Adoption of online music

Differences between the Netherlands and Germany

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Abstract

The rapid growth of Internet technologies changed the music market drastically. New ways to share music between consumers without paying fees let the sales of the music industry decrease, but on the other side provided an opportunity to offer new music products and services to its customers. The legislations of the Netherlands and Germany reacted differently to these developments.

Therefore the current state of adoption of online music—pirated or legal—has been reviewed in order to shed some light on potential differences in the music listening habits caused by different legislation as well as to recognize future trends. A survey with students was conducted in both countries, using an adapted TAM questionnaire. Furthermore, the Internet traffic volumes of several online music providers were compared. Results indicate that the lenient laws in the Netherlands supported the rapid adoption of online music at the cost of a decreased perceived financial value of music. In Germany the adoption of online music—pirated was and still is hampered by harsh copyright protection laws.

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1   Introduction

1.1   Definition: Online music services

The term *digital music* is often used in connection with Internet and audio entertainment (Peitz, 2005; IFPI 2012). It has the disadvantage of ambiguity. On one hand, *digital music* is understood as technical description of how the music was recorded or saved. On the other hand it is used as term for music which is shared, streamed and sold in the Internet. This paper avoids this term in order to avoid imprecise statements.

A much more appropriate term for *digital music* would be *online music*, as it refers to the connection with the Internet, and implies that the file format must be digital. The term *online music* is still too blurry, because it does not describe in which context online music is used. Leonhard (2008) points out that *music* shifts from *music as a product* to *music as a service*, especially in the context of the Internet. Therefore the term of *services* is added, creating the term *online music services*.

Online music services are services which enable users to access and listen to music via the Internet. This includes any form of music storage, streaming and distribution services, but excludes services which are only supplement services like music lyrics. These days another term is combining *online* and *service* within one word: *cloud*. *Cloud music* would be also appropriate, but this term is misused by companies for their product in several ways and thus waters down the precise definition.

1.2   Legal situation in Germany

The legal situation of music piracy in Germany is very strict. In the first part of this section, the current copyright law is described. Later it is explained how two very popular companies,

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RapidShare AG and Google Inc. with their product YouTube, faced problems with their business models in Germany.

Publishing music without having the proper licenses of the author is punished by the German copyright law with 3 years imprisonment or alternatively with a fine (§106 Abs. 1 UrhG). §2 of this law adds that even the attempt of trying to infringe the copyright is punishable (§106 Abs. 2 UrhG).

While it is very inefficient to sue each case of piracy before a German court, there is another way for authors to claim their losses. Owners of the copyrighted material are allowed to send a so-called "Abmahnung" via a lawyer who is a demand to compensate potential losses because of piracy (Härting, 2005). The "Abmahnung" charges not only this compensation, but also the costs for the lawyer who was needed to set up this letter. The "Abmahnung" is usually accompanied by a contract which forces the accused party to stay away from pirated material, otherwise a much higher fine has to be paid.

Companies and lawyers are currently abusing this system, demanding much higher compensations than a court would approve. Being guilty of uploading one music file is charged with a 650 € fine, which not only generates an income for the suing party, but should also deter people from piracy (Haak, 2010). Due to the high costs for citizens, a new law for this system is currently in progress which should limit the maximum costs for the first offence of Internet piracy (Kremp, 2012).

Regardless of the way the aggrieved party chooses, it is always entitled to compensation. The sum which has to be paid is calculated on the basis of potential losses because of the copyright infringement. In case of a peer-to-peer upload, companies argue that this is a potential upload to thousands of people and that therefore their loss is worth several thousands of euros. In

current court rulings, judges agreed that a peer-to-peer upload is an upload to an unlimited amount of people, and that the value of claim is worth several thousand euros.

There is one special case in which copies are allowed: Copying for private usage is allowed in Germany, as long as it is only one copy and no copy protections are circumvented. In 1964, Germany introduced a levy on recording devices and media to compensate for the losses private copying is causing (Helberger, 2012). In the following years all other European countries introduced similar regulations except for Great Britain and Ireland. A list of current charges on recording devices and media can be found in Appendix 10A.1.

The German copyright laws are not only affecting private persons, they also affect companies and their business models. Several streaming or data storage companies are facing issues with German copyright, due to the so called "Störerhaftung". This expression means that companies which enable customers to commit copyright infringements by making files public are also guilty. In a popular lawsuit Constantin Film against RapidShare, the court supported the media company's claims. RapidShare is offering a very easy-to-use file exchange service. Customers only need to visit the main page, select a file on their computer for uploading and press a button. This process generates a link, which can be shared with others, enabling them to download the uploaded files. Some users had used this service to share copyright-protected content. RapidShare was already using an automated system which compared the uploaded material to reference files of copyright protected material. The court ruled in the end that these measures were not sufficient (Büscher, Bornkamm, Schaffert et al., 2013). RapidShare has been forced to scan the Internet for websites offering copyright protected material which has been shared on rapidshare.com (Sawall, 2012).

Another popular case in Germany is the case Youtube against *GEMA* ("Gesellschaft für musikalische Aufführungs- und mechanische Vervielfältigungsrechte). *GEMA* is a performance

rights organization in Germany, which has the exclusive rights to protect the majority of musicians against piracy, while collecting money for every public usage of music of its members. GEMA was founded in 1902, got renamed in 1933 as "Staatlich genehmigte Gesellschaft zur Verwertung musikalischer Aufführungsrechte" (STAGMA) and was renamed GEMA again after the Second World War. GEMA takes cares of the collection and the negotiation of royalties for any public music performance and reproduction.

In the negotiations between GEMA and YouTube, GEMA requested a fee that was much higher than similar fees in other countries. On its website GEMA claims that in Great Britain only 0.0001185 € per stream are paid. This would sum up to 120 € for 1 million video views, which is not considered sufficient by GEMA (Guerges, 2011). While the details of the negotiation were kept secret, the license fees requested by GEMA are between 0.006–0.12 € per video stream (Rundfunk, 2012). YouTube refused to pay these license fees and lost at court against GEMA. Any further infringements of copyright would be costly for YouTube. The court ruled that it is the duty of YouTube to scan permanently for any copyright infringements, which includes not only the original version, but also all cover versions or live versions. Furthermore, GEMA is allowed to report further copyright infringements in any way – even via a phone call — and YouTube has to react immediately (Krempp, 2012a). As a result of these incidents, many videos are blocked from view in Germany. Even videos which contain merely a little part of any copyright-protected music by GEMA are blocked completely.

1.3   Legal situation in the Netherlands

The Dutch system is less restrictive. Downloads from illegal sources are allowed according to the private copying exception (WIPO, 2013), hence users have not to fear any financial or legal consequences if they *download* music from illegal sources. But the *upload* of copyright protected material to a public space like the Internet is considered illegal and can be prosecuted.

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In the Netherlands, the *Stichting de Thuiskopie* has been charged by the ministry of law with the collection of the copyright levy fees. Till the end of 2012 the *Stichting de Thuiskopie* was only charging fees for media, but not devices. On December 25th the Dutch government announced a new law for copyright levies which also included a moderate fee for devices. The fee for a PC is 5.00 € , compared to 17.06 € in Germany (cf. Sec. A.2). The new copyright levy on devices covers the losses caused by illegal file sharing of media. The Dutch department of law clarified in January 2013 that it does not plan any further levies or restrictions, because private copies are already covered by the current copyright levy and the right of a private copy (Teeven, 2013).

The Dutch counterparts of the German *GEMA* are the *Vereniging Buma* and *Stichting Stemra*. These two organizations form together the collecting society for the Netherlands. In contrast to the German *GEMA, Stichting Stemra* was able to license music to all major Internet platforms, including *YouTube* or *Grooveshark,* and therefore these two platforms are available with their complete media content and services.

While the Dutch laws seem to be rather lenient, there have also been some remarkable lawsuits. In 2001 *Vereniging Buma* and *Stichting Stemra* sued Kazaa B.V. for being responsible for the distribution of copyright-protected material without any proper license. At that time, Kazaa B.V. was located in the Netherlands and one of the most popular filesharing tools. Their service allowed users to share files with each other as well as to search for specific files on other computers. Some users shared their media libraries with other users, which led to a very high number of copyright infringements. In 2002 the judges ruled that Kazaa B.V. cannot be made responsible for the copyright infringements of its users. This decision was confirmed by the Supreme Court in 2003 and was celebrated as huge success for peer-to-peer business in the Netherlands. Nevertheless Kazaa B.V. was sold by its owners to an Australian company to circumvent any more legal incidents (EFF, 2003).

The *Stichting Brein* (Bescherming Rechten Entertainment Industrie Nederland) is an organization which represents *Vereniging Buma / Stichting Stemra* and several other organizations as well as companies within the entertainment industry. They had a successful lawsuit against *ThePirateBay.se* – one of the largest file sharing portals – which led to a blockade of the website within the Netherlands at most ISPs (Internet service providers). The judges ruled that ThePirateBay.se is mainly used for criminal activities and thus it has to be blocked by the ISPs (Rechtsbank 'sGravenhage, 2012).

1.4 Quality differences

In 1980 Philips announced the invention of the Compact Disc Digital Audio (CDDA), which became the standard for Compact Discs (CD) with audio content. With this invention, the rise of digital music began in 1982 and soon surpassed the sales of phonograph records. The CDDA uses a data transfer rate of 1411.2 kbit/s to achieve its quality (Peek, Bergmans, van Haaren et al., 2009). After 1990, there was a rapid transisition from analogue modem technology (9.8–56 kbit/s) via ISDN (64–128 kbit/s for private connections) to DSL variants (recently up to 100 Mbit/s). Even in the early 90s it became clear that the feasibility of hearing music online was only a matter of time.

In 1995 MPEG Audiolayer III was developed, which is better known today as MP3. This new compression algorithm allowed compressing music even further than on the CDDA. With hardly 10–20% of the bitrate (128–192 kbit/s), a similar quality could be created, which let people share their music online. A song on a CD needs 30 MB of storage on average, while the same song as MP3 can be reduced to 5 MB (Bakker, 2005). Within the following years even more sophisticated algorithms were developed to decrease the size further (e.g. Advanced Audio Codec (AAC)), while maintaining quality. Studies have shown that even professional musicians cannot distinguish between MP3s at a level of 256 kbit/s and a CDDA properly (Meyer, 2000). Thus

companies like Sony or Spotify are able to offer streaming services which are offering CDDA-like quality while using only a fraction of a common broadband connection.

1.5   The role of online music

The first successful implementations of online music were blamed for a fundamental crisis within the music business (Fetscherin, 2004). Some researchers argue that the digitization of music is a disruptive innovation (Moreau, 2013). Platforms like Napster or Kazaa offered free services, which allowed users to share their digital files with each other. While the majority of the music industry did not know how to cope with this emerging market, Apple introduced its MP3-store iTunes in 2001. It grew with tremendous speed, achieving a 70% market share of all sales of music within the Internet (Bakker, 2005).

Within the following years, the revenues of online music kept increasing, while the sales of physical media were showing a steady decline. According to recent studies from PricewaterhouseCoopers International LLC, the revenues of online music will surpass those of physical media in 2015, as can be seen in Figure 1 (pwc, 2013) and as it has been suggested in some scientific studies (Peitz & Waelbroeck, 2005). Due to the enourmous success of online music, the global music industry celebrates its first year of growth after a long time of decline (IFPI, 2013). One of the most active fields of growth are online music streaming services, which had grown by 40% in 2012 according to Siemer & Associates (Siemer & Associates, 2013).

In Europe 20% of the online music revenues are already generated by subscription-based online services (IFPI, 2013). Subscription services are the second largest source of online music revenues in Europe; in some countries, e.g. Finland, Norway or Sweden, they are the main driver of online music revenues.
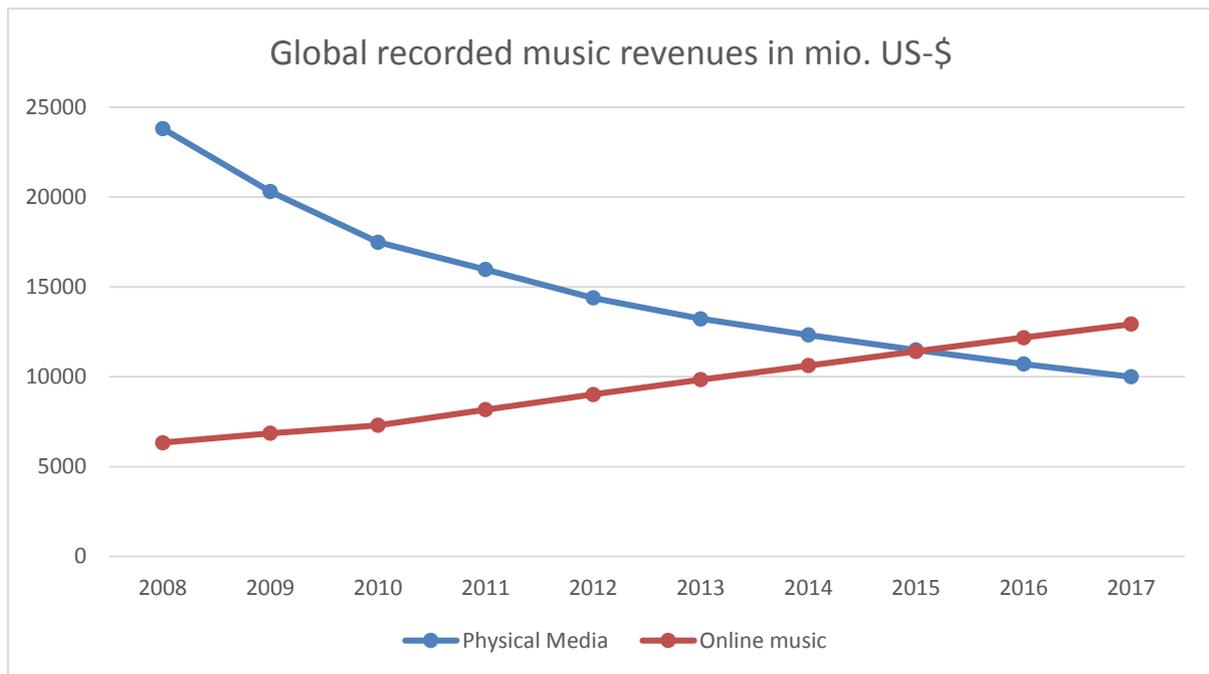
Figure 1: Composition of global recorded music revenues according to pwc international (pwc, 2013).

2   Research questions

According to the previous sections, the music industry in Europe is undergoing a drastic change.

The statisticians predict increasing adoption rates of online music and a steady decline of physical

media. Within this climate of change, regional governments have different ways of protecting

the music business on the one hand and promoting Internet usage on the other hand. Even

though Germany and the Netherlands are neighbours, their approaches are fundamentally

different. This leads to the following research questions:

- What are the differences in digital music services adoption between Germany and the

  Netherlands?

  - What is the actual state of digital music services adoption in Germany and the

    Netherlands?

  - How satisfied are customers with current music services?

  - How will music services develop in the future?

3 Electronic Literature Review

The literature review was conducted with help of WebOfKnowledge (Thomson Reuters, 2013) and Publish or Perish (Harzing, 2007). For WebOfKnowledge (WoK) default settings were used, and no limitations in years or any other options were set. Furthermore, the search terms were entered as "topic" to find as many relevant papers as possible. If more than 150 papers were found, the research domain was restricted to economical and business domains as a next step. The titles of the remaining papers were checked for relevance. For example, papers which obviously addressed security issues and their technical solutions were excluded from further investigation. At least the abstract of the remaining papers was read in order to decide, wether any relevant information for this study could be found within those papers.

Publish or Perish was used to search for relevant publications via Google Scholar. If there were more than 150 results, only results with a sufficient h-index were considered. The procedure for further investigation was similar to the one used at WebOfKnowledge.

Search term(s) for WebOfKnowledge	Results	relevant papers
"Online music" / "music online"	158	15
"music streaming" / "streaming music"	32	2
"Music piracy"	134	114
"Media adoption" / "adoption of new media"	44	6
TAM music	14	1
IDM music	0	0
Innovation music	473	10

Table 1: Search terms used as preperation for this paper

The literature about adoption of new music technologies is scarce, hence a closer look at how far the adoption of online music has gone is an important addition to the current literature. There are plenty of studies analyzing the positive and negative effects caused by music from illegal sources, but only very few deal with newer trends like streaming of music. According to Aguiar and Martens (2013), there is merely one empirical study besides theirs which has analyzed the effects of music streaming on music purchases.

Search terms "online music" and "music online" yielded a total of 158 results at WoK which is surprisingly little. Most of those results were not relevant for this study, merely 15 studies were connected to music in a relevant way based on their topics. Publications like "The Portrayal of Migraine in Popular Music: Observations and Implications" deal with online music, but they focus on other aspects of music–in this case the medical influence of music. The results become even worse if the topic was narrowed down to the streaming of music. The search term "*music streaming*" lead to 15 results at WoK which were all related to technology, but not to social sciences. If the words in the search topic were reversed ("streaming music"), merely 17 results could be found, but only two of them were relevant for this topic according to their title. One is an article in the Fortune magazine, the other explains the business model of "freemium" for companies which stream music.

The same key words were also applied to Publish or Perish to increase the amount of literature. Because of its special design, the Google search engine reported more results, but most of them had already been found by the other search engines. In order to get an overview of the adoption of new music technologies the scope of the search had to be broadened by using "media adoption" and similar words as search phrases. There have been some studies dealing with adoptions of media or entertainment in general or with other technologies which are only interesting in regards to the methods used.

It turns out that, at the time of the literature survey for this work, the adoption of new media and music in particular has been researched to a rather limited extent only. Most studies concerning these topics analyze the influence of piracy (Jeong & Lee, 2010; Jeong, Zhao & Khouja, 2012; Dörr, Wagner & Benlian, 2013; Geng & Lee, 2013).

4   Theory

This chapter explains the main theories this study is based on and adapts them to create one comprehensive model, which is used for the survey and its results. Firstly, the process of diffusion of innovations is explained. Secondly, the technology acceptance model (TAM) is introduced. Finally, both models are merged into one model.

4.1   Diffusion Theory

The theory of diffusion of innovation by Rogers (1983) is explained in the following section. Rogers defines diffusion as "process by which an innovation is communicated through certain channels over a period of time among the members of a social system" (Rogers, 1983). This process consists of four different stages. They are called: *knowledge, persuasion, decision, implementation* and lastly *confirmation*.
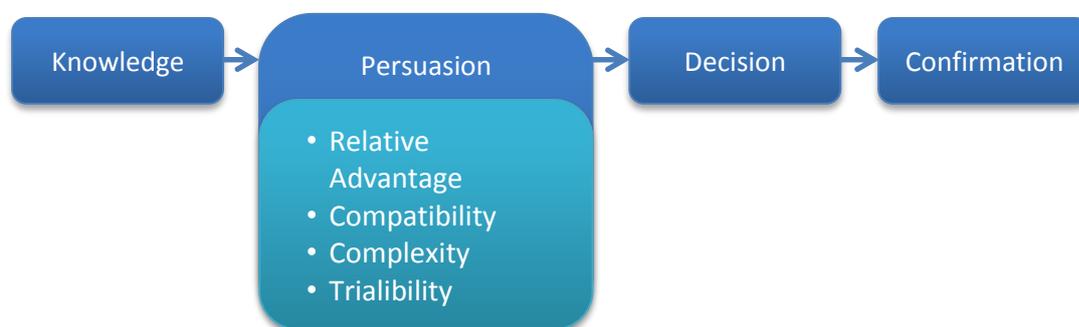

Image 1: Diffusion process according to Rogers (1983).

The first phase of the process is *knowledge*. The individual has discovered an innovation, but has no further information about it. The phase is shaped by two different variables. The first one is

the "receiver variable". This variable describes the internal factors of an individual and how it is reacting to innovation. Factors like the attitude towards change or social characteristics of a person influence the receiver variable and form the first group of factors. The second group are the social system variables. These are external influences, like social norms or tolerance of deviance.

The second phase of the diffusion process is called *persuasion*. The individual, which has detected an innovation in the first phase, is now gathering information about the innovation. There are five "perceived characteristics of innovation": relative advantage, compatibility, complexity, triability and observability, which determine on the decision to adopt or decline the innovation. *Relative advantage* is about the added value which the innovation delivers, compared to the previous generation of the product. Without any additional benefits it is unlikely that an individual is going to adopt an innovation. The second one, *compatibility*, is about the ability of the product innovation to be adopted by a person; *compatibility* describes whether the innovation fits or does not fit into an existing environment. A car for example, should fit into the garage; if it does not fit, this is a strong argument against a potential adoption. The third one is *complexity*, which describes as how complex an innovation is seen. A higher simplicity increases the likelihood of the adoption of an innovation, while complexity decreases it. The fourth factor is triability. The possibility to test and experiment with an innovation, before it is going to be adopted or bought, leads to higher adoption rates. The last factor is *observability*. Innovations which can be seen by others and thus create a social feedback, lead also to higher adoption likelihood. Those five factors also describe the rate of adoption according to Rogers.

The third phase is *decision*. Within this phase, the individual is weighting all previous information, and decides on the intention to adopt. There are two possible results: adoption and rejection. In time the individual can revise its decision again, which leads to an continued adoption or to a

discontinuance, due to a replacement for example. Similary, a rejection can lead to a later adoption or a continued rejection.

The last phase in the diffusion process is called *confirmation*: the adoption finally takes place as the product or technology is used.

All four phases of the diffusion theory are also influenced by communication sources. Different channels like TV advertisement or friends can alter the results in each phase. A friend, who is convinced of the benefits of a certain product, presents a product in another manner than a TV advertisement could do, and thus may alter the decision, particularly because most of the factors are about intentions and perceived values.

4.2 Technology Acceptance Model

The Technology Acceptance Model (TAM) was developed in 1989 by Davis (Davis, 1989). It is based on the "theory of reasoned action" (Liska, 1984; Ajzen, Fishbein & Heilbroner, 1980) and extends its scope to the technological sector. While the theory of reasoned actions was based on elements of attitude and subjective norms, these variables were exchanged with *perceived usefulness* and *perceived ease-of-use* by Davis.

The likelihood to adopt a technology depends on its perceived usefulness and perceived ease-of-use, so both variables influence the attitude towards using a specific technology. The first one describes benefits an individual expects from the new technology. The latter one, perceived ease of use, is the perception of simplicity of using a specific innovation. The perceived ease of use also has direct influence on perceived usefulness. If a product is seen as very complex, this decreases its perceived usefulness.

The attitude towards using a product has an impact on the behavioral intention. The behavioral intention is also influenced by the perceived usefulness. This means that the attitude as well as

the intention to use a product are influenced by the perceived usefulness. The intention can lead

to an actual system use, which means that an individual buys and uses a product and thus adopts
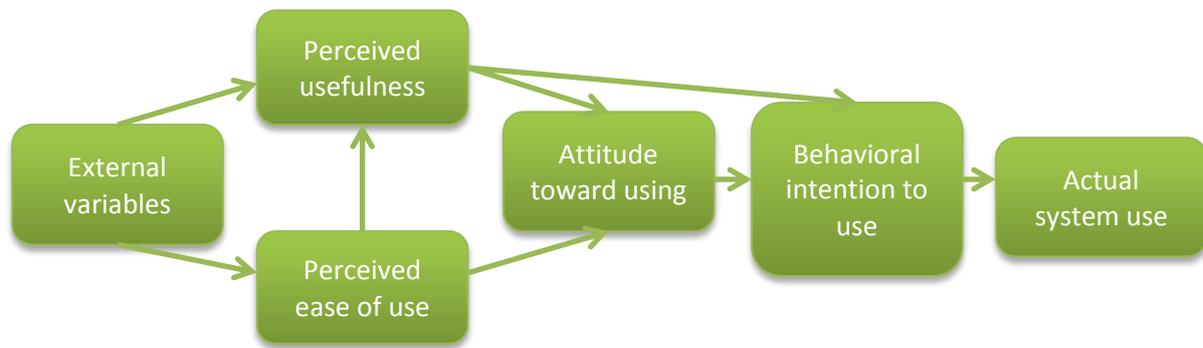
the technology successfully.

Figure 2: Technology Acceptance Model according to Davis (1989).

4.3   Combining Diffusion Theory and TAM

Within this section, the diffusion theory by Rogers and the TAM by Davis are merged to one

comprehensive model.

Based on empirical research, Rogers´ five perceived characteristics of innovation do not

consistently lead to adoption. Researchers could only find evidence for a consistent connection

to adoption for: relative advantage, compatibility and complexity (Agarwal & Prasad, 1998;

Tornatzky & Klein, 1982). Thus the model can be simplified by omitting *triability* and

observability, before it is merged with TAM.

The constructs used in TAM can be found within the model of diffusion of innovations, according

to many studies. Moore and Benbasat (1991) explain within their study: "The similarities

between these constructs [perceived usefulness and perceived ease of use] and Rogers´

perceived relative advantage and perceived complexity are clear" (Moore & Benbasat, 1991).

Plouffe et al. (2001) argue that "the set of constructs used in TAM is essentially a subset of those

proposed by PCI". Most researchers agree that those constructs are similar or even the same

(Wang, Meister & Wang, 2011; Adams, Nelson & Todd 1992; Agarwal & Prasad, 1998; Wu & Wang, 2005). Wang et al. (2011) identify some exceptions, but they do not apply to this research.

According to this research, the TAM by Davids can easily be matched with the diffusion model by Rogers. The first phase, knowledge, is very similar to the external variables within TAM. The persuasion phase of Rogers has one additional point, which cannot be found within TAM – compatibility. While it could be also subsumed under perceived usefulness (Chen, Gillenson & Sherrell, 2001), recent research has shown that it is an independent construct and not interconnected to any construct within TAM (Wu, 2005). Another finding of Wu (2005) is that compatibility has the strongest impact onto behavioral intention. Therefore it is very important to keep this factor within this model. The decision phase is obviously very similar to the behavioral intention, while the confirmation corresponds to the actual use of the innovation.
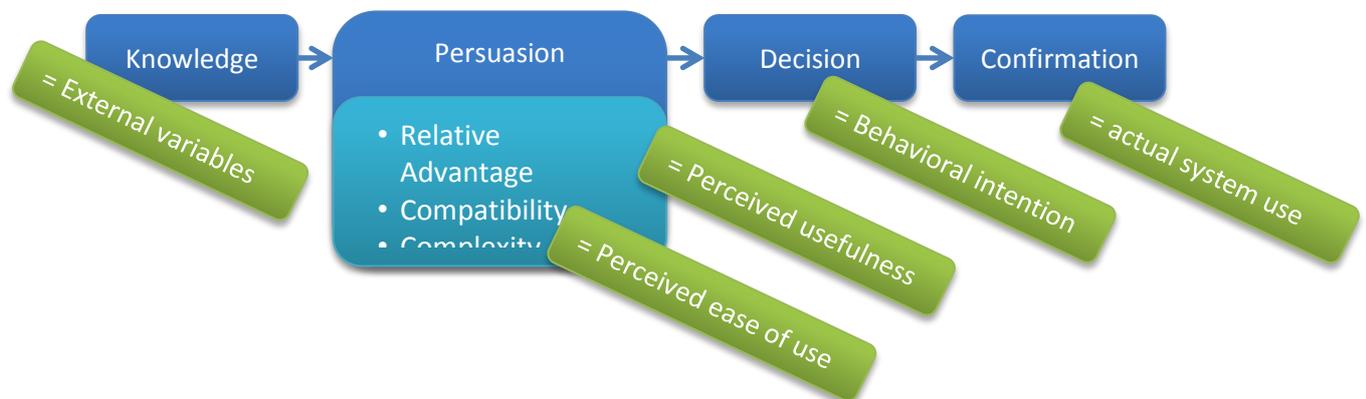

Figure 3: TAM integrated into updated Diffusion Theory Model. Blue: Diffusion Model; Green: TAM.

5   Method

Within this chapter it is explained how the research was conducted. This research follows a deductive research approach, collecting quantitative data, to assess the research questions and connect them with the theory of the previous section. To find out the main differences in adoption of online music services, a survey in conjunction with an experiment is used as strategy. According to (Suki, 2011) younger, well-educated, male people are more likely to adopt online

music. Thus students have been selected as a well-young and educated group. This group has a higher chance to represent feature trends by adopting innovations early. There are two test groups: The first one consists of students from the Netherlands. This test group has no restrictions or blockades to access music via the Internet. The second group consists of students in Germany. Those are facing blockades on popular websites like YouTube or Grooveshark (the latter company stopped its service due to a dispute with GEMA). Thus this test group has a manipulated market. Both groups are tested with a survey in form of a questionnaire about their current usage, perception and desires for future products. Easterby-Smith et al. (2008) suggest that most questions should begin with "who", "what", "where" and "how" within a scientific survey. The survey enables researchers to collect large amount of data in an economical way (Saunders, Lewis, Thornhill, 2009). This study has been designed cross-sectional, testing the difference of online music adoption in 2012.
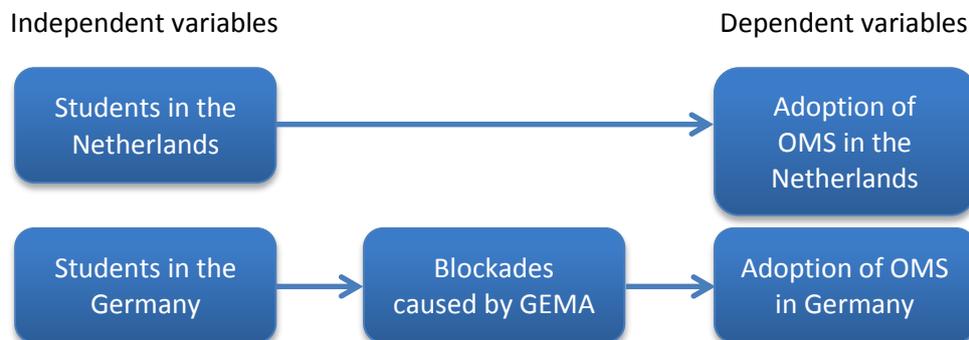
Independent variables

Dependent variables

Students in the Netherlands → Adoption of OMS in the Netherlands

Students in the Germany → Blockades caused by GEMA → Adoption of OMS in Germany

Figure 4: Research model.

The survey is conducted as an online survey, which executes the data collection at the same time in both countries. The questionnaire consists of standardized questions and answers, to facilitate comparison between both countries (Saunders et al., 2009). It also makes it easier to process a larger sample size due to the fact that the amount of time needed for the survey is not connected to the amount of participants. The larger data sample leads to a higher validity of results.

Chapter 5 Method

The questionnaire consists of four different parts. The first part focuses on gaining general information. Previous studies revealed that there is a difference in usage of digital music services between genders and different age groups (Peitz, 2005; Koster 2007). Hence it is important to collect both data sets for a better comparison of those. The question of residence of students is a very delicate one. Many students are not studying in their home country, which is particularly the case at the University of Twente, which is very close to the German border. To avoid bias, there are two questions needed aiming at the current place of residence and the place of residence prior to studying.

The next group of questions identifies the current usage of music in general and the current adoption of online music services. The answers of the students should present the current mix of music sources in their average daily usage. Further questions try to shed some light on the specific adoption of online music services.

The third group of questions directly concerns the core concepts of TAM and the Diffusion Theory Model. It aims at the current thoughts on the persuasion phase, which consists of relative advantage, compatibility and complexity on online music services. The results should help to determine the status of online music services and its rate of adoption. The majority of questions in this section are using a seven-point scale metric, which helps the participants to express their opinion in a more precise way. Together with the second group of questions, it is thus possible to create an overview of the current knowledge and current status of the persuasion process of online music services.

The last group of questions is about the prediction of the participants for the future market of online music services, as well as the potential usage of the participant of online music services.

Chapter 5 Method

5.1 Survey questions

According to the previous chapter, the following questions were asked in the survey:

1. Your Gender:

2. Your age:

3. Where do you currently live at (country)?

4. What is your current profession?

5. Where did you live at before you started studying?

6. Specify per source the amount of hours you listen to music per week:

7. Specify the amount of hours listening to music for each device listed (weekly):

8. How did you obtain the majority of your MP3 files and music CDs (no personal data are saved, so please answer honestly!)?

9. How much money (in €) do you currently spend monthly for obtaining music?

10. Which online-services are you using or did / do you have heard of?

11. Ad-financed online music services have a better selection of songs, than my offline collection (e.g. CD, MP3).

12. Paid online music services have a better selection of songs, than my offline collection (e.g. CD, MP3).

13. I can access music quicker by using ad-financed online music services.

14. I can access music quicker by using paid online music services.

15. I would find ad-financed online music services as easy to use.

16. I would find paid online music services easy to use.

17. Online music services integrate well into my music listening habits.

18. Online music services are too complex in their usage.

19. I will use paid online music services in the forthcoming 12 months.

20. I will use ad-financed online music services in the forthcoming 12 months.

21. I will use pirated music in the forthcoming 12 months.

22. I would prefer more online music service offers which are using the following business

    model (multiple answers possible)

    a. Ad-financed music flat rates

    b. Paid music flat rates

    c. Pay-per-use music services

    d. Buy single songs / albums as MP3 or CD

    e. Music is a free good, which should be available for free

23. I am willing to pay the following amount of euros per month for music within the

    forthcoming 12 months.

24. I am currently missing the following features for online music services.

5.2   Using Google data to refine usage questions

Nowadays, there are many online music services available. The current list for online music

databases, with the ability to stream music, has 35 entries at Wikipedia (Wikipedia, 2013). The

analysis of the usage as well as the familiarity of a service is very interesting, but the available

space is not sufficient to report about all services in detail. Hence this large number of services

needs to be reduced to the most important ones.

Due to the fact that all these services are online and Google with its search engine is directing the

majority of search queries particularly in Europe, Google has some overview over the popularity

of specific search terms. Such data have already been used to predict election results as well as

the spread of viral infections (Ginsberg, Mohebbi, Patel et al., 2008). A recent academic

publication in political economics makes use of these data, too, with the astonishing result that

these data are sufficient to predict future outcomes of a country's GDP (Preis, Moat, Stanley & Bishop, 2013).

Google is offering limited public access to its data via Google Trends. This web service allows users to compare up to six different search terms with each other. Google does not reveal the absolute numbers, but offers a relative comparison of those six search terms. Thus it becomes evident if a search term is more important than another, and also how many times larger the number of queries is. Furthermore it is possible to limit this comparison to specific time frames or countries. The data are not only visualized by means of a graph, but can also be exported as CSV file for further analysis.

The data sets of Google also include search queries about online music. Thus it is possible to use the list of online music services of Wikipedia and compare those services to each other, to identify the most important ones while ignoring the less important ones within the study. Particularly the results for each country clearly show remarkable differences and help to narrow down the important services. While Rara for example seems to be a popular service, Google Trend clearly shows that this service has its majority of customers within Brazil and is less interesting for a study conducted in Germany and the Netherlands.

Evidently, before a ranking can be created, it is necessary to understand what the data by Google mean.

According to the support pages of Google Trend, the keyword having the highest value is assigned a numerical value of 100, the values of all other keywords are relative to it (Google, 2013). For instance, if a search term had its highest peak in search queries in July, the results of all other months are ranked in relation to it. If multiple search terms are used, all other search terms are also ranked in relation to the highest entry within the specified time frame. Thus the extracted

always data contain one cell which contains a "100", namely the peak value. According to the market research institute ABI, Spotify is currently the market leader (ABI, 2013). So all online music services which are currently accessible in Germany and Netherlands from the list at Wikipedia are compared with Spotify by Google Trends. The peak of Spotify according to Google Trend was on December 23, 2012. No company was able to surpass this peak value of Spotify, hence all data were gathered in relation to this peak value, making them comparable to each other. The advantage is that now all competitors can be compared to each other within one table of data, instead of having a survey limited to only 6 companies.

The extracted data by Google show the search volume for the searched term per week. To avoid temporary disturbances of the search volume through external factors like advertisement, the time frame which is analyzed has been set to one year. The most recent date at the point of extraction was May 2013, thus the oldest data used were from May 2012. The search volumes of each week were summed up, creating one count for the whole year, for each company. This number has been used to create a ranking and to identify the most frequently used services within Germany, Netherlands as well as worldwide.

The final ranking is still not a complete overview over the online music market, because some companies cannot be compared with this method. Companies like Spotify have only one product, which is their streaming service. Therefore if someone searches for Spotify, he is probably interested in this streaming service. But there are also some global players like Google or Amazon relevant in this business sector. However it is difficult to distinguish people who search for music on YouTube and people who search for movies – the results would have been heavily flawed if YouTube were included in the ranking. Another problem is that the search volume for YouTube is so large that most other companies would have been pushed to values below 0 1 – making it impossible to compare them properly, for the exported files contain integer numbers only.

Thus those global players have not been included within this ranking, but are added afterwards within the survey.

The final list of services which was used in the survey is:

- YouTube
- Amazon MP3
- Spotify free
- Spotify Premium
- Soundcloud
- Grooveshark
- Rdio
- Simfy
- Itunes
- Last.fm
- Deezer
- Napster
- Online Radio

5.3 Interpretation of open questions

The last question of the survey (Question 24) is an open question allowing the participants to write about missing features within current products. To deal with the not standardized data, the answers are broken down into subunits which can be assigned to topic groups; this process is also known as coding (Saunders et al., 2009). The codebook is created after the data collection has taken place. This approach allows to identify the most popular topics which have been mentioned often and to compare them between both students group.

5.4 Reasoning of adoption of TAM and IDM to music services

The original questions of TAM cannot be transferred easily to the field of online music services. In terms of perceived usefulness, TAM aimed at an increase of work performance. In the field of online music services, there is no such performance goal for listening to music in a private or home environment. Van der Heijden (2004) adopted the TAM survey for entertainment purposes and also introduced a new variable "enjoyment" next to "perceived usefulness" and "ease of use".

Out of the four questions about ease of use, one question of van der Heijden is adoptable to this case: "I find <the system> easy to use", hence this question is also used in the survey of this study.

Enjoyment is a new construct, which has been introduced by van der Heijden especially for hedonistic systems. Music as part of the entertainment media industry is an archetype of a hedonistic system. But the purpose of an online music service is to give access to entertainment which is enjoyable rather than being the entertainment itself. The amount of time spent to deal with the service should be minimal. Therefore its role is being a tool, which means that no questions about enjoyment are necessary, and that those constructs about enjoyment are part of the perceived usefulness.

Measuring perceived usefulness for online music services is difficult. The original questions by Davis measure work performance, while van der Heijden measures the performance to fulfill a task. Both concepts are not applicable to online music services without further modifications. Listening to music via online music services is neither work nor a task, thus the questions to measure perceived usefulness need to be changed.

The work of van der Heijden contains two concepts which can be learned from his questions. Firstly, there is the concept of quickness and easiness of a service. In the case of this study, this means the promptness of access to music. Secondly, there is the concept of improving a service to fulfill a task better. In terms of online music services, this is the ability to deliver the songs the user wants to listen to. Van der Heijden's other questions are about the support which hedonistic system gives the user the best choice of movies to watch, which is not applicable to the case in this study.

The next field within the integrated model of section 4.3 is an extension of the TAM survey using ideas derived from IDM. Music services need to be compatible to the user's environment and complement his entertainment. Thus this construct can be easily adopted and implemented within the survey.

Also the concept of complexity fits into the music business. Complex products, which require studies of operating manuals or consultation of support, are conflicting with entertainment; thus it is crucial to a music service to be perceived as not complex.

5.5 Survey

To reach as many people as possible within the same time frame, without a budget for employees conducting the study in persona, the most reasonable approach is an online tool, which is distributed among students.

The amount of students without Internet access can be neglected. All universities in Germany and the Netherlands enable students to go online within their facilities. The student dorms are offering Internet access for free or with huge discounts.

There are many services as well as software products on the market which offer solutions to conduct online surveys. The choice for this study was the open-source project LimeSurvey (Minke,

2013). Due to its open-source nature, the source code is available, which allows modification in every part of the software whenever needed. This feature was necessary to adopt a unique and professional design, which underlines the importance of this study and should encourage students to fill out the questions.

On top of that, LimeSurvey is a very flexible and feature-packed software, which allows to create a survey with many possibilities to create unique constellations of questions and answers. Even if a specific feature is missing, there are a lot of plugins already developed as well as the possibility to modify the source code. Thus there were no technical limitations in creating the survey caused by the software.

The survey was conducted over 4 weeks and distributed via social networks at University of Twente, Technical University Berlin, University of Applied Science Gelsenkirchen, University of Cologne and University of Maastricht.

The data within the database have been coded via multiple-dichotomy coding (Saunders et al., 2009) and can be easily analyzed by means of Excel or SPSS. A reliability analysis using a Cronbach Alpha is used to test the data set for internal consistency (Lews, Saunders & Thornhill, 2009). This should prove that the questions are understood by the participants in the same way and thus can be seen as reliable.

6   Results

After four weeks, a total number of 357 participants conducted the survey. Out of this total number 140 did not fill out the whole survey, while 217 participants answered all questions. Within the group of 217 participants, 153 people had matching criteria for this study. The criteria are:

- is currently a student

- lives currently in the Netherlands or Germany,

- and also originates from the same country he is currently living in

Participants not matching all of these criteria were discarded, as their views and habits are "contaminated" by their past. A student born and raised in the Netherlands, but enrolled at a German university, is a difficult case for a study aiming at investigating differences between both countries. Therefore such participants are left out of the evaluation.

Out of those 153 participants with matching criteria, 117 come from Germany, while 36 come from the Netherlands. While those numbers differ from each other, they are representative for the total number of students within their countries in relation to each other. In Germany nearly 2.4 million students are currently enrolled, while there are only 666.689 students enrolled in the Netherlands according to recent statistics (Richters, 2012; Bundesamt, 2012).

While there are nearly as many male (56.4%) than female participants in Germany, the number of male participants in Netherlands is clearly dominating with 83.3%.

6.1   Usage of music

The first question about music (Chapter 5.1, Question 6) of the survey is about the media which are used to listen to music. The data have also been visualized in Figure 5. The German students listen to CDs 2.2 hours per week on average, whereas the Dutch students listen merely 1.2 hours per week. While in both groups the CD listening time is rather small, the difference in relation to each other is still very large.

The largest difference in music listening habits is observed for online MP3 services. While Germans are using these services 0.8 hours per week on average, the Dutch listen to them merely 0.22 hours per week on average, which is a quarter of the German figure. While the German

students are clearly leading at listening to CDs and online MP3 file services, the opposite is true for free and paid Internet streaming. With over 7.6 hours per week for free music streaming services, the Dutch students clearly surpass their German counterparts (3.7 hours per week). The same is true for paid internet streaming. While even fever hours are spent by German students for paid Internet streaming, the Dutch students hear nearly as much free and paid music (6.8 hours). In total Dutch students listen 34 hours music per week on average, while German students listen merely 23 hours per week. The difference is mostly due to the extensive use of streaming services in the Netherlands – while the usage of sources like local MP3 files is very similar in both countries.
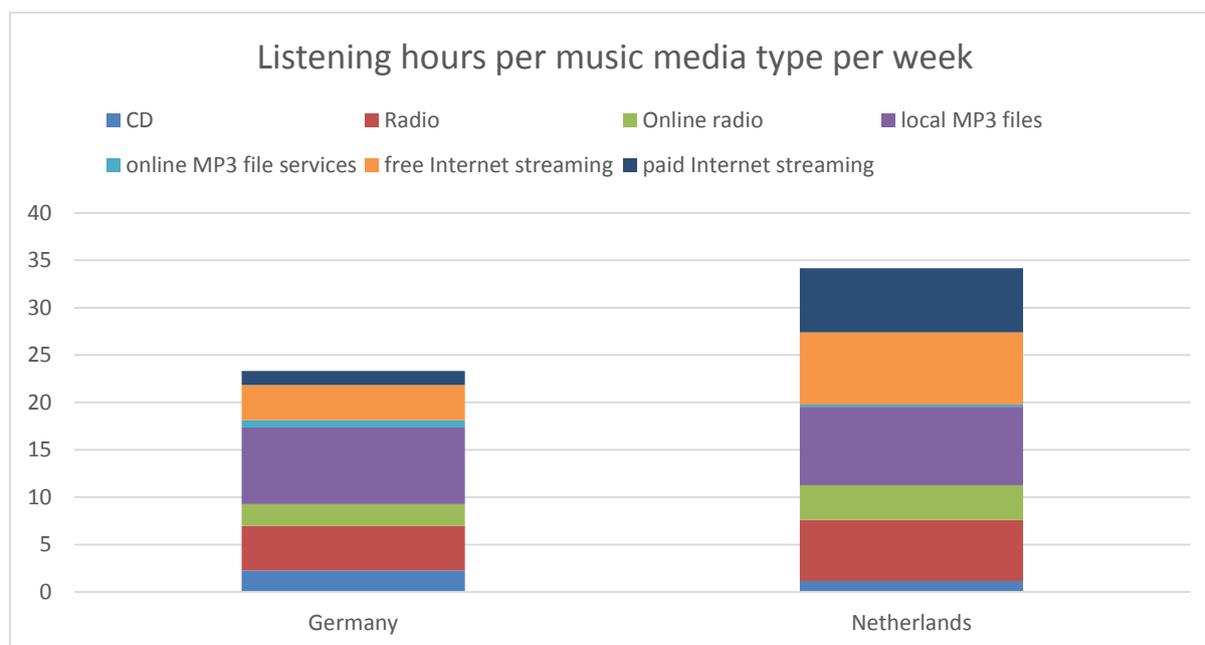
Figure 5: Usage of media types in hours per week, compared between both countries.

The 7th question deals with the devices used to listen to music. Not surprising, the most frequently used device in both countries is the computer (i.e. PC or laptop, excluding tablets). However, the percentage of the computer as music playing device is slightly larger in the Netherlands. Over 60% of the listening hours are spent at the PC in the Netherlands, in contrast to 54% in Germany. The second place for listening devices is taken by the radio / CD-player in Germany, but by the smartphone / tablet in the Netherlands. According to the data, smartphones are much less

popular as music devices in Germany: merely 1.9 hours music per week is their usage in Germany, compared to 5.4 hours in the Netherlands.

The information provided in the first and second question both result in the same weekly listening time for each country, thus underlining the validity of the data.

Question 8 asks for the sources of the music. While over 45% of the German students buy some of their music online, only 14% of the Dutch students are doing this. The German lead continues in the grey zone of music sources, like "copied from a friend", "ripped from online sources" and "ripped from digital media". Over 65% of all German participants use music which has been copied from a friend, compared to less than 8% of the Dutch students. The main source for music of Dutch students is clearly the illegal download, which is used by over 80% of all participants, compared to less than 25.5% in Germany. These comparisons can be seen in Figure 6.
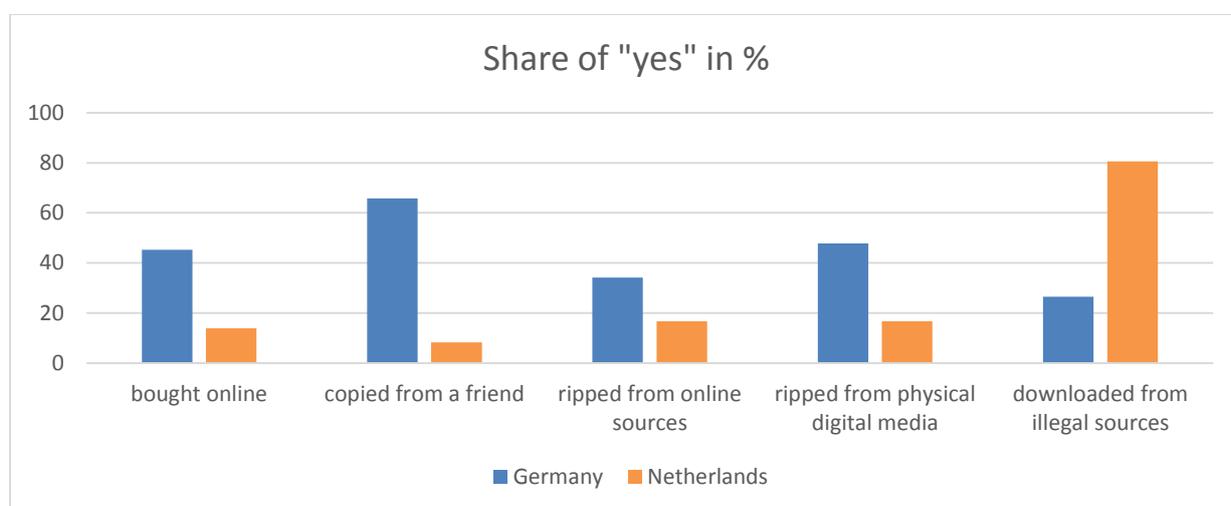
Figure 6: Sources of music in Germany and Netherlands and shares of students using them.

The larger share of online MP3 payments is also evident in the next topic (Question 21), which is about money spending on music per month. While the German students spend 6.54 € for CDs and 2.6 € for MP3 files, the Dutch students invest 3.9 € for CDs and 0.3 € for online MP3 files. Particularly the spending for online MP3 services in the Netherlands is very low compared to the spending in Germany. Most songs cost at least 0.89 € at Amazon MP3 or iTunes – which means

that on average only every third Dutch student is buying a song every month, while at least two songs are bought by every single German student. While the Germans spend more money on MP3 files and CDs, the Dutch students invest five times more money into online streaming services with (2.09 € / month). But in total, German students spend more money for their listening habits with 9.62 € on average, compared to 6.28 € for the Dutch students. While the German students spend more money for music, they listen to less music, as it has been shown in Figure 5.

6.2   Online service popularity

The 10th question deals with the knowledge about the most important music services of both student groups. The first company mentioned in the question is *YouTube*. While 100% of all Dutch participants use YouTube regularly as music service, 4% of the German group claim to not use *YouTube* as music source. There were no participants who had never heard of *YouTube* as possible source for music files. It is the only service which is known to all participants as music service.

Amazon is also a global player, but the majority of Dutch participants (63%) claims that they have never heard of the Amazon MP3 Service, and 0% of the Dutch group are using *Amazon's* MP3 file services. In Germany only 29% never heard of the possibility to buy MP3s at *Amazon*, while 20% are using this service. The largest group (51%) has heard of the service, but is not using it.

The free service of *Spotify* is used by over 56% of the Dutch students, while the other part at least knows about this service. The premium service of *Spotify* achieves very high usage figures, with 36% of the participants paying for the premium service and others at least know about this service. The awareness of this service in Germany is much lower: 10% of the German students have never heard of the free *Spotify* services, while over 31% are not aware of the premium services of *Spotify*. Also the usage statistics are lower: Only 22% are using the free service, and 5% are paying for the premium services. Over 55% of the Dutch students are using either *Spotify premium* or *Spotify free*. The German Students on the contrary are using *Spotify free* or *premium*

in 22% of the cases. While the Dutch students either use or at least knowing about *Spotify* services as mentioned above, 10% of the German participants did not know anything about *Spotify*.

Soundcloud is a German startup, which is located in Berlin. But in spite of its German roots, the awareness of this service is much higher in the Netherlands. Only 6% of the Dutch students have never heard of it, while 32% of the German group claimed to not know this service.

Grooveshark was available In Germany for a short time only, before the service had to shut down due to legal problems. But the service is still used by 14% of the German students, which is the same amount as in the Netherlands. The amount of people not knowing about this service is higher in Germany (40%) compared than to the Netherlands (28%).

The new music streaming competitor from the USA, *Rdio,* has no users in the Dutch test group, while it is used by 1.7% users of the German group. In both countries, the majority claims to have never heard of this service (84% Germany, 83% Netherlands).

Simfy is another German startup which is offering its services in Germany only. The obvious result is that over 92% of the Dutch participants have never heard of it. But even in Germany over 41% have never heard of it and only 1.7% use it.

Itunes is known by the majority in both countries, but its usage differs strongly. 26% of the German participants are using the service, while only 6% claim to use it in the Netherlands.

Last.fm is used by 32% of the German participants and 25% of the Dutch students, which is one of the highest results, next to *Spotify*, *Amazon* and *YouTube*. The main difference between both countries can be found in the number of people not knowing about this service, which is 19% in Germany and only 8% in the Netherlands.

Jango is not known to the majority of both countries (>86%), and no one claims to use it.

Deezer is not known to the majority of the German students (85%), and less than 1% are using this service. While being not popular in the Netherlands, too, its usage statistics is there slightly higher, namely 3%.

While *Napster* is known by the majority in both countries, it is not used by a significant number of users anymore.

Online radio is heavily used in both countries: 55% Germany and 44% in the Netherlands. A really small minority of less than 5% does not know about online radio stations in both countries.
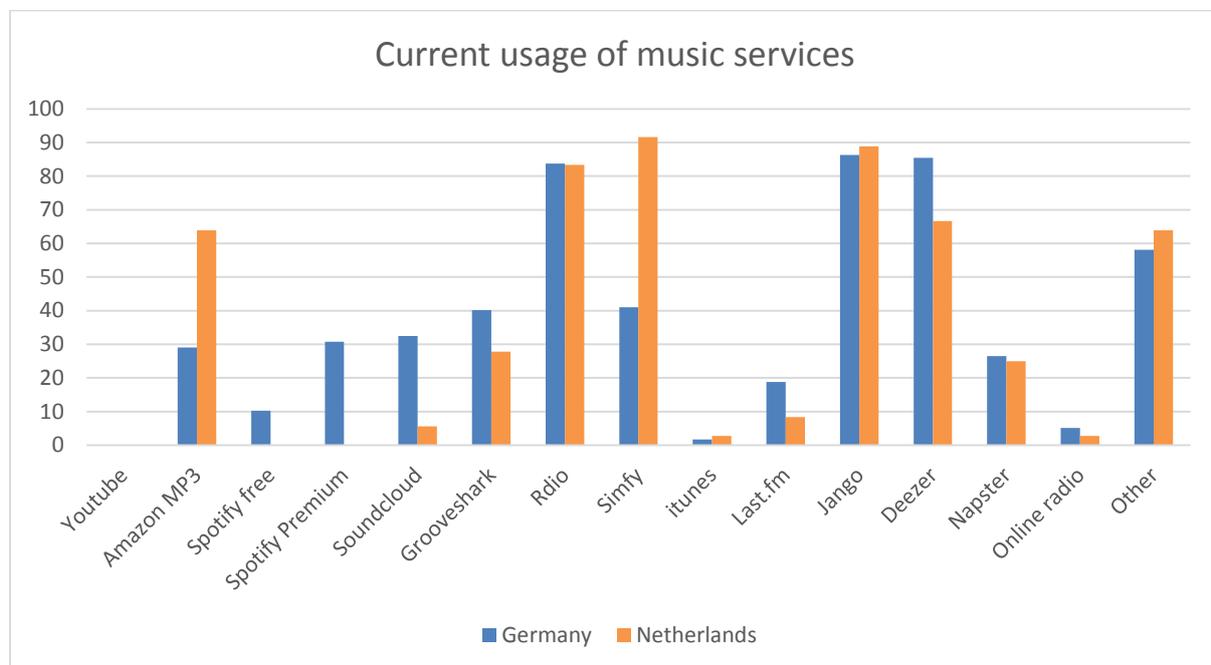
Figure 7 Current usage of online music services, share of people who have never heard of specific online music services

Figure 7 illustrates that most online streaming services are used more intensely by the Dutch students in comparison to the German group, but the German students have a higher usage of online MP3 stores. Over 80% of the Dutch students are using streaming services besides YouTube, while only 60% of the German group are using streaming services.

6.3 TAM answers

This section presents the answers to the TAM-questions. This section presents the answers to the TAM questions. The results were also tested for internal consistency by means of Cronbach's alpha test. For both countries, alpha values 0.8 were obtained. Hence it can be assumed that the results of the survey are consistent, and that the question were interpreted by the participants in the same way. The first four questions deal with perceived usefulness. The very first question in this question group (question 21) asks about the agreement with the following statement: "Ad-financed online music services have a better repertory of songs than my offline collection". The majority of the German students agrees with this statement, while only one third disagrees, which can be seen in Figure 8. The Dutch students are more skeptical about the quality of online music databases; the percentages of the people who support the statement and the people who reject it are similar in size.
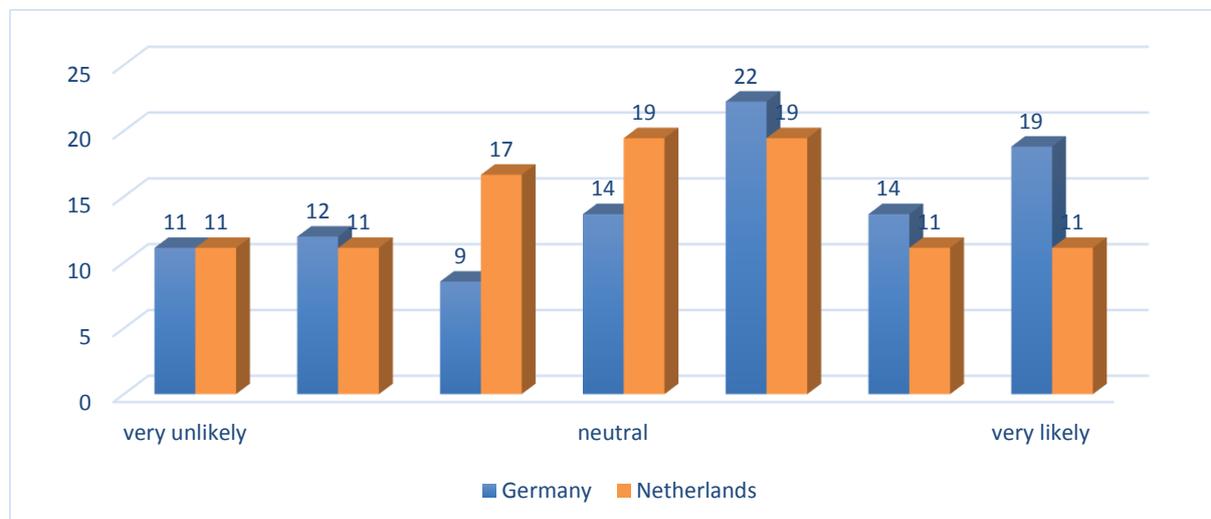
Figure 8: Answers to the first question about perceived usefulness: Percentage of answers expressing various levels of consent with the statement: "Ad-financed online music services have a better selection of songs, than their offline collection (e.g. CD, MP3)".

The next question is about an analogous statement about paid online music services. While there are still as many people who reject the statement in Germany (31%) in comparison to ad-financed music services (31%), the group of rejecters within the Dutch students (39%) is slightly smaller

(33%) as shown in Figure 9. In general more people in both countries agree that the paid online music service have a larger repertory of songs, compared to the free services.
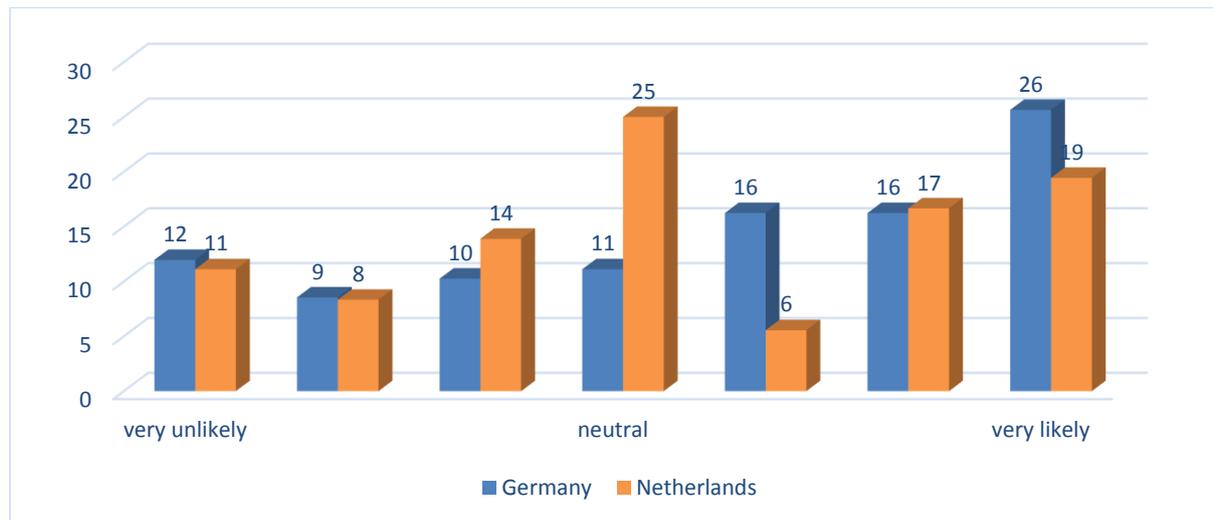

Figure 9: Answers the second question of perceived usefulness: Share of participants, which agree with the statement, that paid online music services have a better selection of songs, than their offline collection

The next two questions aim at the *perceived usefulness* from another point of view: *speed of access*. While in Germany many students believe that ad-financed online music services allow quicker access to music (48% have a positive attitude) and only a minority is doubting the marketing claims as shown in Figure 10, Dutch students are very conservative. Only one quarter believes in quicker access, more than half of them doubt it.
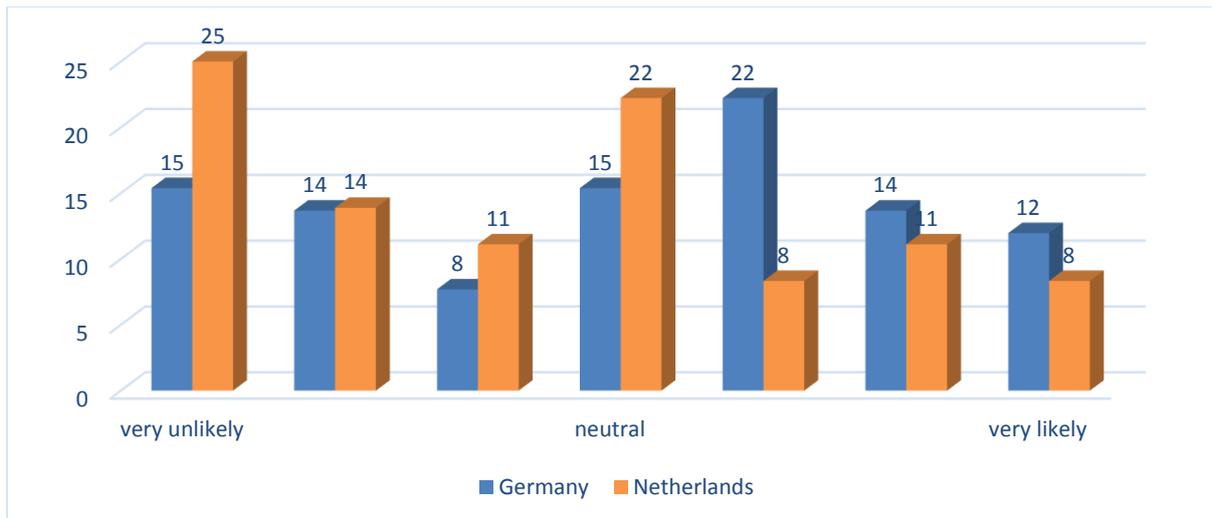
Figure 10: Perceived usefulness: answers to the statement: "I can access music quicker by using ad-financed online music services".

Similar to the first two questions, the perception changes when paid services are considered. In Germany the number of supporters of faster music access decreases a little bit, while the rejecting group grows by 4%. The opposite is happening within the Dutch group: the group of supporters is grows from 27% to 48%, while the neutral and the rejecting parties shrink in size.
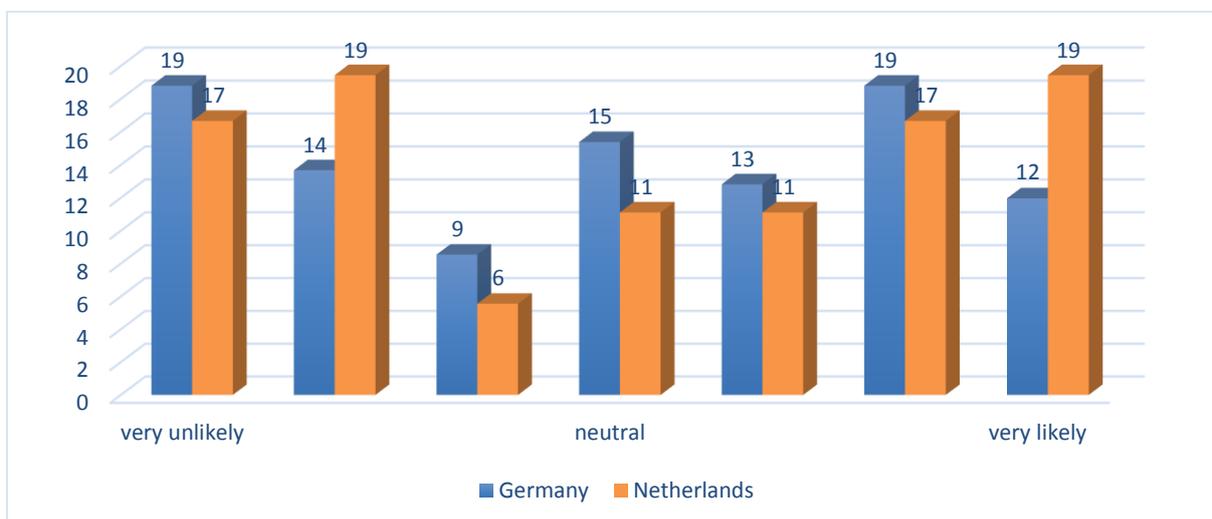

Figure 11: Perceived Usefulness: Answers to the following statement: I can access music quicker by using paid online music services.

The next topic is *perceived ease of use*. While the majority (62%) of the German students believes that ad-financed online music services are easy to use and only 18% do not agree with this

statement, the Dutch students have a different view. Only 33% of them agree on the statement about ease of use, while 31% are neutral on the topic and 36% reject it.
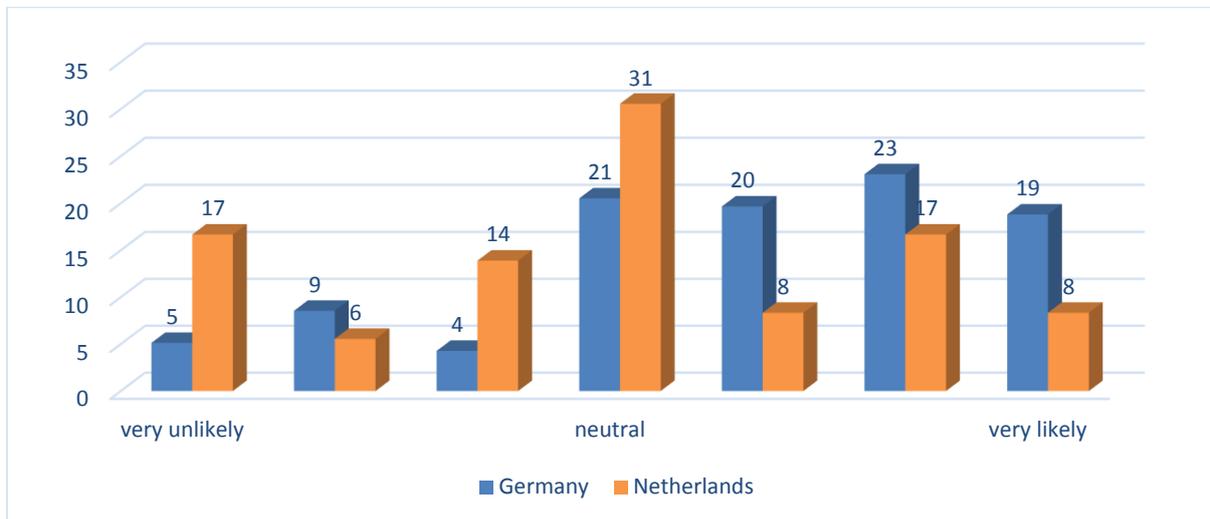

Figure 12: Shows the share of people, who agree that ad-financed online music services are easy to use.

The German students consider the quality of paid online music services similar as that of the ad-financed online music services. But the total number of supporters is smaller compared to the ad-financed version, and the number of rejecters is larger. While only 5% believe that ad-financed online music services are not easy to use, the percentage is 9% on paid services. The opposite is true for the group of Dutch students. The share of Dutch students believing in a more easy-to-use paid service compared to the previous question is larger, although though it still does not reach the same high levels as in Germany. But the total number of Dutch students rejecting the statement is smaller compared to Germany.
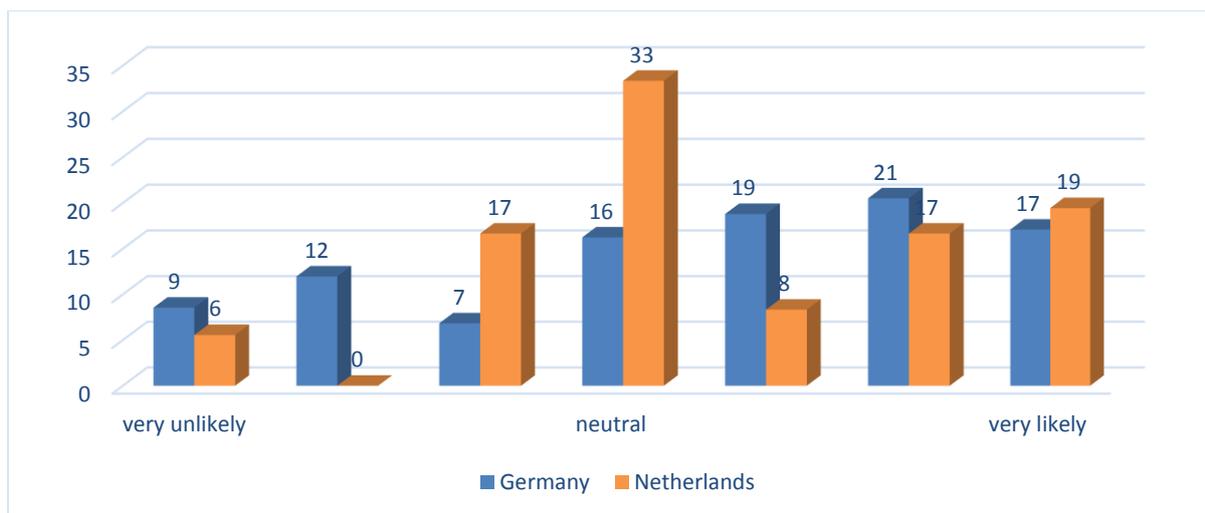
Figure 13: Illustrates the share of students, who agree that paid online music services are easy to use.

In Germany 49% agree that online music services are fitting into their music habits. This figure is topped slightly by the Dutch students with 56%, which can be seen in Figure 14. But it should be noted that the amount of people in the Netherlands who clicked "very likely" is 25%, and thus much higher than the 15% in Germany. The amount of students rejecting the statement is a third in both countries.
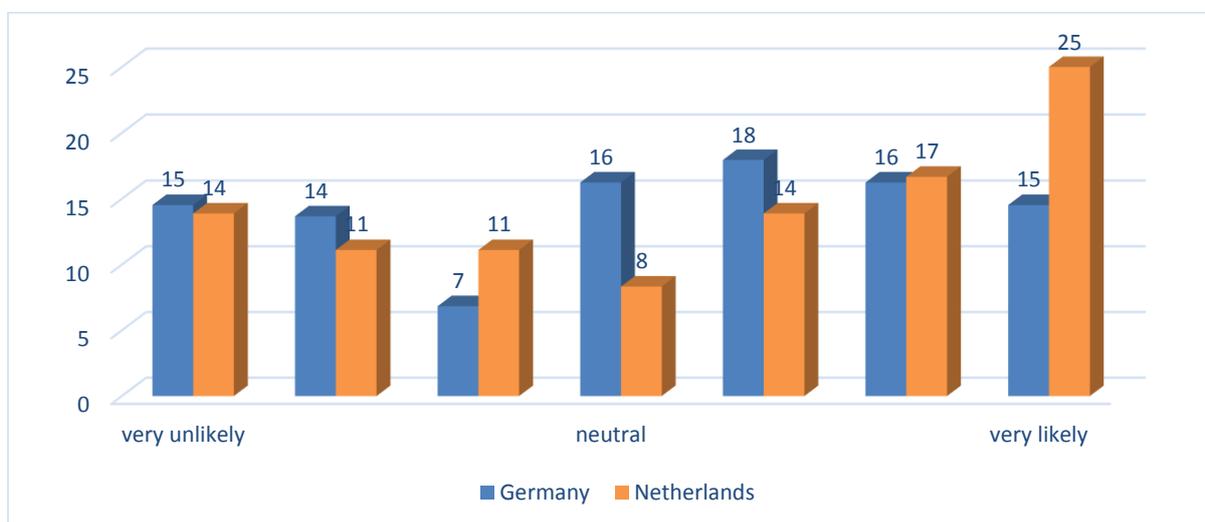

Figure 14: Share of students from each country supporting the statement "online music services are fitting into my listening habits".

The complexity is not seen as a problem in Germany or the Netherlands. In both countries the numbers of supporters of the statement "online music services are too complex" are very low. In case of the Dutch students, the two options with the highest support for too high complexity were

not chosen once, in case of the German students only the highest option was not chosen as it is illustrated in Figure 15. The majority of students rejected the thesis (81% Germany, 84% in the Netherlands).
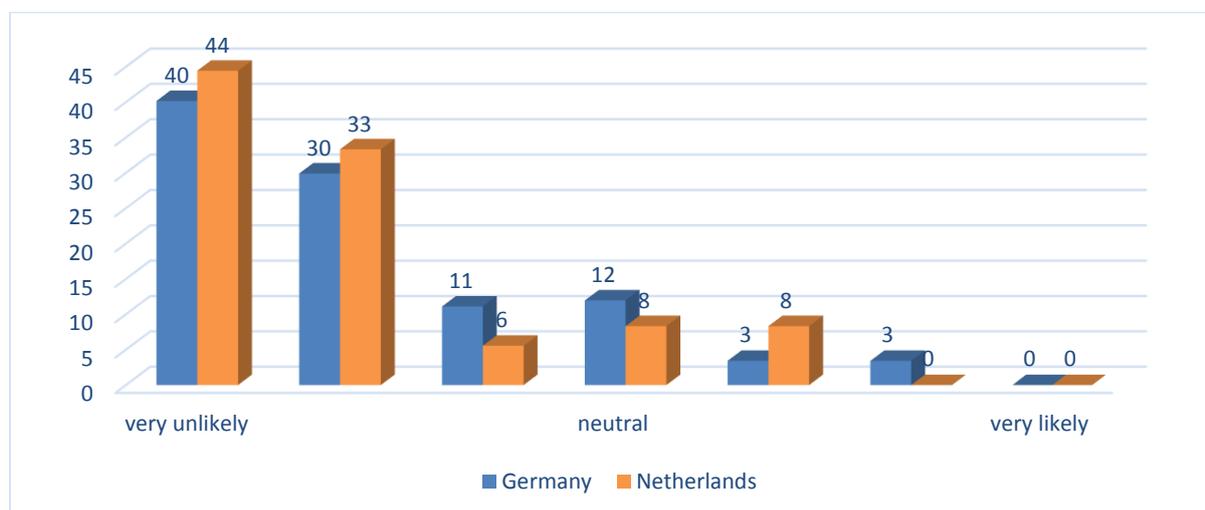

Figure 15: Share of students which agree to the statement that online music services are to complex.

6.4 Perception of future usage of music services

Question 19 asks for the usage of paid online music services within the forthcoming 12 months. More than half of the participants decided that it would be very unlikely that they would pay for an online service. Also the numbers of people who would pay for an online music service are very similar. But there is one difference; While there Dutch students answer "very likely" only, the German students are distributed over the two top answers evenly and are not as convinced as their Dutch neighbors.

The following Question 20 asks for the usage of ad-financed music services in the future. While the number of students in Germany who are very likely to use ad-financed music services in the forthcoming 12 months is more than doubled, the number of Dutch students to adopt ad-financed music services remains the same. But in general there are more people willing to adopt online music services in the future, if it is a free service, compared to the previous question about paid services.

Question 21 asks whether pirated music is going to be used. While slightly more people in Germany plan to use pirated music than legally acquired music, the majority of Dutch students prefers pirated music in the next 12 months with over 86%, as it can be seen in Figure 16. Only 11% of the Dutch group plan not to use music from illegal sources, compared to 47% in Germany. 27% of the German group state that it is very unlikely for them to use pirated music and only 8% agree on this in the Netherlands.
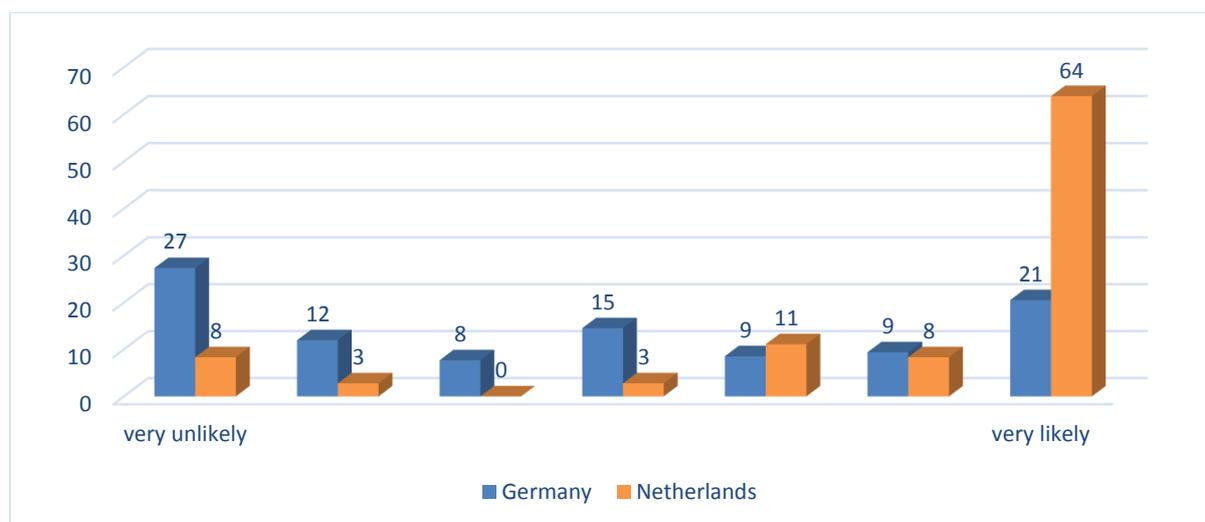

Figure 16: Share of students which are going to use pirated music within the next 12 months.

The next four questions ask about preferred business models. The Dutch students do not like the idea of pay-per-use music services at all; only 5% think positively about it. In Germany this idea is also not very popular, but there are in general more people with a positive attitude, even though only 2% out of 18% positive answers clicked on "very likely". The most frequently demanded service offers for the German students are clearly stores which offer MP3s — over 48% of the German students support this idea. In contrast to this only 17% of the Dutch students would prefer more offers in this area, and the number of students who clicked on "very unlikely" was as high as on pay-per-use music services. The idea of music flat rates, paid or ad-financed, are similar popular within the group of Dutch students, while the German students clearly prefer more ad-financed music flat rates — 47% positive count for ad-financed and 24% for paid music flat rates.

It is also worth mentioning that the amount of supporters for ad-financed music flat rates is two times higher than in the Netherlands, but significantly lower for paid music flat rates.

To summarize, the Dutch students dislike the idea of more pay-per-use music services as well as more stores to buy MP3s, while liking the idea of more music flat rate offers. The German students prefer the idea of MP3 stores and ad-financed music flat rates.

The answers to Question 23 confirm that within the next 12 months the German students are willing to pay more for their music than Dutch students. The German student is willing to pay 26 € on average per month, while the Dutch student is willing to pay merely less than half of it, namely 11 €. This discrepancy between the willingness to pay is even higher than the results from question 9 (cf. Sec. 6.1). This means that the current difference in spending for music is lower than the planned difference in the forthcoming twelve months.

The last question asks which services or features the students consider missing; the answer is expected as an arbitrary text. The grouped answers can be found in chapter 10A.4 within the Appendix. The most frequently mentioned missing feature within the German group is "easy mobile sharing", which is mentioned four times in total. Another often mentioned topic is the blocking of music by GEMA, which even seemed to provoke anger in one case. Different views are found with regard to pricing. On one hand lower prices are demanded, on the other hand a fair distribution of the money is requested. Some participants explicitly mentioned that there should be a fair share of the money for the artists. Other features desired by German students are standard functions like shuffle and looping songs.

Two features are mentioned twice: larger song libraries and the option to buy songs after they have been listened to. This latter feature is also been mentioned by Dutch students. This is the only overlapping thought between both groups. Within the group of Dutch students no suggestion

has been mentioned more than once and even though there were fewer Dutch students compared to German students, the answers in the open fields were fewer and shorter.

7 Discussion

Within the next two sections, the views of German and Dutch students are analyzed within the scope of the integrated TAM/IDM-Model from Section 4.3.

7.1 Differences between both countries

To elaborate the differences in the adoption of online music services between German and Dutch students, three research sub-questions have been defined in Section 2. Those subquestions are now answered in detail.

The first sub-question is "What is the actual state of digital music services adoption in Germany and the Netherlands?". Over 75% of the listening time of the German students is taken up by offline media, compared to merely 57% in the Netherlands. This is a first indication that there is a fundamental difference in listening habits and especially in the adoption of Internet services for music listening.

Especially the area of paid internet streaming has a lower adoption rate of 6.3% in Germany (Netherlands 19.8%). The comparison of listening hours reveals that the total number of listening hours per media source is very similar for physical media, but the Dutch students are listening to music 10 hours per week more than to their neighbors. A large portion of those extra hours is given to free and paid internet streaming. This already suggests that the adoption of online music services is higher in the Netherlands, but there are more data which can be analyzed.

Online music services are also available on mobile devices like smartphones or tablets – the listening hours on those devices are also significantly more in the Netherlands, where these

devices are the second most important music-playing devices for music in the Netherlands, while being only on the fourth place in Germany. This is another indication that online music services are currently not playing a huge role in Germany.

The sources of the offline libraries of music files in both countries are very different. The German students obviously avoid illegal sources, fearing to get caught and to have to pay high fines. The majority copies music from friends – which is not necessarily less illegal, but much harder to prosecute. The exchange of music files via a USB-stick for example cannot be prosecuted without observation, whereas the whole Internet traffic can be automatically monitored. But there is also a very high share of German students which claim to buy the majority of their music (45%). In Germany the least popular method to acquire music are illegal sources. The opposite is the case in the Netherlands: the students do not fear harsh fees and prosecution, and therefore their main source for music files are illegal ones. Only 14% claim to use an online store to buy their MP3 files. The report of the IFPI (2013) suggests that 32% of all Internet users are using *unlicensed sources regularly* to listen to music. Within this study the German students are slightly below this percentage (26%), while the number of Dutch students exceeds the percentage by a large amount (81%).

The high share of illegal sources for music files can also be seen in the average money spent for music per month – 9.71 € in Germany compared to 6.28 € in the Netherlands. But the money in the Netherlands is spent for physical media as well as streaming services, whereas in Germany the share of money for streaming services is negligible.

Even though many songs are blocked in Germany on YouTube, over 95% are using YouTube as source for music in Germany, even though some users complained about blocked songs within the open question of the survey. In the Netherlands 100% of all students are using YouTube to listen to music. Besides the regional differences of music services, there is a evident trend in the

usage of those services: German users are using online stores as often as streaming services, while the Dutch have very high usage figures on streaming services and nearly no users for MP3 stores like iTunes.

The percentage of German students using online music services (excluding YouTube) is 60%, compared to 81% in the Netherlands. Thus, the answer to the first sub-question is that the adoption rate of online music services is significantly lower in Germany. The students in Germany still rely on the old distribution models of buying single files rather than using music as a service. Evidently the draconic laws helped to preserve the old business models and slowed down the success of new Internet-based distribution models, whereas in the Netherlands the high rate of piracy lowered the revenues of physical media. But it also boosted the growth rate of revenues of music streaming services which is currently the highest in Europe (IFPI, 2013).

The facts that the adoption process has not been finished, yet, and that not everyone is using online music services, point to the second subquestion: "How satisfied are customers with current music services?". This question can be answered with help of the questions related to the integrated TAM/IDM model.

In general the majority of German students believes that there is an advantage in online music services. The Dutch users on the other hand are more cautious with their judgment. There are fewer Dutch students supporting the two statements that online music has a better music collection and faster access to music compared to the German group. Thus the *perceived usefulness* of online music services for Dutch students seems to be lower. There is one additional interesting fact which can be found in the data. While paid online music services are generally seen in a better light than ad-financed services in the Netherlands, more German students do believe in slower access if the service is a paid one. A potential explanation is that the Dutch students which have much more experience with online music streaming services know that paid

services mean less advertisement and thus the access to music is faster. On the other hand German students, among whom have nearly no users of paid online music services do see the payment process as an obstacle.

The trend of an optimistic attitude of German students towards online music services continues with *perceived ease-of-use*. The majority believes that those services – regardless of being ad-financed or paid – are easy to use. And similar to the question about speed of access, the number of students who doubt this increases slightly in case of paid services. The image of the *ease-of-use* of online music services in the Netherlands is different. Only one third believes that ad-financed online music services are easy to use. The advertisement seems to increase the difficulty by blocking elements or placing distracting elements within the service, while only 23% believe that paid online music services are not easy to use.

Similar to *perceived usefulness*, the *perceived ease-of-use* is seen much more positive in Germany. But also the trend of a more cautious approach to paid services can be seen again.

Compatibility is also seen in a positive light. Most Dutch and German students do not see any major problems to integrate online music services in their lifes. *Complexity* of online music services is not seen as any obstacle to adopt music, too; the vast majority in both countries does not see those services as complex.

Based on the answers in the survey in both countries, one can clearly make out a positive influence of the elements of the persuasion-phase (cf. Sec. 4.3) onto the decision to adopt online music services. This positive influence can also be seen in the increasing figures of online music usage in the yearly reports of IFPI (2011, 2012, 2013). Nevertheless there are slight differences between students in both countries. There are unidentified prejudices in Germany against paid services. They are seen as less attractive in terms of *perceived usefulness* and *perceived ease-of-*

use, which can already be seen in the current usage figures – there are almost no German students using them.

The last subquestion sheds some light on the decision of students on online music services: "How will music services develop in the future?". While there are currently huge differences in the adoption rates of online music services, those differences will diminish in the future, if the students predicted their future usage correctly. 31% of the students in both countries selected within the survey the options that they are likely using paid online music services within the next 12 months. Even though there were fewer German students seeing the advantages in *usefulness* and *ease-of-use,* the group of supporters was still slightly larger than in the Netherlands. Therefore it is no surprise that the German group of paid online music service users will catch up.

In terms of ad-financed online music, German students plan to surpass their Dutch neighbors. This development also is in agreement with the previously gathered data about their current perception.

While the Dutch students already integrated online music from unlicensed and licensed sources into their music habits, the German students are going to catch up in terms of licensed online music services. But the lenient laws on unlicensed access to music is demanding its tribute. Over 80% of the Dutch students claim to use pirated music within the next 12 months, whereas the percentage of German students is merely 38%. This could also explain the lower figures in *perceived usefulness* and *ease-of-use:* online music services have to compete with unlicensed music.

Even though online music services are popular in Germany, the answers of the German students suggest that the traditional business model – buying songs or albums – will survive the next year,

while there is nearly no support of this model in the Dutch group. While typical music stores (online and offline) are competing in Germany with new online distribution models, unlicensed music is the main competitor in the Netherlands. 47% of the Dutch students believe that music is a free good – 30% clicked on "very likely", whereas merely 30% of the German students supported this statement and merely 15% clicked on "very likely".

The second last question asks how much the students expect to spend on music in the future. In both groups the answers indicate significantly higher expenditures than what they currently spend. But with over 26 € per month the willingness to spend money for music is significantly higher in Germany compared to 11 € in the Netherlands.

7.2   Comparison with recent literature

The majority of scientific papers in this field has analyzed the influence of "unlicensed music" on the music industry. Directly after the astonishing success of peer-to-peer networks, which enabled users to share their music files for free, the majority of scientific papers agreed that piracy has a negative influence on music revenues (Blackburn, 2004; Liebowitz, 2008; La Belle, 2006). But within the past years this view music changed and even sees small positive effects (Aiugar & Martens, 2013).

A recent study by Aguiar and Martens (2012) suggests that more clicks on unlicensed music-websites or music-streaming websites do have a small, but positive effect on online music stores. Aguiar and Martens suggest that music from unlicensed download websites would not have been bought otherwise in most cases. Students in the Netherlands and Germany are willing to pay more money for music in the future, thus this study may support this statement. Even though the situation of the music market in both countries is different, revenues from digital music are rising in both countries (IFPI, 2013).

Aguiar and Martens (2012) also identified differences in music listening habits between inhabitants of different EU countries, but were not able to give identify the reasons. Our study offers a possible explanation for the differences between countries: The fear of German students of legal consequences has obviously an impact on their music habits.

A study by DangNguyen, Dejean and Moreau (2012) analyzed the influence of online music services on the traditional music stores. They found that streaming music has no negative impact on buying single songs and suggest that both business models might co-exist. This result agrees with the opinion of German students of our study. Even though the number of users of online music services will increase, many users still plan to buy single music files in the future. For the Dutch students this is much harder to tell, due to the large amount of unlicensed music.

8   Limitations

To a certain degree the results have to be interpreted with caution, because from the survey, with its limited space, some side issues have to be left out.

Some of the questions asked the students about "illegal music". This term has not been analyzed further, because it was not part of the research question, and can be understood in different ways. An unlicensed copy from a friend, whose source of the music is not known, may be illegal even though there are no known cases of prosecution. The perceived legality of music sources may not conform to the current laws. An indication of this problematic perception of music can be found within this survey, where some people claimed that music is a free good. Evidently sharing unlicensed copies is not seen as a criminal act by some people – even though it is one. In principle, the survey should have contained a definition of the term "illegal music". But this would have been impractical, and merely have kept people from answering.

The number of participants of the survey is large enough to reveal trends, but not sufficient for an in-depth statistical analysis. It would be beneficial to conduct the study at more universities. This would also eliminate a possible bias caused by local peculiarities, which cannot be ruled out for this survey.

Another potential bias of the study is the large excess of male students within the Dutch sample. The influence of the gender could not be analyzed due to the lack of data. There may be differences in adoption rates which can be related to the gender of the participants.

9   Conclusion

The different legislations in the Netherlands and Germany appear to have a great impact on current usage of music as well as on the intention of their citizens to use music in the future.

- The restrictive German laws prohibit P2P filesharing, which has a strong negative effect on pirated music, but has also slowed down the adoption of legal online music services.

- Lenient laws in the Netherlands concerning music piracy lead to higher adoption rates of free online music services.

- The willingness of users to pay for music is significantly higher in Germany, which goes hand in hand with increased local store or MP3 purchases rather than paid online music services.

- Most German students intend to adopt online music services in the future.

- Dutch students are happy with their current mix of free online music services and pirated music.

The Dutch legislation is not aggressively prosecuting file sharing, and this appears to have an impact on the willingness to pay for music. From a business perspective a large number of potential customers is not willing to adopt anything which costs money, and regards music as a

free good. On the other side ad-financed online music services which are free of any charges are already very well spread.

The German development and adoption of online music have been slowed down by the laws compared to the Netherlands. The goal of the legislation was to protect the music industry at all costs. The result is a higher willingness of the music consumers to pay for music, but at the same time a lower adoption. But at least the behavioral intention of most German students indicates that the adoption has not failed, but is going to catch up within the next years.

The music markets are different in both countries and will develop in different directions. Therefore companies must focus on the particular unique market situations to develop the right product for the right market. No system seems to be superior or better in any way, both systems will embrace online music services sooner or later, but the extent of the business and the predominant business model of the music industry may be different.

10 Outlook

To improve the quality of the results and get a deeper understanding of the processes and development of the adoption of new music services, a longitudinal study would be a very desirable. This would help to understand the migration of listeners to newer services and to identify upcoming trends. The adoption of new devices (e.g. CD) or services (Internet streaming) is a process which is rapidly evolving with a lot of changes over the last years. The influence of shorter product life cycles has also affected out to the music industry. Thus it is even more important to conduct a longitudinal study.

To further strengthen the data it would be recommendable to gather data from more age groups. This could also illustrate the current rate of adoption and how it will develop in the future; The youth of today is the working force of tomorrow. These data might help the music industry to

develop the right products at the right time. They could also help the music industry to develop their own approach to new technologies rather than delaying the success of a technology by lawsuits again (Lam & Tan, 2001).

Another suggestion is to conduct the study in more countries. This might shed some light on the influence of different legislations on the adoption of new services as well onto the revenues of the music industry. Duchêne and Waelbroeck (2004) found that too strict laws can have a negative impact on social welfare; therefore it is important for regional governments to find the right balance between the protection of producers, the promotion of innovations, and the welfare of its citizens.

A   Appendix

A.1   Private copying levies in Germany

CD writer	8.70 €
DVD writer	10.68 €
DVD R/RW	0.17 €
MP3 player	2.56 €
Tape recorder	1.28 €
Video recorder	9.21 €
Mobile phone without touch screen	12.00 €
Mobile phone with <8 GB storage	16.00 €
Mobile phone with >8 GB storage	36.00 €
Sound storage medium	0.0614 €/h
Image storage medium	0.0870 €/h
Digital storage devices (e.g. USB stick) < 4 GB	0.91 €
Digital storage devices > 4 GB	1.95 €
Multimedia hard drive with recording ability	34.00 €
Multimedia hard drive without recording ability	19.00 €
Network hard drive < 1 TB	5.00 €
Network hard drive > 1 TB	17.00 €
External hard drive < 1 TB	7.00 €
External hard drive > 1 TB	9.00 €

Source:
https://www.gema.de/fileadmin/user_upload/Musiknutzer/Tarife/Tarife_sonstige/Tarif_Mobiltelefone_ab_2011.pdf

https://www.gema.de/fileadmin/user_upload/Musiknutzer/Tarife/Tarife_sonstige/Tarif_externe_CD-_und_DVD-Brenner_ab_2010.pdf
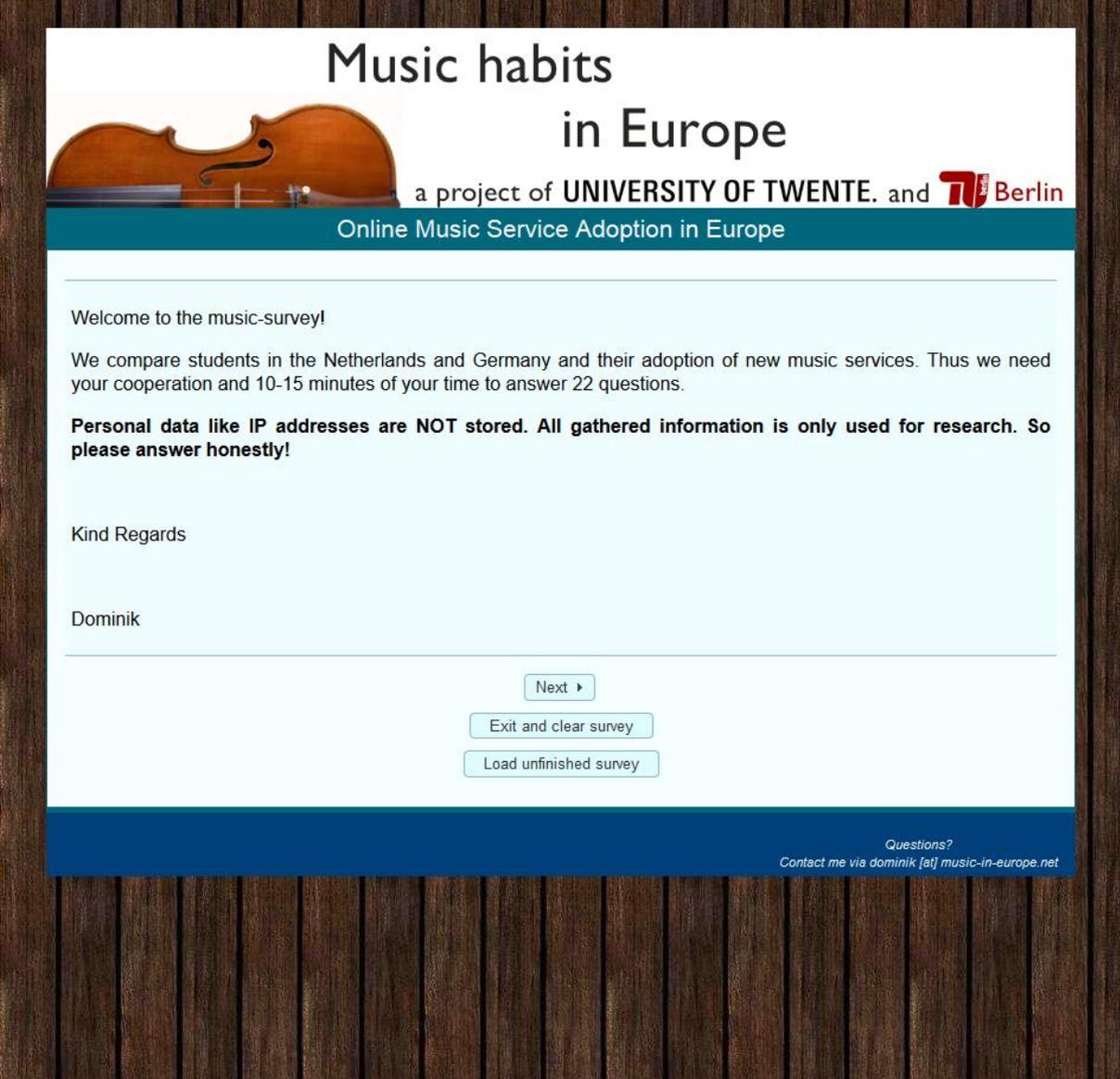
A.2   Private copying levies in the Netherlands

CD-r & DVD-r	0.03 €
External harddisk	1.00 €
Personal Computer / Laptop / Server	5.00 €
Tablet	2.50–5.00 €
Smartphone / Telefoon	2.50–5.00 €
Audio / Video player	1.00–2.00 €
Harddisk recorder / Settopbox	2.50–5.00 €

Source: http://www.thuiskopie.nl/nl/importeur-fabrikant-en-handelaar/tarieven

A.3 Screenshots of the online survey

A.3.1 Start web page with welcome text

A.3.2   First question page

A.3.3   Second question page

Music habits in Europe

a project of UNIVERSITY OF TWENTE. and TU Berlin

Online Music Service Adoption in Europe

0% ▭▭▭▭ 100%

How are you listening to music, today?

6. Specify per source the amount of hours you listen to music per week:

Only numbers may be entered in these fields

CD

Radio

Online Radio

MP3 / Music on my disk

MP3 / Music in Online File Locker (e.g. iTunes Match, Amazon Cloud Player)

Free Internet Streaming (e.g. Youtube, Grooveshark)

Paid Internet Streaming Subscription (e.g. Spotify Premium, Rdio)

7. Specify the amount of hours listening to music for each device listed (weekly):

Only numbers may be entered in these fields

Computer / Laptop

MP3-Player

Smartphone / Tablet

Radio / CD Player

TV

* 8. How did you obtain the majority of your MP3-files and Music CDs:
(no personal data is saved, so please answer honestly!)
Check any that apply

☐ Bought the songs via legal sources like iTunes, Amazon or offline store

☐ I copied these songs from a friend

☐ Ripped from Online Sources like Youtube or Online Radio Stations

☐ Ripped them from physical digital media like CD / DVD

☐ Downloaded them through the Internet from other non-legal sources

☐ Other:

9. How much money (in €) do you currently spend monthly for obtaining music?

Only numbers may be entered in these fields

buying CDs

buying MP3s online

subscribing and listening OnDemand Streaming Services

subscribing and listening online Radio

* 10. Which online-services are you using or did/do you have heard of?

	Using	Heard of	Never heard of it
Youtube	○	○	○
Amazon MP3	○	○	○
Spotify	○	○	○
Spotify Premium	○	○	○
Soundcloud	○	○	○
Grooveshark	○	○	○
Rdio	○	○	○
Simfy	○	○	○
iTunes for buying MP3	○	○	○
Last.fm	○	○	○
Jango	○	○	○
Deezer	○	○	○
Napster	○	○	○
Online Radio (3FM, eins live, Shoutcast Radio)	○	○	○
other:	○	○	○

◄ Previous | Next ►

Exit and clear survey

Resume later

A.3.4 Third question page

A.3.5 Forth question page

A.4   Answers to the open Question 24

The original answers can be found in the electronic database. The answers below have already been coded and thus answers of one person may have been split into several topics.

A.4.1   Grouped German answers

New services

- A borrowing service
- I like the idea of supporting musicians by paying for their music but I am a student and love music. I cannot buy songs seperately or spend 20 € per album that interests me. Sometimes I like a song and listen on youtube to other songs of the artist. I couldn't afford buying every song or the whole album.
- Integration into my own library. Spotify almost nails it, but their player blocks my hardware buttons for volume control etc.. There's still a lot of reasons to use a third party player that would integrate all sources seamlessly. This would most likely involve a protocol for licensing, control and metadata, similar to what RTSP is to RTP.

New features

- Better recommendations (what ITunes calls GENIUS). Better integration between music news (text) and download. Something like a music magazine with download opportunity would be nice.
- looping, randomizer
- faster download possibilities
- listening to online playlists from other users (aka Grooveshark)"
- better download possibilities
- It would be nice, to listen to the whole song before buying it.
- bigger song collection
- connection between devices offline
- putting together own lists assorted with lyrics and sheet music.
- bigger music collection (rare stuff is hard to find)
- Similarly, playlists between services (e.g. Youtube, Spotify and local libraries)
- Radio channels similar to how Last.fm does it, but with selectable ""moods""/genres.
- Global shuffle is incompatible with my music library, I have a very diverse taste
- Curated and edited playlists. I want essays that teach me about music, written by an author I know and trust. Lead me through Madlib, Onra and Sepalot, give me an introduction to Shostakovich, tell me how Bach relates to Jazz. Actually show me different interpretations of a couple Jazz standards, and tell me about the thoughts behind them.
- buy track listened to, search tracks based on mood

YouTube blocking

- In Germany is a institution, called GEMA, which tries to censure the internet by prohibiting a lot of youtube-videos. The GEMA is also responsible for the blocking of grooveshark.com (only avaible by using a proxy) Please GEMA, fuck off!
- Too many services are banned in Germany...
- Youtube not being useless for popular-ish music in Germany thanks to GEMA. Spotify offering a wider range of artists.

Mobile

- ad financed music service like Spotify for Smartphones
- easy mobile sharing
- easy saving of playlists online and connecting these with my mp 3player
- easy mobile sharing?
- easy mobile sharing?

Quality

- I feel that the online services do not offer the high quality I want to sit down, enjoy and listen to. As far as I know, there is no uncompressed audio source available for users with high-quality audio equipment.
- For casual use (during work/car driving) the (GEZ-payed) radio stations offer all I need."

Other

- Don't use music services because my friends rip me music and few songs that I am interested in are available as video on youtube etc
- Re Q11 + Q12: You're missing the point here. I listen to online stations of any kind when I don't /want/ to select songs myself. It's all about convenience.
- I am currently involved in wireless audio on the application layer (we're trying to replace cables and connect devices that have been sharing the same room already, to give people more control and make playback easier). Hit me up if you want to talk further.
- Amazon AutoRip is finally there, so there's nothing more to miss ;-) Vinyl at home and MP3 on the go.
- Time to investigate good services. Apart from that, I am more or less content with my music collection, so that I normally only buy CD's to extend the parts I feel are missing.
- You forgot VINYL!!! :)
- I do my own music, so most of time I listen to not-published music or to my own music to work on (it was not asked, about 3 hours per day). At youtube I prefer p.e. certain clips out of live-concerts or akkustik-sets, unplugged-sets that are not published via video, CD or MP3 to have an authentic impression of an artist and his way of interpreting differently his own songs.

Price

- 0,99 Euro is a good price per song. The artist should get the major part of these 0,99 Euro."

- A flatrate for about 5€ per month could be interesting but then without all the sucking ads if I am paying for it. I don't pay if I use youtube so that is okay"
- adequate price
- a Provider that offers Music for a reasonable Price without a contract period that is too Long and which can be easily quit. So far only extreme Prices or contract conditions exist so that it is easier and more reasonable not to pay for Music but to listen to ad-supported Music etc.
- Supporting artists without supporting monstrosities like RIAA and MPAA.

A.4.2 Grouped Dutch answers
Feature

- Filter function on Spotify
- Sponsored (digital) artist events (like video lessons on how to play tracks for musicians or contests).
- Download first, pay later if it's any good. I usually download an album via a torrent. If i still really like it after a month or so, i'll buy it on vinyl if available.
- Possibility to 'own' music and listen to it offline

Other

- I always use youtube (with auto-replay).

A.5 Survey Results

Because of their extensive sizes the survey data set and the survey website sources are made available as separate files.

A.6 SPSS Results

A.6.1 Germany

Case Processing Summary

		N	%
Cases	Valid	117	100.0
	Excluded[a]	0	.0
	Total	117	100.0

a. Listwise deletion based on all variables in the procedure.

Chapter A Appendix

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.836	.831	8

Inter-Item Correlation Matrix

	Ad-financed online music services have a better selection of	Paid online music services have a better selection of	I can access music quicker by using ad-financed online music services.	I can access music quicker by using paid online music services.	I would find ad-financed online music services easy to use.	I would find paid online music services easy to use.	Online music services integrate well into my music listening	Online music Services are too complex in their usage.
Ad-financed online music services have a better selection of	1.000	.792	.602	.487	.541	.378	.449	.145
Paid online music services have a better selection of	.792	1.000	.509	.572	.452	.404	.304	.055
I can access music quicker by using ad-financed online music services.	.602	.509	1.000	.527	.562	.273	.365	.123
I can access music quicker by using paid online music services.	.487	.572	.527	1.000	.304	.562	.214	.027
I would find ad-financed online music services easy to use.	.541	.452	.562	.304	1.000	.501	.390	.341
I would find paid online music services easy to use.	.378	.404	.273	.562	.501	1.000	.200	.286
Online music services integrate well into my music listening	.449	.304	.365	.214	.390	.200	1.000	.280
Online music Services are too complex in their usage.	.145	.055	.123	.027	.341	.286	.280	1.000

Inter-Item Covariance Matrix

	Ad-financed online music services have a better selection of songs, than my offline collection (e.g.	Paid online music services have a better selection of songs, than my offline collection (e.g.	I can access music quicker by using ad-financed online music services.	I can access music quicker by using paid online music services.	I would find ad-financed online music services easy to use.	I would find paid online music services easy to use.	Online music services integrate well into my music listening habits.	Online music Services are too complex in their usage.
Ad-financed online music services have a better selection of Paid online music	3.898	3.239	2.345	1.998	1.835	1.416	1.788	.387
Paid online music	3.239	4.288	2.077	2.460	1.609	1.587	1.268	.153
I can access music quicker by using ad-financed online music services	2.345	2.077	3.886	2.158	1.903	1.020	1.450	.327
I can access music quicker by using paid online music services	1.998	2.460	2.158	4.315	1.086	2.214	.898	.075
I would find ad-financed online music services easy to use	1.835	1.609	1.903	1.086	2.953	1.632	1.351	.791
I would find paid online music services easy to use. Online music services	1.416	1.587	1.020	2.214	1.632	3.595	.764	.733
Online music services integrate well into my music listening	1.788	1.268	1.450	.898	1.351	.764	4.068	.764
Online music Services are too complex in their usage.	.387	.153	.327	.075	.791	.733	.764	1.826

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Ad-financed online music services have a better selection of songs, than my offline collection (e.g. CD, MP3).	31.983	77.569	.748	.716	.792
Paid online music services have a better selection of songs, than my offline collection (e.g. CD, MP3).	31.761	78.408	.676	.681	.802
I can access music quicker by using ad-financed online music services.	32.342	81.037	.636	.554	.808
I can access music quicker by using paid online music services.	32.444	81.387	.581	.576	.815
I would find ad-financed online music services easy to use.	31.530	84.113	.648	.549	.808
I would find paid online music services easy to use.	31.838	85.154	.535	.513	.821
Online music services integrate well into my music listening habits.	32.222	86.847	.441	.275	.834
Online music Services are too complex in their usage.	30.573	99.195	.240	.205	.849

A.6.2 Netherlands

Case Processing Summary

		N	%
Cases	Valid	36	100.0
	Excluded[a]	0	.0
	Total	36	100.0

a. Listwise deletion based on all variables in the procedure.

Chapter A Appendix

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.830	.823	8

Inter-Item Correlation Matrix

	Ad-financed online music services have a better selection of songs. than my offline collection.	Paid online music services have a better selection of songs. than my offline collection.	I can access music quicker by using ad-financed online music services.	I can access music quicker by using paid online music services.	I would find ad-financed online music services easy to use.	I would find paid online music services easy to use.	Online music services integrate well into my music listening habits.	Online music Services are too complex in their usage.
Ad-financed online music services have a better selection of Paid online music	1.000	.643	.625	.461	.413	.433	.519	.135
services have a better selection of I can access music quicker	.643	1.000	.304	.676	.139	.697	.457	.139
by using ad-financed online music services I can access music quicker	.625	.304	1.000	.422	.635	.352	.453	-.007
by using paid online music services I would find ad-financed	.461	.676	.422	1.000	-.095	.848	.560	.111
online music services easy to use	.413	.139	.635	-.095	1.000	.046	.094	.035
I would find paid online music services easy to use. Online music services	.433	.697	.352	.848	.046	1.000	.545	.303
integrate well into my music listening	.519	.457	.453	.560	.094	.545	1.000	.353
Online music Services are too complex in their usage.	.135	.139	-.007	.111	.035	.303	.353	1.000

Inter-Item Covariance Matrix

	Ad-financed online music services have a better selection of songs. than my offline collection.	Paid online music services have a better selection of songs. than my offline collection.	I can access music quicker by using ad-financed online music services.	I can access music quicker by using paid online music services.	I would find ad-financed online music services easy to use.	I would find paid online music services easy to use.	Online music services integrate well into my music listening habits.	Online music Services are too complex in their usage.
Ad-financed online music services have a better selection of songs. than my offline collection.	3.342	2.333	2.274	1.883	1.402	1.324	2.072	.315
Paid online music services have a better selection of songs. than my offline collection.	2.333	3.943	1.200	3.000	.514	2.314	1.981	.352
I can access music quicker by using ad-financed online music services.	2.274	1.200	3.964	1.879	2.350	1.171	1.969	-.017
I can access music quicker by using paid online music services.	1.883	3.000	1.879	4.993	-.393	3.171	2.731	.317
I would find ad-financed online music services easy to use.	1.402	.514	2.350	-.393	3.450	.143	.383	.083
I would find paid online music services easy to use.	1.324	2.314	1.171	3.171	.143	2.800	1.990	.648
Online music services integrate well into my music listening habits.	2.072	1.981	1.969	2.731	.383	1.990	4.771	.985
Online music Services are too complex in their usage.	.315	.352	-.017	.317	.083	.648	.985	1.628

	Item-Total Statistics				
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Ad-financed online music services have a better selection of songs. than my offline collection (e.g. CD. MP3).	30.861	79.094	.714	.655	.790
Paid online music services have a better selection of songs. than my offline collection (e.g. CD. MP3).	30.556	78.311	.666	.701	.795
I can access music quicker by using ad-financed online music services.	31.472	80.028	.608	.761	.803
I can access music quicker by using paid online music services.	30.806	75.475	.648	.853	.797
I would find ad-financed online music services easy to use.	30.972	93.228	.250	.672	.848
I would find paid online music services easy to use.	30.222	81.321	.713	.807	.792
Online music services integrate well into my music listening habits.	30.417	76.650	.633	.505	.800
Online music Services are too complex in their usage.	28.917	98.650	.212	.288	.844

B   Bibliography

§97 Passage 1ff UrhG Anspruch auf Unterlassung und Schadensersatz - dejure.org. (n.d.). Retrieved March 24, 2013, from http://dejure.org/gesetze/UrhG/97.html

§106 Passage 1 UrhG. Unerlaubte Verwertung urheberrechtlich geschützter Werke. Retrieved March 24, 2013, from http://www.gesetze-im-internet.de/urhg/__106.html

§106 Passage 2 UrhG. Unerlaubte Verwertung urheberrechtlich geschützter Werke. Retrieved March 24, 2013, from http://www.gesetze-im-internet.de/urhg/__106.html

ABI Research (2013). Spotify to Hold 32% of 29-Mil. Music Streaming subscribers forecasted for end-2013. Retrieved September 10, 2013, from https://www.abiresearch.com/press/spotify-to-hold-32-of-29-mil-music-streaming-subsc

Adams, D. A., Nelson, R. R., Todd, P. A. (1992). Perceived usefulness, ease of use, and usage of information technology : A Replication. *MIS Quarterly*, *16*(2), 227–247.

Agarwal, R., & Prasad, J. (1998). A conceptual and operational definition of personal innovativeness in the domain of information technology. *Information Systems Research*, *9*(2), 204–215. doi:10.1287/isre.9.2.204

Aguiar, L., & Martens, B. (2013). Consumption on the Internet: Evidence from Clickstream data. *Joint Issue Centre*, (25851 EN). doi:10.2791/83798

Ajzen, I., Fishbein, M., & Heilbroner, R. L. (1980). *Understanding attitudes and predicting social behavior* (1st ed., p. 278). Upper-Saddle-River: Prentice Hall.

Bahr, M. (2012). AG Hamburg: 250,- EUR Schadensersatz für P2P-Upload eines Filmes - Kanzlei Dr. Bahr. Retrieved September 24, 2012, from http://www.dr-bahr.com/news/250-eur-schadensersatz-fuer-p2p-download-eines-filmes.html

Bakker, P. (2005). File-sharing—fight, ignore or compete. *Telematics and Informatics*, *22*(1-2), 41–55. doi:10.1016/j.tele.2004.06.004

Blackburn, D. (2004). On-line piracy and recorded music sales. *Working Paper Series - Harvard*, 1–60.

Bundesamt für Statistik (2012). Statistisches Bundesamt Bildung und Kultur. *Schnellmeldergebnisse*, *49*(November 2012).

Büscher, W., Bornkamm, J., Schaffert, W., Kirchhoff, W., & Löffler, C. (2013). BGH, Urteil vom 15. August 2013 - Az. I ZR 80/12 (File-Hosting-Dienst). Retrieved from http://openjur.de/u/643330.html

Chen, L., Gillenson, M. L., & Sherrell, D. L. (2001). Enticing online consumers: an extended technology acceptance perspective. *Information & Management*, *39*(8), 705–719. doi:10.1016/S0378-7206(01)00127-6

Davis, F. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS quarterly*. Retrieved from http://www.jstor.org/stable/10.2307/249008

Dörr, J., Wagner, T., Benlian, A., & Hess, T. (2013). Music as a Service as an Alternative to Music Piracy? *Business & Information Systems Engineering*, *5*(6), 383–396. doi:10.1007/s12599-013-0294-0

EFF. (2003). Translation of the complaint - against KaZaa in the Netherlands. Retrieved September 22, 2013, from http://w2.eff.org/IP/P2P/BUMA_v_Kazaa/20011112_kazaa_complaint.html

Fetscherin, M. (2005). Movie piracy on peer-to-peer networks—the case of KaZaA. *Telematics and Informatics*, *22*(1-2), 57–70. doi:10.1016/j.tele.2004.06.005

Geng, X., & Lee, Y. (2013). Competing with Piracy : A Multichannel Sequential Search Approach, *30*(2), 159–184. doi:10.2753/MIS0742-1222300206

Ginsberg, J., Mohebbi, M. H., Patel, R. S., Brammer, L., Smolinski, M. S., & Brilliant, L. (2008). Detecting influenza epidemics using search engine query data. *Nature*, (457). doi:10.1038/nature07634

Google. (2013). How is the data scaled? - Trends Help. Retrieved September 10, 2013, from https://support.Google.com/trends/answer/87282?hl=en&ref_topic=13975

Guerges, E. (2011). GEMA: YouTube. Retrieved September 14, 2012, from https://www.gema.de/nl/122011/mitgliedernews/youtube.html

Haak, K. (2010). Urheberrecht: Kistenweise Abmahnungen für illegale Downloads - Nachrichten Wirtschaft - Webwelt & Technik - DIE WELT. *welt.de*. Retrieved September 24, 2012, from http://www.welt.de/wirtschaft/webwelt/article6607065/Kistenweise-Abmahnungen-fuer-illegale-Downloads.html

Harzing, A.W. (2007) Publish or Perish, available from http://www.harzing.com/pop.htm

Härting, N. (2005). *Internetrecht* (Vol. 5901, pp. 1–559). Retrieved from http://tocs.ub.uni-mainz.de/pdfs/126525870.pdf

Helberger, N., & Hugenholtz, P. (2012). No place like home for making a copy: Private copying in European copyright law and consumer law. *Berkeley Technology Law Journal*. Retrieved from http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2010007

IFPI, (2011). Digital Music Report 2012, International Federation of the Phonographic Industry, London.

IFPI, (2012). Digital Music Report 2012, International Federation of the Phonographic Industry, London.

IFPI, (2013). Digital Music Report 2012, International Federation of the Phonographic Industry, London.

Jeong, G., & Lee, J. (2010). Estimating consumer preferences for online music services. *Applied Economics*, *42*(30), 3885–3893. doi:10.1080/00036840802360153

Jeong, B.-K., Zhao, K., & Khouja, M. (2012). *Consumer Piracy Risk: Conceptualization and Measurement in Music Sharing*. *International Journal of Electronic Commerce* (Vol. 16, pp. 89–118). doi:10.2753/JEC1086-4415160304

Koster, S. (2007). User Acceptance of I-Music services. *Twenty Student Conference on IT, Enschede*. Retrieved from http://referaat.cs.utwente.nl/TSConIT/download.php?id=253

Kremp, M. (2012). Gesetzentwurf: Maximal 100 Euro für Erstabmahnung im Internet. *spiegel.de*. Retrieved September 24, 2012, from http://www.spiegel.de/netzwelt/web/gesetzentwurf-maximal-100-euro-fuer-erstabmahnung-im-internet-a-828844.html

Kremp, M. (2012a). Landgericht Hamburg: Urteil im Prozess Gema gegen YouTube. *spiegel.de*. Retrieved September 24, 2012, from http://www.spiegel.de/netzwelt/web/landgericht-hamburg-urteil-im-prozess-gema-gegen-youtube-a-828774.html

La Belle, M. M. (206AD). The "Rootkit Debacle": The Latest Chapter in the Story of the Recording Industry and the War on Musical Piracy. *Denver University Law Review*, *84*(1), 79–134.

Lam, C., & Tan, B. (2001). The internet is changing the music industry. *Communications of the ACM*, *44*(8). Retrieved from http://dl.acm.org/citation.cfm?id=381658

Leonhard, G. (2008). *Music 2.0*. (D. Battino, Ed.). Hämeenlinna, Finland: Hämeen Offset-Tiimi Oy. Retrieved from http://scholar.google.com/scholar?hl=en&btnG=Search&q=intitle:Music+2.0#2

Liebowitz, S. (2004). Will MP3 downloads annihilate the record industry? The evidence so far. Retrieved from http://www.emeraldinsight.com/journals.htm?articleid=1783166&show=abstract

Liebowitz, S. J. (2008). Research note: Testing file sharing's impact on music album sales in cities. *Management Science*, *54*(4), 852–859. doi:10.1287/mnsc.1070.0833

Liska, A. E. (1984). Critical Examination of the Causal Structure Model Attitude-Behavior Fishbein / Ajzen. *Social Psychology Quarterly*, *47*(1), 61–74.

Meyer, C. (2000). Kreuzverhörtest. *3*, 92–95. Retrieved from http://www.heise.de/ct/artikel/Kreuzverhoertest-287592.html

Minke, M. (2013). LimeSurvey - the free and open source survey software tools! Retrieved from http://www.limesurvey.org

Moore, G. C., & Benbasat, I. (1991). Development of an instrument to measure the perceptions of adopting an information technology innovation. *Information systems research*, *2*(3), 192–221. Retrieved from http://isr.journal.informs.org/content/2/3/192.short

Moreau, F. (2013). The Disruptive Nature of Digitization: The Case of the Recorded Music Industry. *International Journal of Arts Management*, *15*(2), 18–31. Retrieved from http://search. ebscohost.com/login.aspx?direct=true&profile=ehost&scope=site&authtype=crawler&jrnl =14808986&AN=88432323&h=MNGNOHGq3ZsPW2iXW%2F9lMm6oAfjehtZfAohgqzz81rR UfQG1s7Gx7rSYAPN1%2BO%2Bp39VyaNoEHYJEXz5d%2F1vpeA%3D%3D&crl=c

Nguyen, G. D., Dejean, S., & Moreau, F. (2012). Are streaming and other music consumption modes substitutes or complements? *Working Paper Series*, 1–22. Retrieved from http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2025071

Peek, J. B. H., Bergmans, J. W. M., van Haaren, J. A. M. M., & Toolenaar, F. J. C. M. (2009). *Origins and successors of the compact disc* (Philips Re., pp. 183–188). Houten: Springer Science+Business Media B.V.

Peitz, M., & Waelbroeck, P. (2005). An economist's guide to digital music. *CESifo Economic Studies*, *51*, 359–428. Retrieved from http://cesifo.oxfordjournals.org/content/51/2-3/359.short

Plouffe, C., Hulland, J. S., & Vandenbosch, M. (2001). Research report: richness versus parsimony in modeling technology adoption decisions—understanding merchant adoption of a smart card-based payment system. *Information Systems Research*, *12*(2), 208–222. Retrieved from http://isr.journal.informs.org/content/12/2/208.short

Preis, T., Moat, H. S., Stanley, H. E., & Bishop, S. R. (2012). Quantifying the advantage of looking forward. *Scientific reports*, *2*, 350. doi:10.1038/srep00350

pwc. (2013). Music segment insights, PricewaterhouseCoopers International Limited. Retrieved September 17, 2013, from http://www.pwc.com/gx/en/global-entertainment-media-outlook/segment-insights/music.jhtml

Rechtsbank `s-Gravenhage (2012). *Vonnis 413085 / KG ZA 12-156*. Den Haag.

Richters, E. (2012). Mobility in higher education in the Netherlands Overview 2012. *Nuffic*.

Rogers, E. (1983). *Diffusion of innovations* (Third Edit.). New York: The free press.

Rundfunk, B. (2012, April 23). GEMA gegen YouTube: Zurück an den Verhandlungstisch | Kultur | Themen | BR.de. *23.04.2012*. Retrieved September 27, 2012, from http://www.br.de/themen/kultur/inhalt/gesellschaft/gema-youtube-urteil102.html

Saunders, M., Lewis, P., & Thornhill, A. (2009). *Research methods for business students* (Fifth Edition). Essex: Pearson Education Limited.

Sawall, A. (2012). Rapidshare: Gericht macht One-Click-Hoster haftbar, aber ... - Golem.de. *golem.de*. Retrieved September 24, 2012, from http://www.golem.de/news/rapidshare-gericht-macht-one-click-hoster-haftbar-aber-1203-90576.html

Suki, N. (2011). Gender, Age, and Education: Do They Really Moderate Online Music Acceptance? *Communications of the IBIMA*, (Article ID 959384), 1–18. doi:10.5171/2011.959384

Teeven, F. (2013). *Uitvoering motie-Verhoeven / Oosenbrug over afzien van een downloadverbod*. Den Haag.

Thomson Reuters (2013) Web of Knowledge, available from http://apps.webofknowledge.com/

Tornatzky, L., & Klein, K. (1982). Innovation characteristics and innovation adoption-implementation: A meta-analysis of findings. *IEEE Transactions on Engineering Management*, *EM-29*(No. 1), 28–43. Retrieved from http://www.management.wharton.upenn.edu/klein/documents/Tornatzky_Klein_1982.pdf

Duchêne, A., & Waelbroeck, P. (2003). Legal and technological battle in music industry, 1–21. Retrieved from http://scholar.google.com/scholar?hl=en&btnG=Search&q=intitle:Legal+and+Technological+Battle+in+Music+Industry:#1

Wang, Y., Meister, D., & Wang, Y. (2011). Reexamining relative advantage and perceived usefulness. *International Journal of Information and Communication Technology Education*, *7*(1), 46–59. doi:10.4018/jicte.2011010105

WIPO. (2013). *International survey on private copying law & practice 2012,* World Intellectual Property Organization. Geneva, Switzerland.

Wikipedia. (2013). List of online music databases. Retrieved September 20, 2013, from http://en.wikipedia.org/w/index.php?title=List_of_online_music_databases&oldid=571615117

Wu, J.-H., & Wang, S.-C. (2005). What drives mobile commerce? *Information & Management*, *42*(5), 719–729. doi:10.1016/j.im.2004.07.001

C   Statutory Declaration

I declare that I have authored this thesis independently, that I have not used other than the declared sources / resources and that I have explicitly marked all material which has been quoted either literally or by content from the used sources.

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