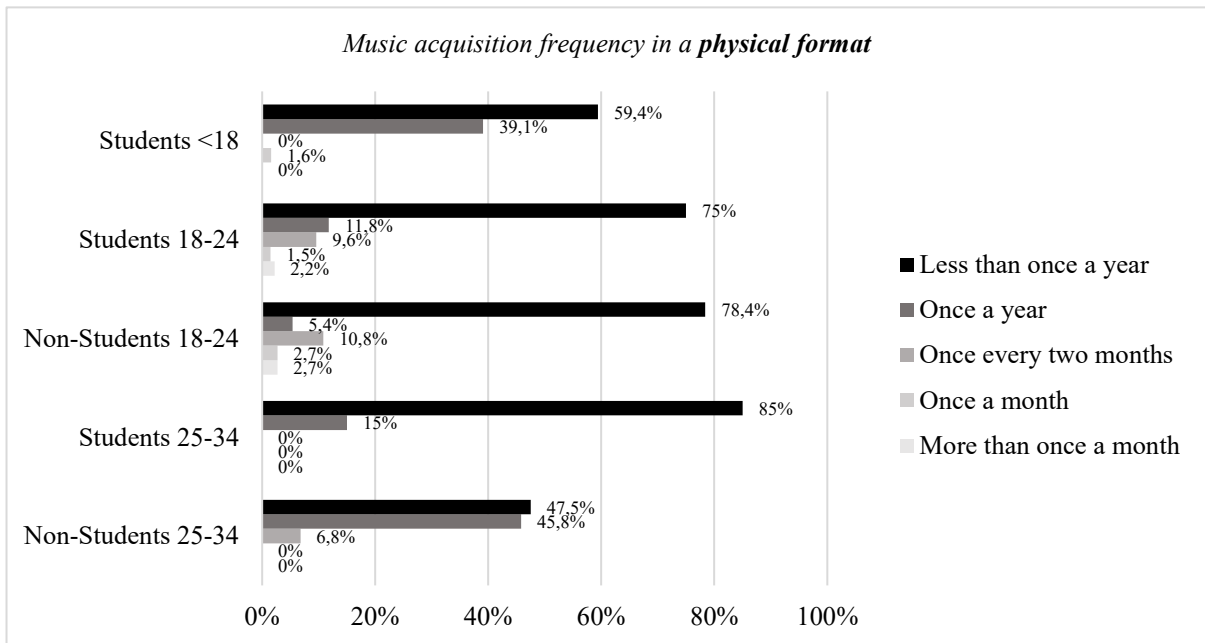
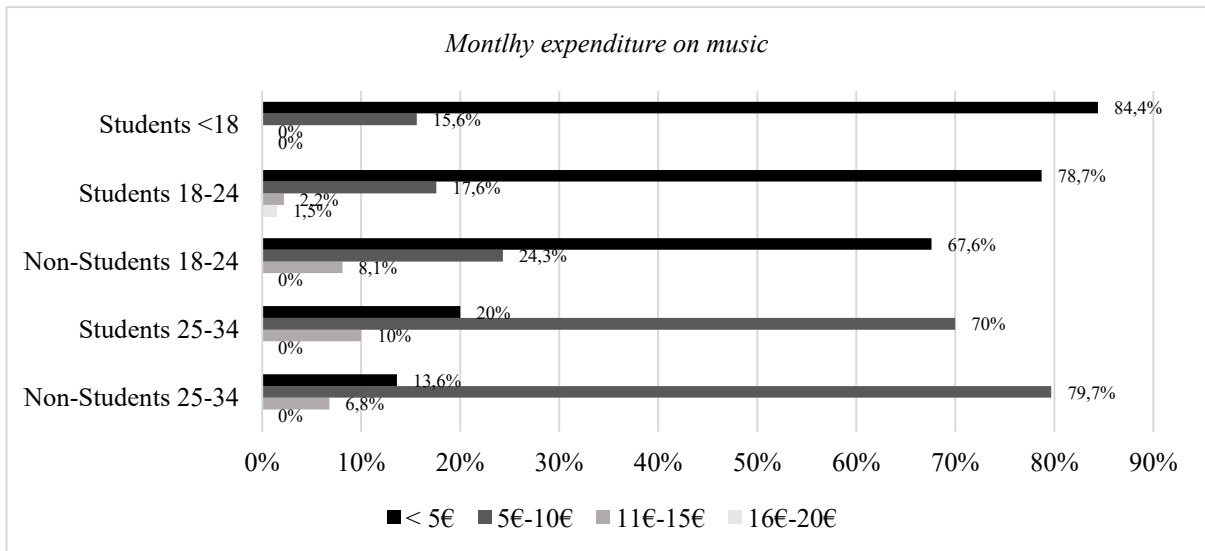


### Income Level

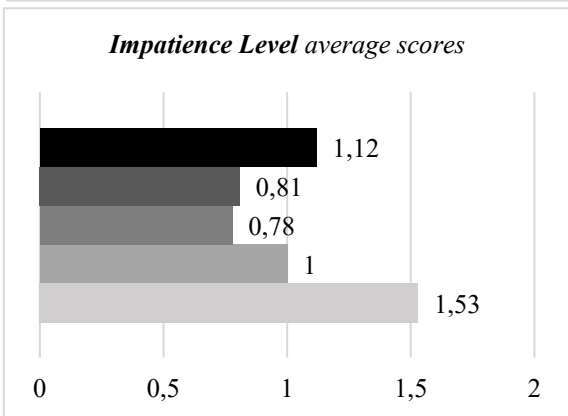
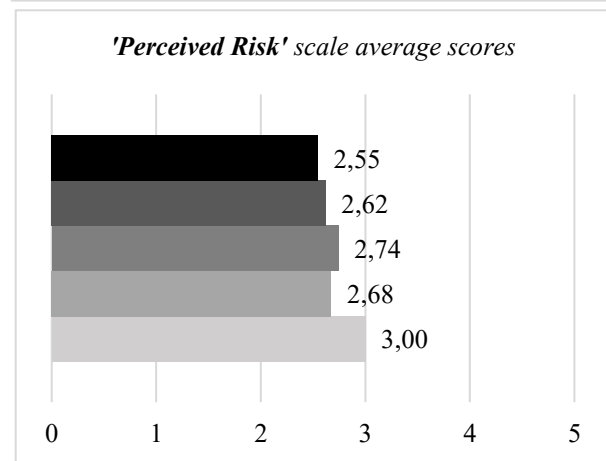
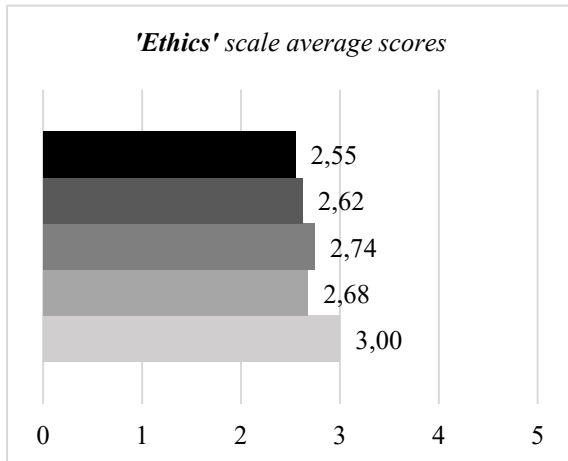
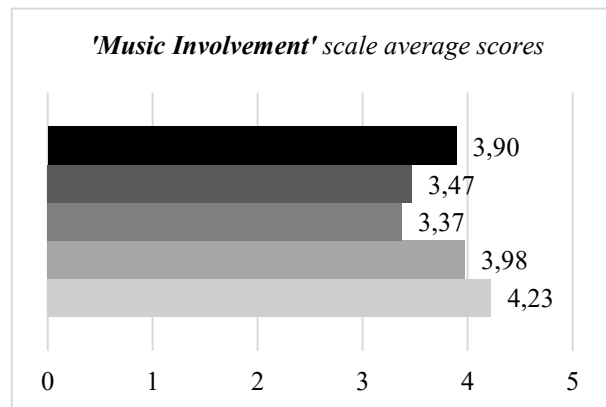
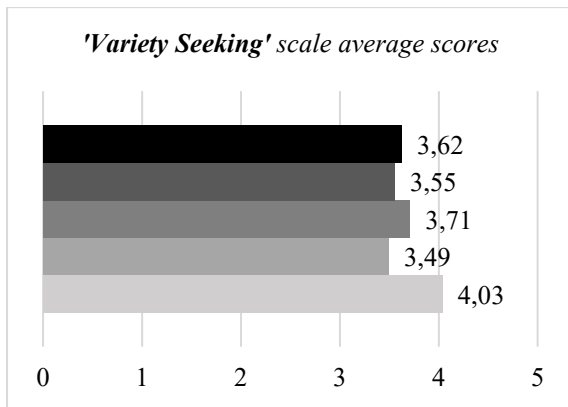


### Music consumption habits





Mean scores of all psychographic variables



Note: The level of impatience was not measured using a scale, but a set of questions meant to estimate an approximation of each respondent's impatience level (Appendix 3).

Therefore, different points were assigned to each set of answers (0 – Not Impatient; 1- Moderately Impatient; 2 -Impatient)

■ Students <18   ■ Students 18-24   ■ Non-Students 18-24   ■ Students 25-34   ■ Non-Students 25-34



## Appendix 7: Logistic Regressions

### Logistic Regression

- Dependent Variable: Piracy
- Independent Variables: Demographic and psychographic variables
- Block 1: Method = Forward Stepwise (Conditional)

Omnibus Tests of Model Coefficients					Model Summary			
		Chi-square	df	Sig.	Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
Step 1	Step	28,654	1	,000	1	340,675 <sup>a</sup>	,087	,126
	Block	28,654	1	,000	2	311,680 <sup>b</sup>	,167	,242
	Model	28,654	1	,000	3	304,000 <sup>b</sup>	,187	,271
Step 2	Step	28,995	1	,000				
	Block	57,649	2	,000				
	Model	57,649	2	,000				
Step 3	Step	7,679	1	,006				
	Block	65,328	3	,000				
	Model	65,328	3	,000				

**Classification Table<sup>a</sup>**

Observed		Predicted		Percentage Correct
		Non-Pirate	Pirate	
Step 1	Piracy	221	8	96,5
	Non-Pirate	77	9	10,5
	Overall Percentage			73,0
Step 2	Piracy	213	16	93,0
	Non-Pirate	66	20	23,3
	Overall Percentage			74,0
Step 3	Piracy	208	21	90,8
	Non-Pirate	65	21	24,4
	Overall Percentage			72,7

a. The cut value is ,500

**Variables in the Equation**

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1 <sup>a</sup>	Ethics	-,856	,171	25,056	1	,000	,425
	Constant	1,215	,440	7,631	1	,006	3,371
Step 2 <sup>b</sup>	25-34y	-2,277	,544	17,544	1	,000	,103
	Ethics	-,874	,188	21,572	1	,000	,417
	Constant	1,589	,488	10,621	1	,001	4,901
Step 3 <sup>c</sup>	25-34y	-2,285	,550	17,277	1	,000	,102
	Ethics	-,695	,198	12,300	1	,000	,499
	Perceived Risk	-,516	,195	7,021	1	,008	,597
	Constant	2,106	,538	15,305	1	,000	8,216

a. Variable(s) entered on step 1: Ethics.

b. Variable(s) entered on step 2: 25-34y.

c. Variable(s) entered on step 3: Perceived Risk.

**Model if Term Removed<sup>a</sup>**

Variable	Model Log Likelihood	Change in -2 Log Likelihood	df	Sig. of the Change
Step 1 Ethics	-184,951	29,228	1	,000
Step 2 25-34y	-171,236	30,792	1	,000
Ethics	-168,501	25,322	1	,000
Step 3 25-34y	-166,849	29,697	1	,000
Ethics	-158,809	13,619	1	,000
Perceived Risk	-155,883	7,765	1	,005

a. Based on conditional parameter estimates

*Logistic Regression*

- Dependent Variable: Paid Streaming
- Independent Variables: Demographic and psychographic variables
- Block 1: Method = Forward Stepwise (Conditional)

**Omnibus Tests of Model Coefficients**

		Chi-square	df	Sig.
Step 1	Step	84,096	1	,000
	Block	84,096	1	,000
	Model	84,096	1	,000
Step 2	Step	29,184	1	,000
	Block	113,280	2	,000
	Model	113,280	2	,000
Step 3	Step	17,682	1	,000
	Block	130,962	3	,000
	Model	130,962	3	,000
Step 4	Step	14,809	1	,000
	Block	145,771	4	,000
	Model	145,771	4	,000
Step 5	Step	8,929	1	,003
	Block	154,700	5	,000
	Model	154,700	5	,000

**Model Summary**

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	347,235 <sup>a</sup>	,234	,314
2	318,051 <sup>a</sup>	,302	,405
3	300,369 <sup>a</sup>	,340	,456
4	285,560 <sup>a</sup>	,370	,497
5	276,631 <sup>b</sup>	,388	,520

**Classification Table<sup>a</sup>**

	Observed	Predicted		Percentage Correct
		Paid Streaming 0	Paid Streaming 1	
Step 1	Paid Streaming 0	148	30	83,1
	1	56	81	59,1
	Overall Percentage			72,7
Step 2	Paid Streaming 0	151	27	84,8
	1	50	87	63,5
	Overall Percentage			75,6
Step 3	Paid Streaming 0	154	24	86,5
	1	49	88	64,2
	Overall Percentage			76,8
Step 4	Paid Streaming 0	152	26	85,4
	1	43	94	68,6
	Overall Percentage			78,1
Step 5	Paid Streaming 0	149	29	83,7
	1	43	94	68,6
	Overall Percentage			77,1

**Model if Term Removed<sup>a</sup>**

Variable	Model Log Likelihood	Change in -2 Log Likelihood	df	Sig. of the Change
Step 1 Involvement	-215,883	84,531	1	,000
Step 2 25-34y	-174,008	29,965	1	,000
Involvement	-182,739	47,428	1	,000
Step 3 25-34y	-164,739	29,109	1	,000
Ethics	-159,180	17,991	1	,000
Involvement	-169,162	37,955	1	,000
Step 4 25-34y	-158,144	30,729	1	,000
Gender	-150,334	15,109	1	,000
Ethics	-152,774	19,989	1	,000
Involvement	-164,744	43,929	1	,000
Step 5 Under 18y	-142,830	9,028	1	,003
25-34y	-147,254	17,877	1	,000
Gender	-146,017	15,403	1	,000
Ethics	-147,300	17,969	1	,000
Involvement	-164,682	52,732	1	,000

a. Based on conditional parameter estimates

**Variables in the Equation**

	B	S.E.	Wald	df	Sig.	Exp(B)
Step 1 <sup>a</sup> Involvement	2,010	,266	57,280	1	,000	7,467
Constant	-7,860	1,022	59,126	1	,000	,000
Step 2 <sup>b</sup> 25-34y	1,784	,352	25,755	1	,000	5,956
Involvement	1,655	,277	35,576	1	,000	5,231
Constant	-6,919	1,056	42,939	1	,000	,001
Step 3 <sup>c</sup> 25-34y	1,837	,370	24,651	1	,000	6,276
Ethics	,733	,184	15,880	1	,000	2,082
Involvement	1,542	,283	29,778	1	,000	4,675
Constant	-8,492	1,181	51,692	1	,000	,000
Step 4 <sup>d</sup> 25-34y	1,935	,379	26,063	1	,000	6,926
Gender	1,154	,310	13,844	1	,000	3,172
Ethics	,799	,192	17,346	1	,000	2,224
Involvement	1,710	,298	32,881	1	,000	5,526
Constant	-9,822	1,308	56,369	1	,000	,000
Step 5 <sup>e</sup> Under 18y	-1,176	,412	8,162	1	,004	,308
25-34y	1,602	,399	16,154	1	,000	4,964
Gender	1,184	,316	14,048	1	,000	3,266
Ethics	,776	,195	15,867	1	,000	2,173
Involvement	1,954	,317	38,001	1	,000	7,054
Constant	-10,379	1,350	59,153	1	,000	,000

a. Variable(s) entered on step 1: Involvement.

b. Variable(s) entered on step 2: 25-34y.

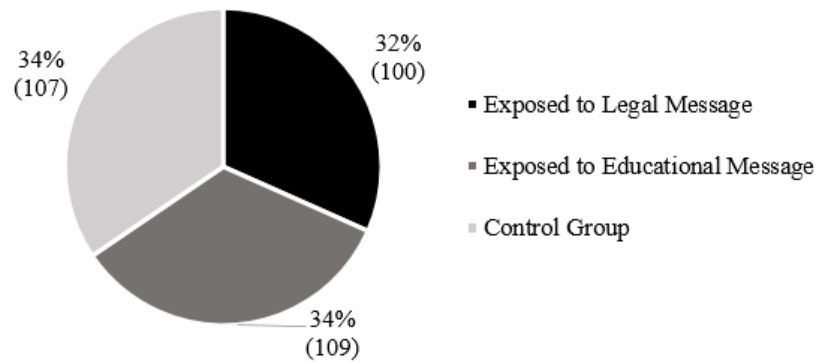
c. Variable(s) entered on step 3: Ethics.

d. Variable(s) entered on step 4: Gender.

e. Variable(s) entered on step 5: Under 18y.

## Appendix 8: Impact of Legal and Educational Conditions on the results of the Conjoint

*Stimuli Distribution*



Conjoint Results	Music Piracy's Utility	p-value
Full (Portuguese) Sample	3.49	0.00
Legal Condition (only)	3.11	0.00
Educational Condition (only)	2.94	0.00
Control Group	3.71	0.00
Interaction: Legal * Free Downloads	-0.78	0.00
Interaction: Educational * Free Downloads	-1.42	0.00
Interaction: Control * Free Downloads	0.78	0.00

## Appendix 9: Attributes' Relative Importance

### *Attributes' Relative Importance – Full Sample and Control Group*

Attribute Levels	Part Worths		Ranges		Attributes' Relative Importance	
	Full Sample	Control Group	Full Sample	Control Group	Full Sample	Control Group
<b>Price</b>	-2,55	-2,71	2,55	2,71	25%	25%
<b>Offline</b>	1,15	0,87	1,15	0,87	11%	8%
<b>Playlists</b>	1,82	1,94	1,82	1,94	18%	18%
<b>Advertising</b>						
<i>No Ads</i>	1,66	1,74				
<i>Ads every 30m</i>	1,04	0,77	1.66	1.74	16%	16%
<i>Ads every 15m</i>	0,00	0,00				
<b>Mobile Access</b>						
<i>Choose + Skip</i>	2,24	2,67				
<i>Choose songs</i>	0,00	0,00	3.1	3.42	30%	32%
<i>Skip songs</i>	3,10	3,42				
		Sum	10.27	10.66	1	1

### *Attributes' Relative Importance per segment*

Attribute Levels	Part Worths					Ranges					Attributes' Relative Importance					
	Segments					Segments					Segments					
	S <18	S 18-24	NS 18-24	S 25-34	NS 25-34	S <18	S 18-24	NS 18-24	S 25-34	NS 25-34	S <18	S 18-24	NS 18-24	S 25-34	NS 25-34	
<b>Price *</b>	-4.35	-2.01	-3.88	-1.6	-1.91	4.35	2.01	3.88	1.6	1.91	35%	19%	35%	10%	17%	
<b>Offline</b>	1.07	0.83	1.02	2.43	2.35	1.07	0.83	1.02	2.43	2.35	9%	8%	9%	15%	21%	
<b>Playlists</b>	2.6	2.21	1.77	1.93	1.77	2.6	2.21	1.77	1.93	1.77	21%	21%	16%	12%	16%	
<b>Advertising</b>																
<i>No Ads</i>	1.19	2.15	1.55	3.33	1.48											
<i>Ads every 30m</i>	0.78	1.35	0.93	1.36	1.06	1.19	2.15	1.55	3.33	1.48	10%	21%	14%	20%	13%	
<i>Ads every 15m</i>	0	0	0	0	0											
<b>Mobile Access</b>																
<i>Choose + Skip</i>	3.2	3.16	2.83	7.08	3.63											
<i>Choose songs</i>	1.78	2.3	2.37	4.19	2.42	3.2	3.16	2.83	7.08	3.63	26%	31%	26%	43%	33%	
<i>Skip songs</i>	0	0	0	0	0											
						Sum	12.41	10.36	11.05	16.37	11.14	1	1	1	1	1

\*Current price scheme – 6.99€ or 3.99€ for university students

## Appendix 10: Market Simulation

### *Estimated Segment Weights*

Since the proportion of each segment in the sample was not representative of the Portuguese population's reality, data from demographic census (PORDATA, 2018) was used to calculate an approximation of the real segment weights.

Age Segments	<18y	%	18-24y	%	25-34y	%
<b>Student</b>	64	100%	136	78.6%	20	25.3%
<b>Non-Student</b>	0	0%	37	2.4%	59	74.7%
<b>Total</b>	64	100%	173	100%	79	100%

Portuguese Population 2017	
Age Group	Total Population
<b>15-19</b>	557.038 <sup>6</sup>
<b>20-24</b>	537.923
<b>25-29</b>	550.693
<b>30-34</b>	603.319

	Age Group		
	<18	18-24	25-34
Estimated Population	334.223	760.738 <sup>7</sup>	1154.012
% of Total Market (under study)	15%	34%	51%

Final Segment Weights					
S <18	S 18-24	NS 18-24	S 25-34	NS 25-34	Total
15%	26,6%	7,2%	13,0%	38,3%	100%

### *Estimated Utilities*

Utilities	S <18	S 18-24	NS 18-24	S 25-34	NS 25-34
Paid Streaming	3,72	6,35	3,29	13,17	7,32
Ad-Supported Streaming	4,99	5,14	4,11	6,83	4,64
Music Piracy	3,95	3,46	3,40	5,87	4,16

<sup>6</sup> Only people between 15 and 17 years old were interviewed, thus it was assumed that the 'Under 18' segment in our study corresponded to 3/5 of this amount.

<sup>7</sup> Includes 2/5 of the population in the 15 to 19 age group (the ones not accounted for in the 'Students <18' segment), plus the total population between 20 and 24 years old.

### Estimated Shares

Alpha = 0,71

	Estimated Shares					Total	Real Share	Sq. Errors
	S <18	S 18-24	NS 18-24	S 25-34	NS 25-34			
Paid Streaming <sup>8</sup>	30,5%	39,8%	31,3%	45,6%	41,8%	39,3%	40,0%	4,51734E-05
Ad-Supported Streaming	37,6%	34,3%	36,7%	28,7%	30,2%	32,7%	30,8%	3,30386E-04
Music Piracy	31,9%	25,9%	32,0%	25,7%	28,0%	28,0%	29,2%	1,31226E-04
								SSE 5,06786E-04

### Estimated Willingness to Pay

Willingness to pay	S <18	S 18-24	NS 18-24	S 25-34	NS 25-34	Total Sample	Control Sample
Paid Streaming's utility without Price	8,06 €	8,36 €	7,17 €	14,77 €	9,23 €	7,73 €	7,96 €
WTP for Paid vs Ad-Supported <sup>9</sup>	4,95 €	5,59 €	5,50 €	17,30 €	16,80 €	7,29 €	7,32 €
WTP for Paid vs Piracy	6,61 €	8,51 €	6,79 €	19,41 €	18,56 €	9,31 €	8,80 €

### Scenario 1: No Ad-Supported Streaming

	Estimated Shares					Total	Δ from current scenario
	S <18	S 18-24	NS 18-24	S 25-34	NS 25-34		
Paid Streaming	48,9%	60,6%	49,4%	64%	59,9%	58,2%	+48%
Music Piracy	51,1%	39,4%	50,6%	36%	40,1%	41,8%	+49,2%
<b>WTP Paid Streaming</b>	6,61 €	8,51 €	6,79 €	19,41 €	18,56 €	9,31 €	

### Scenario 2: Ad-Supported Streaming with the same features on mobile and PC

	Estimated Shares					Total	Δ from current scenario
	S <18	S 18-24	NS 18-24	S 25-34	NS 25-34		
Paid Streaming	28,2%	37,1%	28,8%	41,5%	38,7%	36,4%	-7,5%
Ad-Sup. Streaming	42,3%	38,7%	41,7%	35,1%	35,4%	37,7%	+15,4%
Music Piracy	29,5%	24,2%	29,5%	23,4%	25,9%	25,9%	-7,5%
<b>WTP Paid Streaming</b>	2,37 €	2,84 €	2,96 €	9,58 €	10,16 €	3,88 €	

### Scenario 3: Student discount extended to students under 18

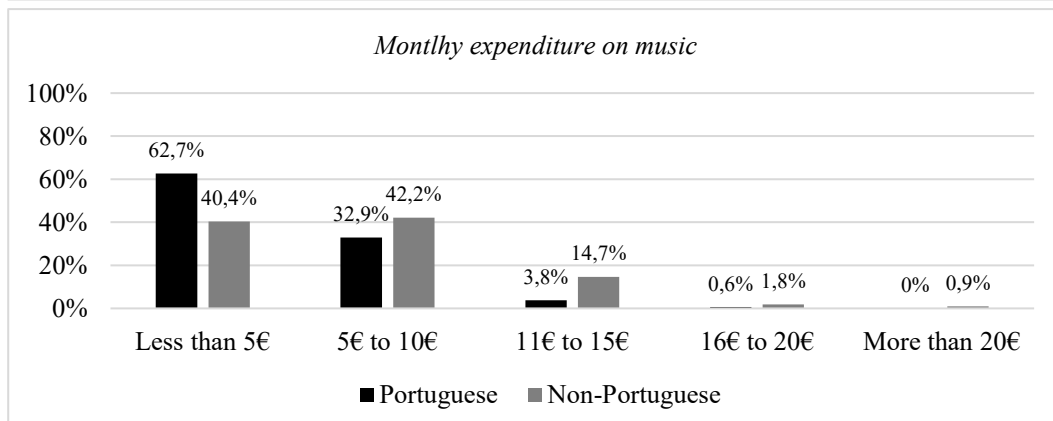
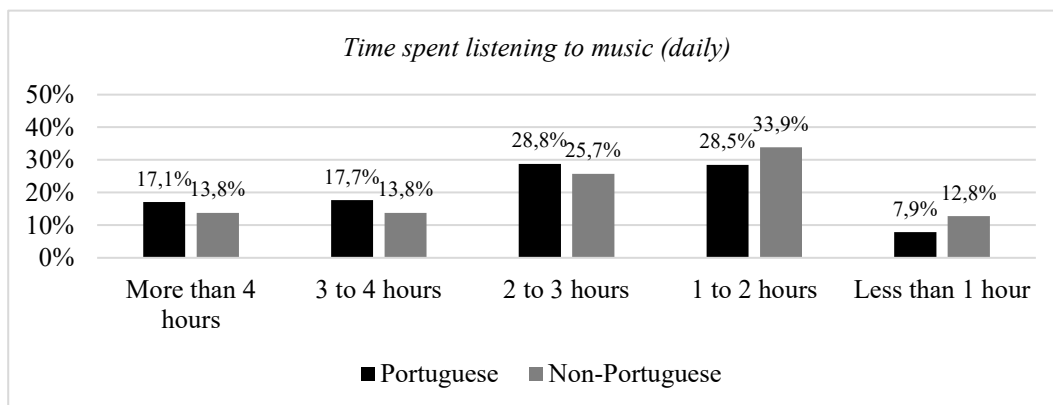
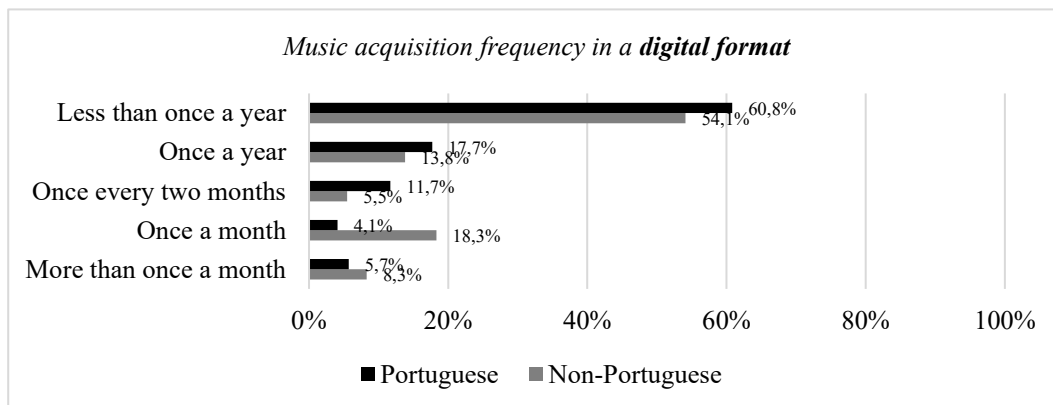
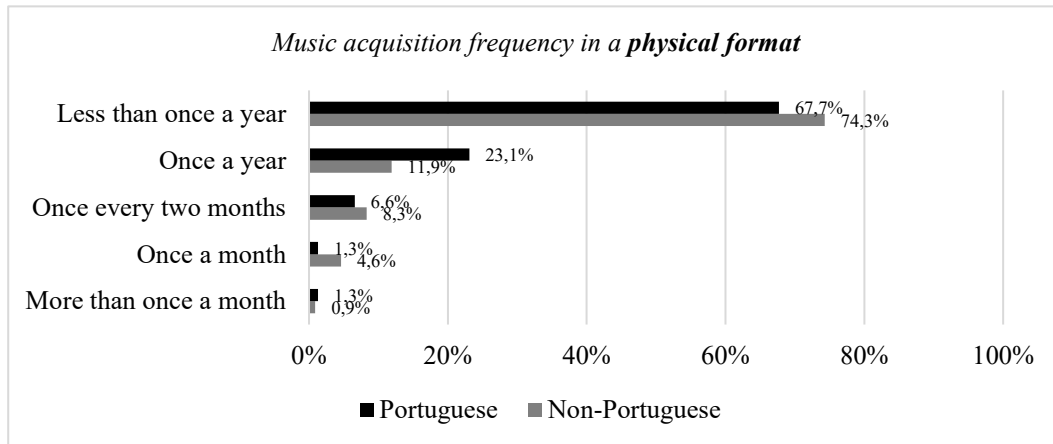
	Estimated Shares					Total	Δ from current scenario
	S <18	S 18-24	NS 18-24	S 25-34	NS 25-34		
Paid Streaming	37,9%	39,8%	31,3%	45,6%	41,8%	40,4%	+2,8%
Ad-Sup. Streaming	33,6%	34,3%	36,7%	28,7%	30,2%	32,1%	-1,8%
Music Piracy	28,5%	25,9%	32%	25,7%	28%	27,5%	-1,8%
<b>WTP Paid Streaming</b>	8,45 €	5,59 €	5,5 €	17,3 €	16,8 €	7,29 €	

<sup>8</sup> It is important to acknowledge that, while Spotify is the only Ad-Supported Streaming provider, the share for Paid Streaming needs to be split among several competitors, being the biggest Spotify and Apple Music.

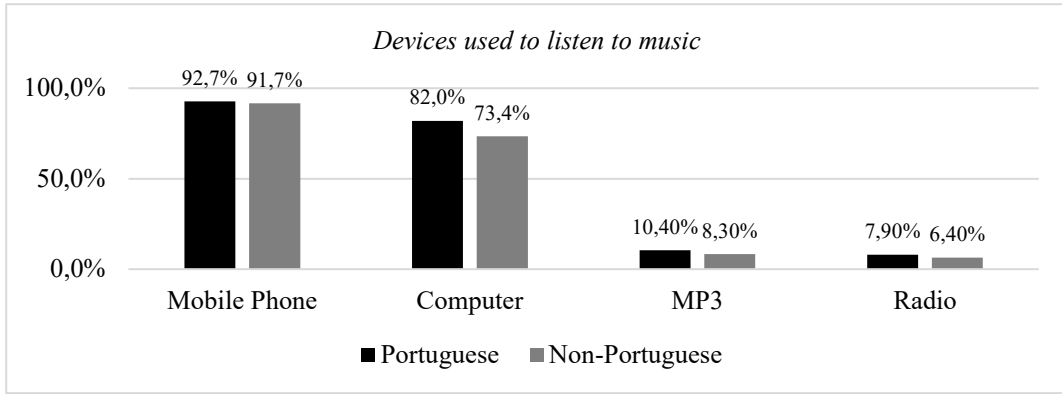
<sup>9</sup> Since Ad-Supported streaming has a higher utility than music piracy, it makes sense to only consider how much more consumers are willing to pay for paid streaming assuming there is the option to stream music for free.

## Appendix 11: Portuguese versus Non-Portuguese Music Consumption Habits

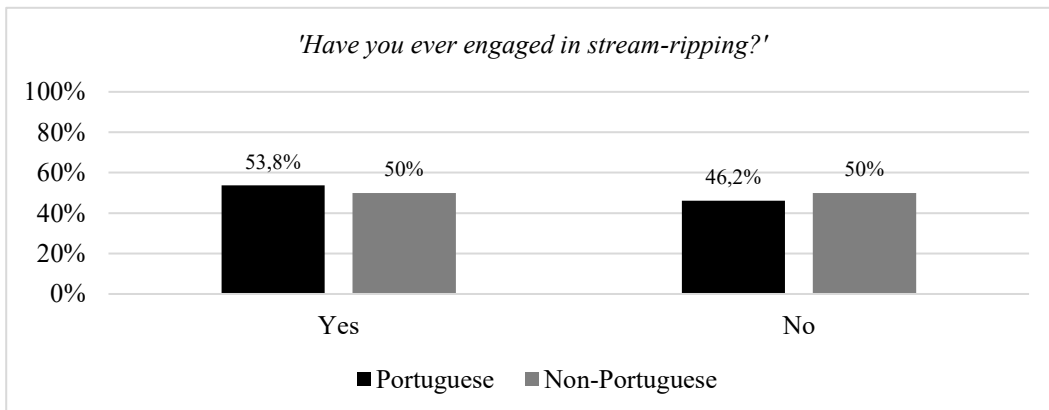
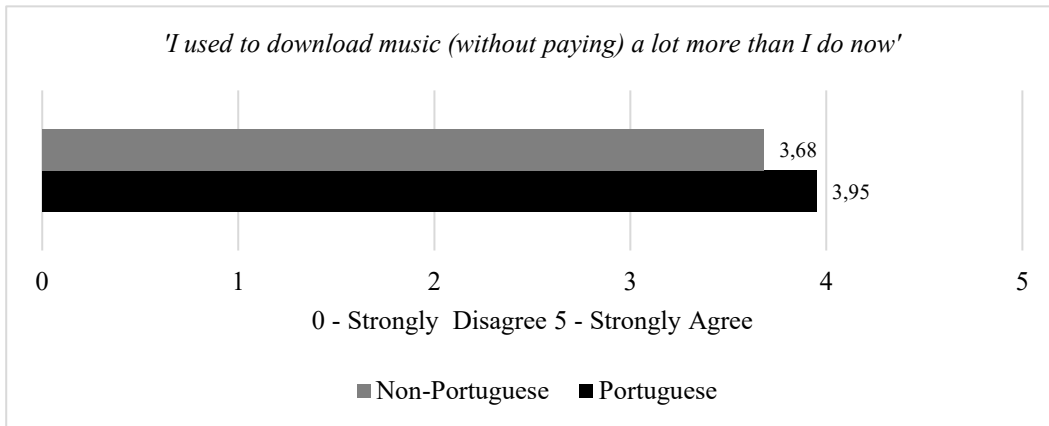
### Music consumption habits

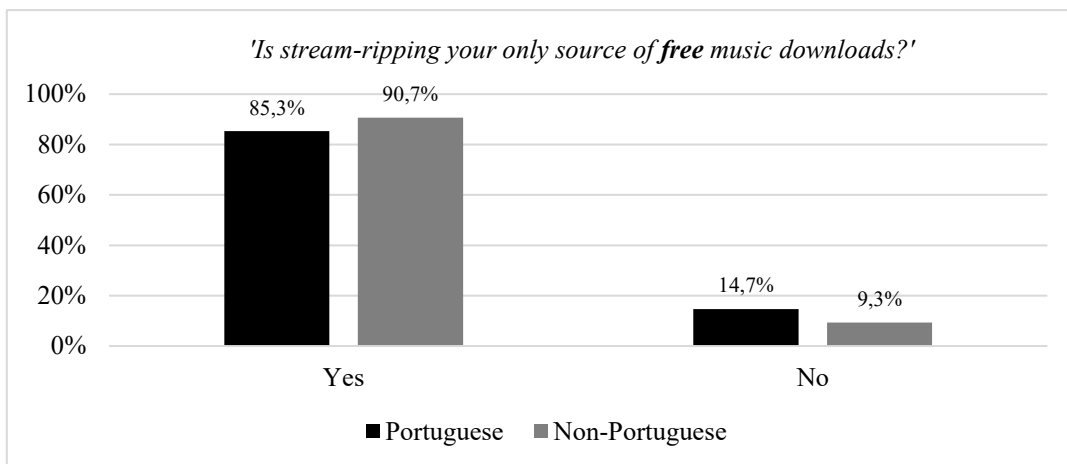
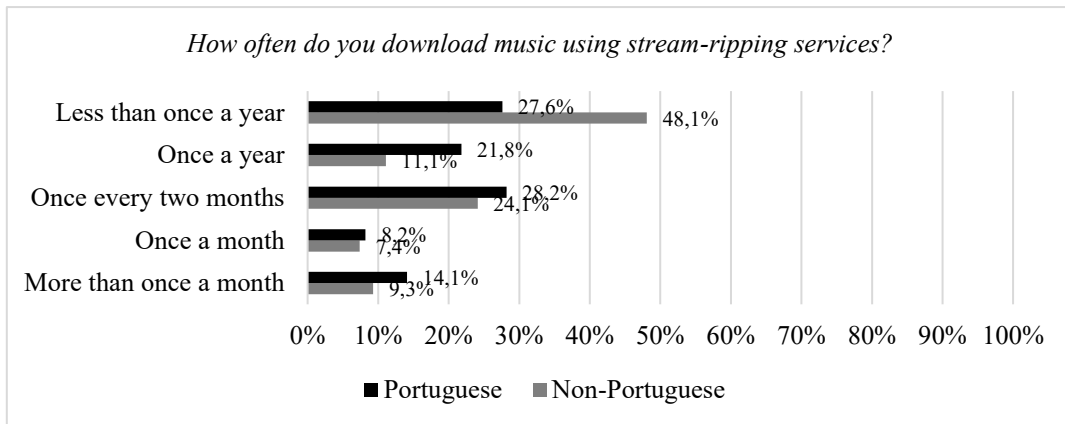






	Portuguese	Non-Portuguese
<b>Music Video Streaming</b>	67.7%	56%
<b>Audio Streaming</b>		
- Free Streaming	49.7%	29.4%
- Paid Streaming	42.7%	60.6%
- None	7.6%	10.1%
<b>% of Pirates</b>	27.2%	29.4%
<b>Audio Streaming and Piracy</b>		
- Free Streamers and Non-Pirates	28.8%	20.2%
- Free Streamers and Pirates	20.9%	9.2%
- Paid Streamers and Non-Pirates	37.3%	45%
- Paid Streamers and Pirates	5.4%	15.6%
- Exclusively Pirates	1%	4.5%
- None	6.6%	5.5%





Mean scores of all psychographic variables

	Portuguese	Non-Portuguese
Variety Seeking	3.67	3.61
Music Involvement	3.72	3.55
Ethics	2.70	3.04
Perceived Risk	2.05	2.38
Impatience Level	1.02	0.96

Note: Variety, Involvement, Ethics and Perceived Risk are labelled from 0 (low score) to 5 (high score). The scale used to measure Impatience is from 0 (low impatience level) to 2 (high impatience level).

## References

- Aguiar, L. (2017). Let the music play? Free streaming and its effects on digital music consumption. *Information Economics and Policy*, 41, 1–14.
- Ajzen, I. (1991). Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*. The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50(2), 179-211.
- Alexander, P. J. (2002). Peer-to-peer file sharing: The case of the music recording industry. *Review of Industrial Organization*, 20(2), 151–161.
- Bakken, D., & Frazier, C. L. (2006). *Conjoint Analysis: Understanding Consumer Decision Making. The Handbook of Marketing Research*.
- Barker, J. C. (2004). Grossly Excessive Penalties in the Battle against Illegal File-Sharing: The Troubling Effects of Aggregating Minimum Statutory Damages for Copyright Infringement. *Texas Law Review*, 83(2), 525.
- Berkman, H. W., Lindquist, J. D., & Sirgy, M. J. (1997). Consumer behavior: Concepts and marketing strategy. *Lincoln Wood, IL: NTC Business Books*.
- Bhattacharjee, S., Bhattacharjee, S., Gopal, R., Gopal, R., Sanders, G., & Sanders, G. (2003). Digital music and online sharing: software piracy 2.0? *Communications of the ACM*, 46(7), 107–111.
- Bhattacharjee, S., Gopal, R. D., Lertwachara, K., & Marsden, J. R. (2006). Impact of Legal Threats on Online Music Sharing Activity: An Analysis of Music Industry Legal Actions. *The Journal of Law and Economics*, 49(1), 91–114.
- Blewett, J., Castaldo, G., & Lamy, J. (2017). World’s largest music stream ripping site shuts down after successful international legal action from record industry. *IFPI*
- Bonner, S., & O’Higgins, E. (2010). Music piracy: ethical perspectives. *Management Decision*, 48(9), 1341–1354.
- Borja, K., & Dieringer, S. (2016). Streaming or stealing? The complementary features between music streaming and music piracy. *Journal of Retailing and Consumer Services*, 32(C), 86–95.

- Browne, D. (2012). Survival of the fittest in the new music industry. *Rolling Stone*.
- Carroll, J. D., & Green, P. E. (n.d.). Psychometric Methods in Marketing Research: Part I, Conjoint Analysis. *Journal of Marketing Research*, Vol. 32(No. 4), 385–391.
- Chaudhry, P. E., Chaudhry, S. S., Stumpf, S. A., & Sudler, H. (2011). Piracy in cyber space: Consumer complicity, pirates and enterprise enforcement. *Enterprise Information Systems*, 5(2), 255–271.
- Chiu, H.-C., Lin, Y.-M., Lee, M., Nieh, M.-E., & Chen, H.-C. (2008). How to discourage online music piracy. *International Journal of Management and Enterprise Development*, 5(6), 723–738.
- Christman, E. (2017). Music Industry Will Hit \$41 Billion By 2030 According to New Goldman Sachs Report. *Billboard Magazine*.
- Chrzan, K., & Orme, B. (2000). *An Overview and Comparison of Design Strategies for Choice-Based Conjoint Analysis. Research Paper Series*.
- Cronan, T. P., & Al-Rafee, S. (2008). Factors that influence the intention to pirate software and media. *Journal of Business Ethics*, 78(4), 527–545.
- Cummings, C. (2016). 72% of Spotify Listeners Are Millennials. *Ad Week*.
- d'Astous, A., Colbert, F., & Montpetit, D. (2005). Music piracy on the web - How effective are anti-piracy arguments? Evidence from the theory of planned behaviour. *Journal of Consumer Policy*, 28(3), 289–310.
- Danaher, B., Dhanasobhon, S., Smith, M. D., & Telang, R. (2010). Converting Pirates Without Cannibalizing Purchasers: The Impact of Digital Distribution on Physical Sales and Internet Piracy. *Marketing Science*, 29(6), 1138–1151.
- Datta, H., Knox, G., & Bronnenberg, B. J. (2017). Changing Their Tune: How Consumers' Adoption of Online Streaming Affects Music Consumption and Discovery. *Marketing Science*, (September 2017), 1–17.
- De Corte, C. E., & Van Kenhove, P. (2017). One Sail Fits All? A Psychographic Segmentation of Digital Pirates. *Journal of Business Ethics*, 143(3), 441–465.
- Dilmeri, A., King, T., & Dennis, C. (2017). Toward a framework for identifying attitudes and intentions to music acquisition from legal and illegal channels. *Psychology and*

- Marketing*, 34(4), 428–447.
- Elberse, A. (2010). Bye-Bye Bundles: The Unbundling of Music in Digital Channels. *Journal of Marketing*, 74(3), 107–123.
- Eliashberg, J., Hennig-Thurau, T., Weinberg, C. B., & Wierenga, B. (2016). Of video games, music, movies, and celebrities. *International Journal of Research in Marketing*, 33(2), 241–245.
- Freestone, O., & Mitchell, V. (2004). Generation Y Attitudes towards E-ethics and Internet-related Misbehaviours. *Journal of Business Ethics*, 54(2), 121–128.
- Friedlander, J. P. (2016). News and Notes on 2017 RIAA Mid-Year RIAA Revenue Statistics. *Riaa*, 3.
- Frontier Economics. (2016). *The Economic Impacts of Counterfeiting and Piracy*.
- Goldman Sachs. (2016). *Music in the Air: Streaming drives industry comeback*.
- Goldstein, N. J., Cialdini, R. B., & Griskevicius, V. (2008). A Room with a Viewpoint: Using Social Norms to Motivate Environmental Conservation in Hotels. *Journal of Consumer Research*, 35(3), 472–482.
- Goode, S. (2012). Initial findings of a gap analysis of the digital piracy literature: six undiscovered countries. *Journal of Research in Interactive Marketing*, 6(4), 238-259
- Gopal, R. R. D., Sanders, G. L., Bhattacharjee, S., Agrawal, M., & Wagner, S. C. (2004). A behavioral model of digital music piracy. *Journal of Organizational Computing and Electronic Commerce*, 14(2), 89–105.
- Haaijer, R., Kamakura, W. & Wedel, M. (2001). The “no-choice” alternative in conjoint choice experiments. *International Journal of Market Research*, 43(1), 93-106.
- Harris, L. C., & Dumas, A. (2009). Online consumer misbehaviour: An application of neutralization theory. *Marketing Theory*, 9(4), 379–402.
- Harrison, G. W., Lau, M. I., & Williams, M. B. (2002). Estimating individual discount rates in Denmark: A field experiment. *American Economic Review*, 92(5), 1606–1617.
- Hinduja, S., & Higgins, G. E. (2011). Trends and patterns among music pirates. *Deviant Behavior*, 32(7), 563–588.

- IFPI. (2015). Digital Music Report 2015. *International Federation of the Phonographic Industry*
- IFPI. (2017a). Global music report 2017. *International Federation of the Phonographic Industry*, 1–44.
- IFPI. (2017b). Music Consumer Insight Report. *International Federation of the Phonographic Industry*
- IFPI. (2018). Global Music Report 2018: State of the Industry. *International Federation of the Phonographic Industry*
- Intellectual Property Office. (2017). *Online Copyright Infringement Tracker - Latest wave of research (March 2017)*.
- Jacobs, R. S., Heuvelman, A., Tan, M., & Peters, O. (2012). Digital movie piracy: A perspective on downloading behavior through social cognitive theory. *Computers in Human Behavior*, 28(3), 958–967.
- Jambon, M. M., & Smetana, J. G. (2012). College students' moral evaluations of illegal music downloading. *Journal of Applied Developmental Psychology*, 33(1), 31–39.
- Jeong, B. K., & Khouja, M. (2013). Analysis of the effectiveness of preventive and deterrent piracy control strategies: Agent-based modeling approach. *Computers in Human Behavior*, 29(6), 2744–2755.
- Kos Koklic, M., Kukar-Kinney, M., & Vida, I. (2016). Three-Level Mechanism of Consumer Digital Piracy: Development and Cross-Cultural Validation. *Journal of Business Ethics*, 134(1), 15–27.
- Krueger, A. B. (2005). The Economics of Real Superstars: The Market for Rock Concerts in the Material World. *Journal of Labor Economics*, 23(1), 1–30.
- Kumar, V., George, M., & Pancras, J. (2008). Cross-buying in retailing: Drivers and consequences. *Journal of Retailing*, 84(1), 15–27.
- Lacher, K. T., & Mizerski, R. (1994). An Exploratory Study of the Responses and Relationships Involved in the Evaluation of, and in the Intention to Purchase New Rock Music. *Journal of Consumer Research*, 21(2), 366.
- Liebowitz, S. J. (2006). File Sharing: Creative Destruction or just Plain Destruction? *Journal*

- of Law and Economics*, 49(1), 1–27.
- Liebowitz, S. J. (2016). How much of the decline in sound recording sales is due to file-sharing? *Journal of Cultural Economics*, 40(1), 13–28.
- Lister, M. (2017). Music Consumption: Millennials and Gen Z Disrupt the Industry. *Fluent*.
- Loo, R. (2002). A caveat on using single-item versus multiple-item scales. *Journal of Managerial Psychology*, 17(1), 68–75.
- Madden, M., & Lenhart, A. (2003). Music downloading, file-sharing and copyright. *Pew Research Center*.
- McCullough, P. R. (2002). A User's Guide to Conjoint Analysis. *Marketing Research Magazine*.
- Mulligan, M. (2017). Generation Z: Meet the Young Millennials. *Entertainment Retailers Association*.
- Nguyen, G. D., Dejean, S., & Moreau, F. (2014). On the complementarity between online and offline music consumption: the case of free streaming. *Journal of Cultural Economics*, 38(4), 315–330.
- Nicolaou, A. (2017). How streaming saved the music industry. *Financial Times*, 1–5.
- Olsen, S. O., Tudoran, A. A., Honkanen, P., & Verplanken, B. (2016). Differences and Similarities between Impulse Buying and Variety Seeking: A Personality-based Perspective. *Psychology and Marketing*, 33(1), 36–47.
- Papies, D., Eggers, F., & Wlömert, N. (2011). Music for free? How free ad-funded downloads affect consumer choice. *Journal of the Academy of Marketing Science*, 39(5), 777–794.
- Papies, D., & van Heerde, H. J. (2017). The Dynamic Interplay Between Recorded Music and Live Concerts: The Role of Piracy, Unbundling, and Artist Characteristics. *Journal of Marketing*, 81(4), 67–87.
- PORDATA. (2018). População residente: total e por grupo etário.
- Robertson, K., McNeill, L., Green, J., & Roberts, C. (2012). Illegal Downloading, Ethical Concern, and Illegal Behavior. *Journal of Business Ethics*, 108(2), 215–227.

- Rochelandet, F., & Le Guel, F. (2005). P2P Music Sharing Networks: Why the Legal Fight Against Copiers May Be Inefficient. *Review of Economic Research on Copyright Issues*, 2(2), 69–82.
- S.A., S. T. (2018). Market and Industry Data Report. *Spotify Technology S.A.*
- Savage, M. (2017). Stream-ripping is “fastest growing” music piracy. *BBC*
- Schaller, T. K., & Malhotra, N. K. (2015). Affective and Cognitive Components of Attitudes in High-Stakes Decisions: An Application of the Theory of Planned Behavior to Hormone Replacement Therapy Use. *Psychology & Marketing*, 32(6), 461–469.
- Shanahan, K. J., & Hyman, M. R. (2010). Motivators and enablers of SCOURing: A study of online piracy in the US and UK. *Journal of Business Research*, 63(9–10), 1095–1102.
- Shugan, S. M. (2004). The Impact of Advancing Technology on Marketing and Academic Research. *Marketing Science*, 23(4), 469–475.
- Simpson, P., Banerjee, D., & Simpson Jr., C. (1994). Softlifting : A Model of Motivating Factors. *Journal of Business Ethics*, 13(6), 431–438.
- Sinha, R. K., Machado, F. S., & Sellman, C. (2010). Don’t Think Twice, It’s All Right: Music Piracy and Pricing in a DRM-Free Environment. *Journal of Marketing*, 74(2), 40–54.
- Sinha, R. K., & Mandel, N. (2008). Preventing Digital Music Piracy: The Carrot or the Stick? *Journal of Marketing*, 72(1), 1–15.
- Sivan, L., Smith, M. D., & Telang, R. (2014). Do Search Engines Influence Media Piracy ? Evidence from a Randomized Field Study. *School of Information Systems and Management, Heinz College, Carnegie Mellon University.*
- Stanton, J. M., Sinar, E. F., Balzer, W. K., & Smith, P. C. (2002). Issues and strategies for reducing the length of self report scales. *Personnel Psychology*, 55(1), 167-194
- Steenkamp, J. B. E. M., & Baumgartner, H. (1995). Development and cross-cultural validation of a short form of CSI as a measure of optimum stimulation level. *International Journal of Research in Marketing*, 12(2), 97–104.
- Styvén, M. E. (2010). The need to touch: Exploring the link between music involvement and tangibility preference. *Journal of Business Research*, 63(9–10), 1088–1094.



- Taylor, S. A., Ishida, C., & Wallace, D. W. (2009). Intention to engage in digital piracy: A conceptual model and empirical test. *Journal of Service Research, 11*(3), 246–262.
- Traylor, M. B., & Joseph, W. B. (1984). Measuring consumer involvement in products: Developing a general scale. *Psychology & Marketing, 1*(2), 65–77.
- Vernik, D. A., Purohit, D., & Desai, P. S. (2011). Music Downloads and the Flip Side of Digital Rights Management. *Marketing Science, 30*(6), 1011–1027.
- Voss, K. E., Spangenberg, E. R., & Grohmann, B. (2003). Measuring the Hedonic and Utilitarian Dimensions of Consumer Attitude. *Journal of Marketing Research, 40*(3), 310–320.
- Weijters, B., & Goedertier, F. (2016). Understanding today's music acquisition mix: a latent class analysis of consumers combined use of music platforms. *Marketing Letters, 27*(3), 603–610.
- Weijters, B., Goedertier, F., & Verstreken, S. (2014). Online Music Consumption in Today's Technological Context: Putting the Influence of Ethics in Perspective. *Journal of Business Ethics, 124*(4), 537–550.
- Williams, K. R., & Hawkins, R. (1986). Perceptual research on general deterrence: A critical review. *Law & Society Review, 40*(4), 542-572.
- Winston, W. L. (2014). *Marketing Analytics: Data-Driven Techniques with Microsoft Excel*.
- Wlömert, N., & Papies, D. (2016). On-demand streaming services and music industry revenues - Insights from Spotify's market entry. *International Journal of Research in Marketing, 33*(2), 314–327.