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Pirates of the Web: The Curse of Illegal Downloading
The determinants of illegal music downloaders

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Abstract

Music piracy is the major factor leading to the downturn in paid-for music consumption. This study aims to distinguish between the determinants of a music pirate and a genuine consumer of music (age, gender, income, music preference, music experience.) It also investigates attendance at live performances, which previous research suggests will tend to inhibit the decline of paid-for recorded music. This research is innovative in that it investigates a range of antecedents of music piracy. The method utilises a structured questionnaire survey (n = 214) and regression analysis to elicit which factors play the most important role affecting our respondents' choices in buying music, illegal downloading music and attending live concerts. Managerial and theoretical implications are presented.

Keywords: consumer behaviour, music consumption, music piracy.

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1. Introduction

In today's economic climate digital music piracy has a major detrimental impact on the modern music industry. According to the International Federation of Phonographic Industry (IFPI, 2010), there is a global market decline, which is estimated to be around 30% for the period of 2004 – 2009 and music piracy is identified as the major factor for this downturn. The IFPI estimates that global music sales have dropped from $25,576 million in 1998 to $18,415 million in 2008, a 38% reduction (IFPI, 2009). The music industry believes that the major cause of this decline is the illegal downloading of music files on the Internet. An estimated 95% of downloaded music files is believed to be illegal file-sharing. (IFPI, 2009). So far, in order to address this issue, the record companies have opted for taking legal actions against illegal downloaders either by suing customers (Bridis, 2004) or file-sharing websites (Usborne, 2010). Additionally, a new UK law will allow internet providers to completely suspend illegal downloaders from the internet (British Broadcasting Corporation, 2010). However, since the fall in CD sales continues and illegal downloading remains prevalent, strategies suggested to date have evidently failed to reduce this illicit behaviour (d'Astous, Colbert and Montpetit, 2005). We suggest that in order to

address the issue, the music industry needs first to identify, together, all the determinants underlying the behaviour of a potential paying customer, compared to a digital pirate.

The music industry has already been forced to face the consequences of the digitalisation, but since most cultural industries use digital technology, the analyses and interpretation of these effects may provide pointers, not only for the music industry, but also for other cultural industries. The understanding of music consumption behaviour may also help in better management decisions in terms of competition in the new digital environment.

The purpose of the present study is to distinguish and understand the profile of people who download illegally compared to the ones that buy genuine music. Thus, we examine demographic variables like age, gender and income, together with music preferences (music genres) and the way music is experienced while consumed (Lacher and Mizerski, 1994). Additionally, due to the wide common belief that live performances will help to offset this decline (Peitz and Waelbroeck, 2004b), we also investigate attendance at live performances. Hypotheses are tested using data gathered from a structured questionnaire survey (n=214) answered by university students. Most studies examining issues of music piracy use students as their research target group, as samples of university and college students tend to provide ready access to illegal downloaders (Cheng et al., 1997). According to Cheng et al., (1997) this is mainly due to the availability of fast and widely available broadband Internet connections in these environments. Although previous research has been conducted, a systematic study has not yet combined these all variables together to create a cohesive understanding of the determinants of music piracy. This study is important in identifying characteristics of consumers who tend to download music illegally. Potential implications for the music industry may include better targeting of marketing communications. The findings may also have relevance for other industries that are subject to digital piracy. This study will support practitioners and academics in having a deeper understanding of the piracy phenomenon.

The remainder of the paper is organised as follows. The literature regarding music consumption is introduced and reviewed, and hypotheses are developed, related to the factors that influence music consumption. The methodology is then presented and hypotheses are tested using data from 214 students from a medium-sized UK university. The paper concludes with recommendations and limitations.

2. Literature Review, Conceptual Framework and Research Hypotheses Development

Cultural industries are composed of organisations that produce and offer cultural goods (Molteni and Ordanini, 2003). In today's digital world, cultural industries are facing many changes not only in the ways that their products are produced and distributed, but also in the way that are consumed. Digital TV, radio streaming, Internet shops and music downloading are all terms that have emerged from the digital era, which have brought to the consumer new consumption patterns. For example, the Internet enables consumers to search and acquire music, film and books. This has changed the nature of how we consume these cultural products. The analysis of cultural consumption attitude

and consumer behaviour is therefore of great importance for management decisions in terms of competition in the new digital environment.

Management and marketing in the music industry is similar in many ways to other cultural goods, such as books, movies and video games. During the last decade, the music industry has been experiencing major changes, especially due to the influence of digitalisation on the production-distribution-consumption model. The creation of software that enables consumers to compress and store music and the wide use of the Internet's potential for free distribution has resulted in changed relationships in the supply and demand chain. These technological advances have raised issues about the role of the record companies, the new digital distribution channels and the "peer to peer" (P2P) phenomenon, which enables free music sharing among Internet users. In particular, the record companies would have preferred to eliminate P2P but as this does not appear to be practical, we propose that what they need to do is to accept and understand the new situation that digital consumption has brought by conducting an analysis of their audiences and their musical consumption preferences.

According to Holbrook and Anand (1990) music consumption can be defined as the act of listening to a piece of music. Prior to the 20th century music was consumed solely through live performances. The emergence of technology, of recording high quality music and the production of equipment such as radios and CD players, brought music consumption to a different level and made it an everyday activity in many people's lives. The Compact Disc (CD) became the most popular means to enjoy music. More recently, with the creation of the MP3 in 1992, a new form of music consumption has appeared. This is digital consumption, via downloading (either legally or illegally) and listening to digital music files. This third type of music consumption in conjunction with high-speed broadband connections has led to the problem of digital music piracy, which has led to great losses to the music industry, as mentioned in the 'Introduction', above.

Factors contributing to the creation of piracy in the music industry have been attracting the attention of researchers and music business managers. Specifically, researchers have been studying whether the creation of P2P networks is responsible for the decline of sales in the industry (Pietz and Waelbroeck, 2004; Zentner, 2006; Liebowitz, 2006; Oberholzer and Stumpf, 2007). Notwithstanding that most studies agree that music sales have decreased due to the illegal downloading, a minority takes a contrary view (Oberholzer and Stumpf, 2007).

Other studies have investigated the individual determinants of intention to download music. Most focus on psychological, ethical and demographical factors (Kwong and Lee, 2002; Bhattacharjee et al., 2003; Gopal et al., 2004; Chiou, Huang and Chuang, 2005; Chiou, Houng and Lee, 2005; d'Astous, Colbert and Montpetit, 2005; LaRose and Kim, 2007; Plowman and Goode, 2009; Coyle et al., 2009). Major determinants include age (Bhattacharjee et al., 2003; d'Astous, Colbert and Montpetit, 2005), gender (Bhattacharjee et al., 2003; Kwong and Lee, 2002; Chiang and Assane, 2008) and Internet bandwidth (Kwong and Lee, 2002). This study intends to test these variables in one cohesive piece of research at the height of illegal downloading to enable a deeper understanding of the modern pirate. This study proposes the following two hypotheses concerning the role of

demographic factors on music consumption.First, people who buy recorded music tend to be older than 30 (i.e. people who have jobs and therefore income to buy music) whilst those who download music tend to be young people. This may be because younger people usually have lower incomes and are less likely to be able to pay for recorded music (Bhattacharjee et al., 2003; d'Astous, Colbert and Montpetit, 2005). Additionally, younger people tend to be more innovative and familiar with the Internet and new technologies (Korgaonkar and Wolin, 1999). This leads to:

> *H1: Age affects an individual's behaviour to buy recorded music/illegally download music/attend live performances; specifically younger people will have a tendency to download music wheras older consumers will buy more recorded music.*

> *H2: Gender affects an individual's behaviour to buy recorded music/illegally download music/attend live performances.*

Like most products, consumption of music is affected by economic factors such as price and income. Studies attempt to estimate consumers' willingness to pay for different scenarios (Sinha and Mandel, 2008; Chiang and Assane, 2009). Others focus on the role of income (Bhattacharjee, Gopal and Sanders, 2003) and income inequality (Ki, Chang and Khang, 2006) on music piracy, specifically that people on lower incomes and are less likely to be able to pay for recorded music In our study we consider income as a possible determinant of music consumption, which leads to our third hypothesis:

> *H3: Income affects an individual's behaviour to buy recorded music/illegally download music/attend live performances.*

Gopal et al. (2004) reported that there is a higher tendency for digital music piracy among people who listen to hip-hop/rap music, attributing this to demographic differences. Furthermore, Prieto-Rodriguez and Fernandez-Blanco (2000) investigate the characteristics of Spanish music consumers categorizing them into popular and classical music consumers. Similarly, Favaro and Frateschi (2007) conduct an empirical analysis for the musical tastes of Italian consumers again differentiating between music genres. This paper investigates whether people with different music tastes might have a different attitude towards music consumption For example; jazz listeners have a tendency to acquirei music for collecting purposes, which increase the likelihood of buying legal products. Therefore:

> *H4: A person's music preference affects the decision to buy recorded music/illegally download music/attend live performances.*

According to Lacher 1989, there are four general categories (sensorial, imaginal, emotional and analytical) of responses that music evokes to the listener. 'Imaginal' refers to the listeners' projection of pictures, memories and images in their minds whilst consuming music. Lacher and Mizerski (1994) build a model of music consumption and purchase intention in order to examine the effect of these four categories; adding as other possible factors for buying music:

the need to re-experience, the experiential response and the overall affective response. In their study, they focus on music consumption only from a physical point of view. In our study, we use the measures developed by Lacher and Mizerski (1994) in order to examine their possible effects not only for physical but also for digital music consumption. This leads to our final hypothesis:

> *H5: A person's way of experiencing music (sensorial, imaginal, analytical, need to re-experience and experiential response) affects the intention to buy recorded music/illegally download music/attend live performances.*

The following section outlines the research method for testing these hypotheses,

3. Method

Data were collected through a questionnaire survey with students from a medium-sized UK university. The questionnaires were sent to students via e-mail. A total of 214 questionnaires were collected. The first part of the questionnaire consisted of personal information (demographics); the second gathered information regarding what type of music consumer each respondent is (as well as direct questioning additional questions were added to identify what type of music equipment they use to listen to their music) and the third measured the various responses (sensorial, imaginal, analytical, experiential and need to re-experience).

The constructs of section three were developed using measurement scales that were adopted from prior studies (Yingling, 1962; Hargreaves, 1982; Pucely, Mizerski and Perrewe, 1987; Mizerski et al. 1988). These constructs were measured using a seven-point Likert scale with anchors strongly disagree (= 1) and strongly agree (= 7). The reliability and validity of the questionnaire items were established. Table 1 presents mean scores and standard deviations for the items of the third part of the questionnaire, together with means, standard deviations and the Cronbach's alpha statistics for reliability for each of the constructs. Table 2 Panel A reports the correlation matrix for all the constructs used in the empirical analysis. We see that none of the pair-wise correlations is higher than 0.5 (the highest is 0.411 for the case of Experiential and Need to Re-experience). Furthermore, in the same Table Panel B, the results of the discriminant validity analysis[i] are reported, suggesting in all cases that the constructs are not similar (the highest coefficient is 0.826 for Experiential and Need to re-experience which is still lower than the acceptable 0.85 upper limit).

Our empirical analysis proceeds as follows: first, we present and discuss descriptive statistics of the variables. Correlation, regression and discriminant analyses are then employed in order to establish the determinants that affect music consumption and test hypotheses.

4. Analysis and results

4.1. Descriptive Analysis

Table 3 presents demographic data for our sample. Of the total sample of 214, 56% were female and 44% were male. The largest age group was 21-25 (33.64%) followed by 31-35 (22.43%). This is a useful profile for this study as it is thought that people who buy recorded music tend to be older than 30 (i.e. people who have jobs and therefore income to buy music) whilst those who download music illegally tend to be young people, often with low incomes who

are familiar with the Internet and new technologies. In general, music consumers tend to be younger than the general population and this is reflected in the sample with 92% being in the range 15-40, with only 8% older than 41 years. In terms of different nationalities, we had a quite diverse sample of respondents of 24 different countries with the largest group coming from the UK (26%).[ii] Most respondents have average monthly income less than £1000. This is as expected, since our respondents are students, who are usually either supported financially from their families or they are employed only on a part-time basis. However, we still have significant numbers in other income classes: 32% have income in the range £1001-£2000, and nearly 20% of respondents have income higher than £2001.

Since we want to examine whether different music genres affect music consumption, we asked our respondents to indicate the types of music they like. We merged the various music genres into six broad categories, namely, pop, rock, electronic, jazz, classic and world music. In the questionnaire, we allowed individuals to choose more than one music genre. From the results, we see that as expected the highest percentages were from those who listen to pop music (72%) and rock music (71%). There were 32% of respondents who listen to electronic music, 34% who listen to Jazz, while the percentages for classic and world music were near to 40%.

Finally, in classifying the respondents with regards to their channels of music consumption, we see that 76% of the sample download music illegally, 65% buy recorded music and 72% attend live concerts. This seems to indicate that attendance at live concerts does not substantially reduce piracy.

4.2. Inferential Analysis

In order to test H_1, we construct a two-way table (Table 4) that reports the percentages of the respondents for every age group with reference to the three different types of music consumption (buy recorded, illegal download, attend live performances). These results indicate clearly that the younger the age, the more the downloading consumption and the less the buying of recorded music. Concerning live concert attendance there is a mixed response. Younger ages showed a tendency to go more to concerts than people aged 36-40 and above. However, those aged 41-45 showed a higher preference to attend live music events than the 36-40 group.

In addition to the two-way table results, we also examined H_1 through chi-square tests to calculate the statistical significance. The chi-square test statistic for the difference in age and tendency to buy recorded music was $\chi^2=71.9$, which is larger than the critical value of 14.06, supporting H_1. Thus, we conclude that there is a statistically significant relationship between age and tendency to buy recorded music. Similarly the statistics for downloading and attending live performances were 33.6 and 16.9[iii] respectively suggesting that age is a major determinant in all three types of music consumption.

Proceeding to H_2 we test for difference in consuming music (for all three channels) by gender using the z-test for the difference in the two proportions. Regarding recorded music, we found that 74% of males are buying recorded music compared to 52% for females. The difference between those two proportions is 22.8% with a z-statistical value 3.4 (which is bigger than the 95% significance level critical value of 1.96). Thus, we can clearly reject the null and

conclude that there is a statistically significant difference between males and females with more males buying music. Applying the same tests for illegal downloading, we find that the proportions are 74 and 78 for males and females respectively. This gives a very small difference of –2.2% and the statistical value this time is -0.3 and therefore we fail to reject the null hypothesis and we conclude that there is no significant difference in illegal downloading among males and females. Finally, conducting the same z-test for the live music attendances, we found that the respective proportions for males and females were 57.4 and 83.3, which means that the females attend more live concerts than males by a margin of 25.8%. The statistical value for this test was –4.18, and therefore we reject the null hypothesis.

The analysis continues with testing H_3 concerning income levels and attitudes towards consuming music. Table 5 presents the proportions of respondents with monthly income respectively less than £2000 and more than £2001 for all three different types of music consumption. From these proportions, we calculate chi-square test statistics for independence. For the first type of music consumption – buying recorded music – the results suggest that there is a statistically significant difference (χ^2=4.65 higher than the critical value of 3.84). Consumers with income higher than £2000 tend to buy more CDs than those with less than £2000, this result is in line with expectations. More interestingly, concerning illegal downloading we observe that consumers with higher income tend to download less than those with lower income. This result, however, is not statistically significant (statistical value 2.31<3.84 thus we fail to reject the null hypothesis). Therefore, although income is very important in terms of buying it is not significant in terms of illegal downloading. Finally, we see that although people with higher income seem to attend concerts more often than those with lower income, this difference is again non-significant (statistical value 0.46) suggesting that income does not play a major role in attending live music events.

Hypotheses H_4 and H_5 will be tested via regression analysis in the next subsection.

4.3. Regression Analysis

In order to test hypotheses H_4 and H_5, regression analysis is employed. Respondents were allowed to select multiple methods of how they obtain music for example, they could report physically buying music, downloading music or attending live performances or any combination of these variables. The three dependent variables are dichotomous, viz buy (or not); download (or not); and attend (or not). According to Doyle (1977) Probit regression is used to estimate relationships that are non metric. Since our dependent variables are binary we believe that Probit regression is appropriate[iv]. Similar approaches have been employed by Prieto-Rodriguez and Fernandez-Blanco (2000); Favaro and Frateschi (2007); Chiang and Assane (2007, 2008); and Fetscherin (2009).

Sex, age and income are used to further test H_1, H_2 and H_3 while dummy variables represent the different music genres (pop, rock, electro, jazz, classic and world). The responses constructs (analytical, experiential, imaginal, need to re-experience and sensorial) are used to test H_4 and H_5 respectively.

The correlations for all explanatory variables were obtained. The results, (not shown here for economy of space[v]) suggest that there are no high

correlations among the explanatory variables so we are able to include them all together in one regression avoiding multicollinearity issues. The diagnostics of the regressions suggest that the standard error is appropriately very small while the goodness of fit, proxied by the McFadden R^2 is sufficiently high (McFadden, 1973).

The first set of Probit regression results, concerning music genres and their effect on music consumption is presented in Table 6. The results suggest that age is positive and statistically significant for buying recorded music. This indicates that the older the respondents are the more they buy recorded music. Interestingly, income does not seem to play an important role in the decision to buy, while sex is positive and significant, showing that males buy more music than females. Jazz is positive and significant, while pop is negative and significant meaning that respondents who listen to jazz music are more likely to buy recorded music contrary to pop listeners who do not tend to buy.

With regards to illegal downloading, age is statistically significant and negative. This suggests that the younger the respondents the more they illegally download music. For income and sex, no significant effect was detected. Interestingly, jazz was negative and significant suggesting that jazz listeners are less likely to download music illegally contrary to the pop, electronic and classic ones.

Live performance results indicate that sex is significant and negative, so women tend to go more to live concerts than men, income is significant and positive, meaning that the higher the income the more they attend live music events, while age is insignificant. Rock, electronic and jazz listeners are positively significant implying that these groups are more prone to attend live concerts.

Table 7 presents Probit regression results for the response constructs. The results for age, income and sex are very similar to the previous regression. From the categorical variables, we see that sensorial and analytical are the only ones that affect the decision to buy music. Sensorial affects negatively and the analytical positively.

The second column of Table 7 demonstrates that, age and sex are in line with the previous regression, while in the categorical variables; only imaginal and experiential responses appear to play an important role. Imaginal was positive whilst experiential was negative.

Finally, live attendance results are again in line with the previous regression.

4.4 Discriminant Analysis

Notwithstanding that previous research indicates that 95% of downloaded music is downloaded illegally (IFPI, 2009), in our sample, 30% of downloaders claim to pay for at least some of their downloads with 56% of those claiming to pay for all their downloads. On the basis of these self-reports, 23% of the downloaded music of our sample, is 'paid for' and therefore, 77% of the reported downloads are *not* 'paid for.' Those who reported not paying for downloads were asked 'why not' with almost all respondents stating 'because it's free' or variations of that meaning in their own words (with a tiny minority citing credit card/Internet security issues). To investigate the antecedents of respondents preferred method of consuming music, a discriminant analysis was conducted . There is, of course, considerable overlap in channels of music

consumption. For example, people may well pay for downloads sometimes yet illegally download as well, whilst occasionally also buying CDs. Therefore, in order to elicit main preferences, we first carried out a preliminary cluster analysis (k-means). This analysis indicated that there is no significant difference in the consumption of live music across the other preference groups and thus, live music cannot constitute a preference group on its own. Once this was established, there was no further need for the cluster analysis as we were able to select three preference groups by simple counts: (i) Illegal download (download illegally more tracks than pay for) (n = 114); (ii) mainly legal downloads (pay for more tracks than download illegally) (n = 30) (two groups that are mutually exclusive); plus (iii) mainly legal purchasers who prefer (buy more tracks of) pre-recorded music rather than downloads (n = 20) (48 cases were unclassified due to either no stated consumption via any channel or missing data preventing classification). The music genres, response styles, income, age and sex of the respondents were entered into the discriminant analysis as predictors (Table 8). The analysis was reasonably successful overall in classifying 74% of cases into the correct groups. Prediction of those preferring illegal downloads was broadly successful, with 90% those preferring illegal downloads correctly classified. On the other hand, the analysis did not predict so effectively those preferring paying for CDs and those preferring paying for downloads. Forty percent of vs those preferring paying for downloads and the same percentage of those preferring paying for CDs were classified correctly (the other 60% in both cases were classified as illegal downloaders). Of those predicted to prefer illegal downloads, 60% actually did but if those whose preference is not clear are removed from the equation, then 77% of those predicted to prefer illegal downloads actually did.

There are two significant variates: Variate 1 distinguishing between illegal and (mainly) legal downloading ($p < 0.001$) and Variate 2 distinguishing between downloading and purchasing recorded music ($p < 0.05$) (Table 9).

The most significant components of Variate 1 tending to discriminate legal downloading (vs. illegal) are (absolute values of standardised canonical coefficients in parenthesis): age (younger) (0.40); and preferences for classic (0.60) and pop (0.53) styles.

The most significant components of Variate 2 tending to discriminate those who purchase recorded music (vs. those who download) are analytic response (0.73) and income (higher) (0.50).

5. Conclusions
5.1. Summary of findings

The aim of this paper was to study three different types of music consumption: physical, digital and live concert attendance. This study investigatated music consumers' consumption preferences and their determinants and factors that influenced their behaviour. The analysis of music consumption preferences demonstrated that 65% of the sample buys recording music, 75% downloads music illegally and 72% attends live concerts. The majority of consumers who attend live concerts are more likely to be women, have income higher than £2000 and listen to rock, electronic and jazz music. Music consumers who purchase recorded music are more likely to be older,

males, have monthly income more than £2000, listen to jazz and have a tendency to analyse the music they listen to. Downloaders on the other hand, are younger, listen to pop, electronic and classical music and enjoy imaginal responses, i.e. the images that the song creates for the audience. The majority (77%) of downloaded music is downloaded illegally. However the minority who pay for at least some of their downloads tend to prefer classic and pop styles; and be younger than the illegal downloaders (both legal and illegal downloaders are younger than than those who prefer recorded music). Consumers who download music legally as well as illegally tend to have lower income than those who purchase recorded music, perhaps reflecting the lower costs or better value of paid-for downloads as compared with CDs. Youth and lower income, therefore, are not *per se* predictors of illegal behaviour but rather of downloading in general.

5.2. Implications for the music industry

These findings have various implications for the music industry. More than ever, today, the music industry market is challenged. Consumers have altered their consumption habits due to digitalisation and the creation of P2P networks. Sales of recorded music in the CD format are declining whilst an illegal form of consumption 'music piracy' has increased dramatically. From our analysis, we concluded that age is an important factor in the consumption of recorded music. The older the respondents, the more recorded music they buy. This could have two different meanings. Either people tend to buy more recorded music as they become more mature or alternatively, this type of consumption may belong to a different generation and will therefore reduce over time, which is obviously a concern for the industry. Similarly, there is a relationship between income and age. So, as time goes by, young people should theoretically earn more and therefore are more likely to consume more recorded music. These findings are important for the music industry, as younger, low-earning people are currently entering the market whereas older, higher-earning ones are departing, demonstrating the need to address this issue with music consumers and implement effective change to their behaviour.

The analysis also demonstrates that men tend to buy more recorded music than women. This finding is in conjunction with the significance of age. This is potentially important in terms of marketing and advertising and educating the public to enhance the awareness of piracy. Further research can focus on finding the musical preferences of male age groups so that music companies can release and promote studio albums that suit these preferences. The analytical and sensorial preferences of those who buy recorded music have major potential implications. This group of people does not consume music spontaneously, but prefer to buy something that they value. Marketing and advertising could approach such consumers by drawing attention to the artistic quality of the product and added tangible symbols such as packaging and sleeve notes.

In terms of the characteristics of people who download music, we found that age again plays an important role. Consumers in younger age groups tend to download more often than older age groups. This study highlights that only 23% of downloaded music is paid for, which suggests that the music industry faces substantial losses. More research is required to identify how to reduce this

behaviour although this study has presented some of the key reasons and influential variables for illegal downloading. The strongest motivational factor identified is that 'music can be found free' so they feel that there is 'no need to pay for it.' Therefore, as long as free P2P networks exist people will continue downloading free. This means that either a way needs to be found to prevent illegal downloading or P2P networks should be eliminated through legal actions.

The imaginal response plays an important role for people who download music illegally. While consuming music, people project pictures, memories and images in their minds that are linked with it (Lacher and Mizerski, 1994). These images proved to be influential in music downloading. People tend to download music when they feel connected with it in some way.   Contrary to our expectations, the re-experience response was found to be non-significant. According to Lacher (1989) people tend to purchase music when they want to listen to it again. However, downloading music has resulted in people having a large quantity of digital music stored in their hard drives and thus little time to re-experience any individual track that they have downloaded.

The last type of music consumption that we examined was attendance at live concerts. Live music is profitable for the musical and events industries and represents an important source income for artists. As expected, higher income plays an important part in the propensity to attend live concerts. One interesting finding was that women tend to attend concerts more than do men. Nonetheless, our results indicate that attendance at live music concerts does not reduce music piracy.

An important aspect of this research is the testing of music genre as an influential variable on downloading. There is no prior research that links type of music consumption to music preferences. The findings suggest that people who listen to pop music are more prone to engage in downloading and less likely to buy recorded music (although, along with classic fans, they are more likely to pay for their downloads, albeit only few are paid for). Pop fans do not show a greater interest in attending music concerts than other genres (rock, electronic and jazz). The industry may be advised to channel investment towards supporting musicians and artists in other genres rather than pop idols who have less cultural appeal which could, possibly lead to lower analytical and sensorial value in the recorded music.

5.3. Limitations and directions for future research

This research comprises an overview of the reasons that influence people's types of music consumption. The sample is based on students and the age range is mainly in the younger classifications. Those categories with fewer cases carry accordingly less weight and the analyses should have more precision if the expanded classes are retained, i.e. a closer approximation to a scale variable.

Because of the unequal group sizes, there were insufficient cases to separate the discriminant analysis into calibration/holdout samples. Replication work is recommended to confirm the effectiveness of the variates in discriminating between the groups.

Future research could focus first on analysing the responses that lead to the consumption of other cultural or entertainment programs like literature, movies and theatre.

Second, research could examine the trends in different countries. According to IFPI (2007) the music market is divided into countries that suffer from physical piracy (CDs) and ones that suffer from digital piracy (downloading). Future research can examine the reasons that lead each country to pirate music.

Third, since live performance is the only type of paid-for music consumption that is rising, further research may investigate in more detail the antecedents of attendance at live music events.

Finally, a similar study on a wider scale might address the above issues and examine differences and similarities in the behaviour of students and non-students.

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Table 1: Mean Scores and Cronbach's Alpha for Items and Constructs			
	Mean	S.D.	Cronbach's Alpha
Analytical Response	2.604	1.235	0.744
I wanted to see how the song Developed	2.642	1.432	
I analysed the way the song was put together and why it came out the way it did, whether it seemed right and made sense	2.566	1.546	
Experiential Response	3.866	1.158	0.808
I felt "carried off" by the music	3.877	1.519	
I felt as if I were part of the song	3.217	1.564	
I felt deeply about the song	4.110	1.385	
I got into the song	4.254	1.328	
Imaginal Response	3.425	1.439	0.817
It created a picture in my mind	3.283	1.702	
It made me remember something	3.462	1.670	
It prompted images in my mind	3.528	1.671	
Need to Re-Experience	5.164	0.897	0.713
It made me want to listen to it Again	5.236	1.026	
It made me want to play the song to my friends	5.264	1.033	
I wanted to be able to listen to it whenever I liked it	4.991	1.295	
Sensorial Response	3.670	1.331	0.716
I was moving some part of my body (head, foot, hand) in rhythm with the music	3.755	1.494	
I wanted to dance to the music	3.585	1.634	

Table 2: Correlation Matrix and Tests for Discriminant Validity					
Panel A: Correlation Matrix					
	Imaginal	Sensorial	Analytical	Experiential	Re-exper
Imaginal	1.000				
Sensorial	0.050	1.000			
Analytical	0.283	0.174	1.000		
Experiential	0.302	0.169	0.294	1.000	
Re-exper	0.222	0.113	0.214	0.411	1.000
Panel B: Discriminant Validity Test Coefficients					
	Imaginal	Sensorial	Analytical	Experiential	Re-exper
Sensorial	0.096				
Analytical	0.597	0.424			
Experiential	0.542	0.352	0.667		
Re-exper	0.415	0.245	0.507	0.826	

Table 3: Descriptive Statistics of the Demographic Variables		
	Sample	%
Sex		
Female	120	56.07
Male	94	43.93
Age		
15-20	20	9.35
21-25	72	33.64
26-30	42	19.63
31-35	48	22.43
36-40	16	7.48
41-45	10	4.67
46-50	4	1.87
>51	2	0.93
Income		
<1000	104	48.60
1001-2000	68	31.78
2001-3000	32	14.95
3001-4000	8	3.74
>4000	2	0.93
Music Genre		
Pop	154	71.96
Rock	150	70.09
Electronic	68	31.78
Jazz	72	33.64
Classic	82	38.32
World	90	42.06
Downloading		
Yes	162	75.70
No	52	24.30
Buy Recorded Music		
Yes	140	65.42
No	74	34.58
Attend Live Concerts		
Yes	154	71.96
No	60	28.04

Table 4: Age and tendency to buy recorded music						
Age	Buy	Don't buy	Download	Don't download	Attend	Don't attend
15-20	30.0	70.0	100.0	0.0	70.0	30.0
21-25	36.1	63.9	83.3	16.7	72.2	27.8
26-30	71.4	28.6	71.4	28.6	71.4	28.6
31-35	83.3	16.7	70.8	16.7	66.7	33.3
36-40	95.3	4.7	69.8	41.9	32.6	4.7
41-45	100.0	0.0	60.0	40.0	60.0	40.0
46-50	100.0	0.0	0.0	100.0	0.0	100.0
>51	100.0	0.0	0.0	100.0	0.0	100.0
χ^2-stat	71.9*		33.6*		16.9*	

* denotes significance at the 95% level. The χ^2-critical value is 14.06

Table 5: Chi-square tests for Income and Music Consumption						
INCOME	buy	do not buy	download	do not download	attend	do not attend
<2000	58.1%	41.9%	77.9%	22.1%	70.9%	29.1%
>2001	76.2%	23.8%	66.7%	33.3%	76.2%	23.8%
χ^2-stat	4.65*		2.31		0.46	

* denotes significance at the 95% level. The χ^2-critical value is 3.84

Table 6: Summary Regression Results for Music Genre			
Dependent Variable	**Buy**	**Download**	**Attend**
(1)	**(2)**	**(3)**	**(4)**
Constant	-1.250 (-2.35)**	2.251 (3.90)**	-0.690 (-1.15)
Age	0.589 (3.61)**	-0.069 (-4.08)**	-0.016 (-1.00)
Sex	0.587 (2.75)**	0.161 (0.72)	-0.896 (-3.92)**
Income	0.00004 (0.20)	-0.00009 (-0.47)	0.0007 (2.49)**
Pop	-0.477 (-2.01)**	0.662 (2.92)**	-0.147 (-0.57)
Rock	0.299 1.36	-0.288 (-1.09)	0.930 (3.93)**
Electronic	-0.264 (-1.21)	0.712 (2.78)**	0.946 (3.61)**
Jazz	0.683 (2.80)**	-0.475 (-1.97)*	0.929 (3.04)**
Classic	-0.011 (-0.05)	1.011 (3.73)**	0.377 (1.53)
World	-0.268 (-1.23)	-0.324 (-1.33)	0.247 (0.99)
Mean dependent var	0.660	0.764	0.726
S.E. of regression	0.43907	0.40704	0.428
LR statistic (prob)	46.31(0.000)	37.679(0.000)	29.171(0.000)
McFadden R^2	0.2130	0.2348	0.2920
Obs with Dep=0	74	52	60
Obs with Dep=1	140	162	154
Total obs	214	214	214

Values of z-statistics in parentheses
*,** indicate statistical significance at the 10%, 5% level respectively.

Table 7: Summary Regression Results for Responses			
Dependent Variable	**Buy**	**Download**	**Attend**
(1)	**(2)**	**(3)**	**(4)**
Constant	-3.112 (-3.382)**	2.755 (3.043)**	0.074 (0.183)
Age	0.093 (4.922)**	-0.063 (-3.998)**	0.014 (1.044)
Income	0.0001 (-0.739)	-0.0001 (-0.644)	0.0004 (2.212)**
Sex	0.610 (2.481)**	-0.112 (-0.474)	-0.953 (-4.685)**
Sensorial	-0.307 (-3.559)**	-0.008 (-0.087)	N/A
Imaginal	0.109 (1.367)	0.503 (5.024)**	N/A
Re-experience	0.161 (1.172)	-0.114 (-0.813)	N/A
Analytical	0.250 (2.523)**	-0.114 (-1.072)	N/A
Experiential	0.122 (1.027)	-0.190 (-1.606)*	N/A
Mean dependent var	0.660	0.764	0.726
S.E. of regression	0.415	0.380	0.427
LR statistic (prob)	70.851(0.000)	51.394(0.000)	25.446(0.000)
McFadden R²	0.2607	0.2218	0.2277
Obs with Dep=0	74	52	60
Obs with Dep=1	140	162	154
Total obs	214	214	214

Values of z-statistics in parentheses

*,** indicate statistical significance at the 10%, 5% level respectively.

Table 8: Standardised Canonical Discriminant Function Coefficients. Dependent variable: consumption preference groups: illegal download / (mainly) legal download / recorded music			
	Variate 1	**Variate 2**	**Wilks's Lambda / F (2, 161) [2]**
[1] **Independent Variable**			
Classic	**-0.60**	-0.36	0.927 / 6.4 $p=0.002$**
Pop	**-0.53**	-0.37	0.967 / 2.7 $p=0.067$
Age	**0.40**	-0.20	0.932 / 5.9 $p=0.003$**
Electronic	0.24	**-0.46**	0.967 / 2.8 $p=0.067$
Income	-.01	**0.50**	0.965 / 2.9 $p=0.057$
Analytical Response	-0.34	**0.725**	0.95 / 4.135 $p=0.018$*
Eigenvalue	0.32	**0.18**	
% of Variance	65	**35**	
Wilks' Lamda	0.64	**0.85**	
χ-square	68	**25**	
P	[2] **	[2] *	

[1] Variables with tests of equality of group means not significant at $p < 0.1$ have been omitted; the variables included above have (non-)equalites of group means $p < 0.1$ and are included as predictors.
[2] $* < 0.05$; $** < 0.01$
Method: Enter. Prior probabilities computed from group sizes.

Table 9: Variates at Group Centroids		
Format	Variate 1	Variate 2
Illegal downloading	0.28	-0.18
(Mainly) legal downloading	-1.18	-0.67
Recorded music	0.15	1.11

Note: Unstandardized canonical discriminant functions evaluated at group means

Endnotes

[i] For a description of these tests see John and Benet-Martinez (2000).

[ii] Analytical results about nationalities are not presented here for economy of space. Tables and results are available from authors upon request.

[iii] The chi-square statistic for this case was slightly bigger (16.9) than the critical value showing that there is a considerable difference but not as big as in the previous cases (i.e. of buying and downloading music).

[iv] For more information refer to Gujarati, 2002 and Greene, 2003
[v] Tables and results available from authors upon request.