Economic validation of a media levy for digital music

Case study in the Dutch download market

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"Music is de food van de people"

Ronald Schepman[1] (Razende Ronald), 22:30, May 15, 2007, Buiksloterwegveer, Amsterdam

[1] http://members.chello.nl/r.schepman/, visited May 2007

Abstract

Digital music allows consumers to experience music in large quantities, anywhere, anytime, based on personal preferences, and shared with friends. In contrast, music performers and writers, as well as the companies that produce, publish, and distribute music, are worried it affects their ability to charge consumers to recover their costs. Their main argument is the large scale file sharing where music is obtained without a compensation paid to the above music actors.

A media levy solution is suggested in literature to overcome this problem. In this solution all broadband subscribers pay a small media levy surcharged to their subscription fee which is divided among the music actors. In return, consumers are allowed to share and download music without additional costs. This solution requires a shift from the current Intellectual Property Rights (IPR) driven approach into a more community driven approach.

Because of its radical nature, this strategy should be a superior alternative in economic terms compared to the current IPR-driven pay-per-download strategy. The goal of this research is to economically compare the media levy strategy with the pay-per-download strategy. Both strategies are evaluated on the amount of remuneration generated for the music actors. The media levy strategy is a better alternative if it results into higher total profits for all music actors and no decrease in profits of a specific music actor.

Our first result is the creation of an economic validation method which can be used to compare the profitability of music actors within eBusiness webs for digital music. An eBusiness web consists of actors, their value activities & revenue model, and the value objects exchanged between those actors. This method is build upon the e3value methodology, which can be used to explore, model, and economically evaluate ecommerce ideas.

The validation method was used to compare the media levy strategy as alternative to the pay-per-download strategy for the Dutch download market for singles and albums. We estimated the economic profitability of the music actors in the current pay-per-download implementation and predicted how the media levy solution would behave under the same estimates and conditions.

Result of this comparison was that the media levy solution resulted into a larger total profit to the music actors, but into a loss in profits of the download portal. Sensitivity analysis showed that this loss in profits is solved when more advertisement revenues are generated by the download portals. Furthermore it showed that the media levy strategy only results into a larger profit compared to the pay-per-download strategy up until a maximum amount of downloads. Mainly because the media levy solution does not incorporate any growth in revenues.

Discussion of the above results showed that the media levy strategy has several disadvantages. First, it is very hard to determine the amount of media levies that should be collected in total. Second, the repartitioning of the levies is practically very hard to realize. Third, a differentiation strategy potentially offers similar results, with more advantages, without the above practical limitations, and better exploiting the customization possibilities of digital goods. This strategy differentiates digital music services based on use values and revenue models. For example consumers are allowed to listen to music from advertisement based services, but have to subscribe to services allowing mobile use of digital music.

Concluding, the media levy strategy is only a better alternative compared to the pay-per-download strategy with a minimum amount of advertisement income and up until a maximum amount of downloads. Under these conditions the download portal and content aggregator are able to recover their costs and offer downloads. Discussion of the results showed that it is likely that a differentiation strategy, results into similar results with less disadvantages and better exploiting the possibilities of digital goods. We therefore suggest exploring the differentiation strategy and keeping the media levy solution as second best alternative in case the differentiation strategy is unable to ensure remuneration to music actors.

Preface

"Music is de food van de people", is what I heard Ronald Schepman, a Dutch street musician, pleading on the Buiksloterwegveer in Amsterdam. His view on music is that music feeds people's passion and emotion in both pleasant and difficult times. This to some extent also relates to my final project. During this final project I was privileged to experience that research is a process constantly challenging your conceptual thinking, creativity, and determination. For this process to succeed you require dedication, curiosity, enthusiasm, and drive. It was exactly this drive and ambition that music was able to feed during my research process.

On the other hand, music was not able to entirely feed me during the final project. On 15th May, I together with Yasser, worked a bit longer and afterwards drunk a beer to finish the day. But in our dedication to the research process we forgot to have dinner. It was exactly this day that we heard Ronald explaining "Music is de food van de people". To us it somehow did not seem right. We both did not eat, had a lot of digital music in our minds that could satisfy our hunger, but were somehow still extremely hungry.

The final project is the final assignment of the Master's course Business Information Technology on the University of Twente. I experienced this course as very challenging and inspiring and absolutely learned a lot from it. I therefore would like to thank all professors and other people that made this course into the most challenging periods of my study period. Specifically, I would like to thank Pascal van Eck, coaching me through this course, for his open attitude and always clear and new views on difficult decisions.

During the final project's research process I was supported by a lot of people, which I hereby want to thank for their great support. In particular I would like to thank Fons Wijnhoven and Theo Huibers, my university supervisors, for their enthusiasm and always sharp opinions, remarks, and directions during the complete research process.

I completed the final project during an internship at KPMG. I would like to thank Gaston Vankan for offering me this privilege. Moreover, I would like to thank René Koets as my company supervisor for his reviews, brainstorming, and motivation during the complete process. Via KPMG I was also able to contact different persons in the Dutch download market as interviewees. I hereby want to thank Bob Crouwel's efforts for arranging these interviews and the interviewees themselves for their expert opinions on the Dutch download market.

Furthermore, I would like to thank all fellow interns at KPMG, for the great discussions, pleasant lunch breaks, and great motivation. Special thanks got to Thijs van den Anker in guiding me through the first struggles of the research process and Yasser Alaoui Mdaghri, as companion on a similar subject, being the best discussion partner.

Last but certainly not least, I would like to thank my family, friends and girlfriend for their great support not only during this final project but also during my entire study period. Special thanks go to my girlfriend Joana Mühlenbrock for designing the beautiful cover of this thesis.

This thesis is the result of the final assignment within a challenging and inspiring period of studying at the University of Twente. Six years ago, I started with an enormous eager to learn and I am absolutely certain that this period succeeded in satisfying this hunger…

Amsterdam, 19 July 2007

Koen Voermans

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1 Introduction

Digital music allows people to experience music in a completely different way. Music can be listened to in large quantities, anywhere, anytime, and based on personal preferences. Furthermore, people are able to share their music with others by using file-sharing networks or broadcasting it via webcasts. Finally, people are able to edit digital music by mixing it or embedding it into other content (e.g. podcasts or photo presentations).

The music industry is suffering from loss of revenues in physical record sales and is still in its first steps towards embracing the world of digital music. Music performers and writers, as well as the companies that produce, publish, and distribute music, are worried that digital music affects their ability to charge providers of their creations. This research evaluates an alternative method that improves their ability to charge and ensures compensation to these music actors.

1.1 Background

The problem of charging for the consumption of creative goods is not new. The reason is that creative goods can be characterized as public goods. A public good is, in contrast to private goods, non-excludable and non-rivalrous [Lieb06]. Non-excludability means that people, whenever the good is supplied, could not be excluded from using the good. Non-rivalrous means a good does not get used up after consumption. In other words, whenever a public good is supplied, people could use the good because it simply exists to anyone and does not stop to exist. So called free-riders could offer the good without paying the original creator.

Efficient consumption of public goods requires consumers, who value the good higher than the delivery costs of the good, should be allowed to consume the good. The price that assures efficient consumption is a price lower than or equal to the delivery costs. However, a price that only compensates delivery costs does not leave room for compensation for the original creator of the good. This makes the private production of public goods unprofitable and results into underproduction of public goods. [Fish04] [Lieb06]

This market failure is traditionally solved with Intellectual Property Rights (IPR). IPR grants musicians exclusive rights to commercially exploit digital music. Therefore, musicians are legally able to exclude free-riders, who deliver the good with no payment to the creator, and charge a price greater than the delivery costs of the good. This higher price results into a proper compensation for the production costs of music. The non-exclusiveness problem is solved by bundling music to private goods. For example, music was bundled to physical recordings or performed in theaters were people had to buy a ticket. [Fish04] [Lieb06]

Technological innovations, like the Internet, data compression, digital production applications, peer-to-peer distribution, large storage capacities, and digital music players, give rebirth to the free-riders problem. People are able to offer music via file-sharing networks without paying the original creators a fair compensation for production costs. Although IPR does not allow people sharing digital music, file sharing is performed on a large scale. The International Federation of Phonographic Industry (IFPI) reported that 20 billion songs were downloaded from the file sharing networks globally in 2005 [IFPI06].

Music industry's initial reaction was to digitally protect the copyrights on music using encryption technology and other private-access control systems. Digital music is sold via Brick-and-mortar like business models where people are able to buy protected music either per download or per album from digital vendors. The protective strategy was supported by governments, by for example the Digital Millennium Copyright Act, which legally forbid the circumvention of the protection mechanisms. [DMCA98] [Fish04]

This approach theoretically ensures private producers with the opportunity to charge higher prices and receive proper compensation. However, it also has several disadvantages. Consumers have to pay for every access to music, resulting into a rise in transaction costs, a barrier onto the creation of derivative works, and a potentially slowing down of innovation. In addition, legally protection of protection mechanisms results in expensive efforts to prevent people from circumventing it. Finally, the music industry theoretically has complete control over every use and access to digital music goods. [Fish04] [Neta02]

Several theoretical options are proposed to ensure compensation to musicians from the use of digital music, ranging from more protection to abandoning of IPR. In a recent paper these alternatives were analyzed and it was concluded that the following three strategies could lead to an improvement [Lieb06]:

- Bundling digital music with complements or advertising: digital music is sold together with complementary goods that are more difficult to copy. These complementary goods could be fan club memberships, merchandise, or options for concert tickets. Another option is to bundle digital music with advertising.
- Digital rights management systems: focuses on the increase in copying costs of digital media by using anti-copying devices and mechanisms. These mechanisms prevent copying from taking place or require some form of payment before a copy can be made. The increase in costs of copies makes originals more competitive.
- Media levies: products or services that support copying of music are surcharged with a levy with the objective of generating funds for copyright owners. In return, consumers are allowed to use and share digital music.

The second strategy is the current primary focus of the music industry to distribute their works via digital vendors and has several downsides already mentioned. The first strategy is a plausible alternative and is already applied in addition to the second strategy. The third strategy requires a fundamental shift that partly replaces copyright and could not coexist with the other two alternatives.

1.2 Research goal

Because of its radical nature, the media levy strategy should be a superior alternative to the current digital rights management driven pay-per-download strategy. If not, the music industry should focus on the other two and could hold back the media levy strategy as backup solution. In literature, the media levy strategy is analyzed and described but has never been economically validated [Fish04] [Neta02] [Oksa05]. The purpose of this research is to determine if the media levy strategy is an economically superior solution to the current pay-per-download strategy. The research goal is:

To evaluate the economic feasibility of a media levy strategy as alternative strategy compared to the current protection, copyright, and pay-per-download based strategy, ensuring music performers and writers, as well as the companies that produce, publish, and distribute music, to receive compensation in order to recover their production costs.

1.3 Research approach

This research focuses on the change of economic profitability for the music actors that create, produce, publish, or distribute music. These actors work together and form an eBusiness web that supplies digital music to consumers and ensures remuneration to all music actors. The profitability of the music actors within the pay-per-download strategy and the media levy strategy are compared. It is evaluated which web, under what conditions, ensures higher profit to the music actors.

The research approach we use is a positivist case study approach. Case studies create a holistic in-depth understanding of a broad and complex phenomenon, which is especially useful in change oriented research [Vers04]. The media levy strategy is quite a radical change to the currently applied pay-per-download strategy. Moreover, comparison of the economic profitability of music actors within both strategies requires a complete overview of all value exchanges between the music actors; is influenced by many different factors, e.g. copyright law; and is unique for every single market.

First, a method is designed to assess and compare the profitability of actors within different eBusiness webs. This method allows structurally calculation of the economic profitability of actors within an eBusiness web based on its incoming and outgoing value transactions with other actors and its own expenses. A literature review identifies and examines the constructs digital music and eBusiness webs to specify up front all aspects relevant for the profitability of music actors.

Second, the method is used to compare the pay-per-download strategy and the media levy strategy in the Dutch download market. From both strategies the profitability of all music actors is calculated. The results are compared and it is evaluated if the media levy strategy is a better alternative compared to the pay-per-download strategy. The economic profitability calculations are based on estimates derived from different sources. These estimates could differ from reality and affect the reliability and validity of the conclusions. For this reason, the boundaries are calculated up until when the media levy strategy is a better alternative. In summary, the following research questions have to be answered:

1 What method can validate and compare the economic profitability of actors within eBusiness webs for digital music? (Prescriptive)
   a. What are the characteristics of digital music and how do they influence the ability of music actors to charge for digital music? (Descriptive)
   b. What are the elements of an eBusiness web for digital music? (Descriptive)
   c. How could the economic profitability of actors within eBusiness webs be calculated and compared in a reliable and valid way? (Prescriptive)

2 Are media levies an economic feasible solution to the current pay-per-download based eBusiness web for digital music? (Evaluative)
   a. What is the profitability of the music actors within the current pay-per-download eBusiness web? (Descriptive)
   b. What is the profitability of the music actors within the media levy eBusiness web? (Predictive)
   c. Is the media levy strategy an economically better alternative compared to the pay-per-download strategy? (Evaluative)
   d. Under which conditions is the media levy an economically better alternative compared to the pay-per-download strategy? (Evaluative)

1.4 Structure of the thesis

The results of the literature review can be found in the first part of the thesis. Chapter 2 positions digital music goods and services among related terminology. Also the characteristics of digital music are described. Chapter 3 describes the elements of eBusiness webs and applies them to digital music. Based on these chapters, the economic validation method is designed in Chapter 4. Furthermore, Chapter 4 describes the case study's specific scope, data collection method, and data analysis method.

The results from the case study can be found in the second part of the report. Chapter 5 analyzes the profitability of the current pay-per-download implementation. Chapter 6 designs the media levy solution and analyzes its profitability. The boundaries under which conditions the media levy strategy is a better alternative to the pay-per-download strategy are determined in chapter 7. Finally, chapter 8 draws a conclusion if the media levy is a suitable alternative to the pay-per-download strategy. Also some limitations are discussed and the several possible implications for practice and research are outlined.

2 Digital music

Music is an original and creative work of audio performed with several possible purposes, e.g. as a profession, for religious and ceremonial reasons, or just for pleasure. Professional music can be performed as a live performance; or distributed as a recorded good in the retail system or broadcasted by the broadcasting industry.

Over time, music changed from an experience (live performance) to an artifact (recording), and recently into information [Hugh03]. This shift changed music in all its aspects: its sound, creator, creation, production, recording, distribution, and consumption. The main drivers for this shift were technological innovations like digital production applications, the Internet, peer-to-peer file sharing, small digital formats (e.g. MP3), MP3 music players, and high-speed broadband connections.

Goal of this chapter is to explore digital music and find its unique characteristics that potentially influence the design of eBusiness webs for digital music. This chapter details on music as information, how it can be positioned among related concepts, its characteristics, the way it can be altered to form derivative works, and how it differs from music as artifacts and music as experience.

2.1 Positioning

Digital music relates to several different concepts: information goods, experience goods, digital products, and services. Information goods are products or services that can be entirely digitized, e.g. online magazine content, digitized maps, search results, and MP3 music [Shap99]. The purpose of information goods is to inform or to entertain. Information goods can be intangible, e.g. a stock quote, or tangible, e.g. a manual.

Experience goods have to be experienced or bought before the consumer can value it. Related terms are search and credence goods. The value of search goods can be determined prior to the buying, e.g. stock quotes. For credence goods it is almost impossible, even after purchase, to determine the value. An example credence good is medical advice. The value can only be determined based on trust of the provider, a certification, or verification by a third party. [Bhat03] [Shap99]

Digital products or online delivered content are stored in digital form and can be transferred over communication networks [Mull05] [Loeb99]. This does not include services. Still, a large part of the information goods include services, e.g. expert advice, online recommendation engines, search engines and radio broadcasts.

Figure 1 displays intangible goods, experience goods, information goods, digital products, and services as overlapping sets. For each category an example is displayed. Music goods in general are positioned over these sets. Digital music is visualized by the dark grey areas. Based on the definitions of the related terms, digital music can be positioned as an intangible, experience, and information good or service.

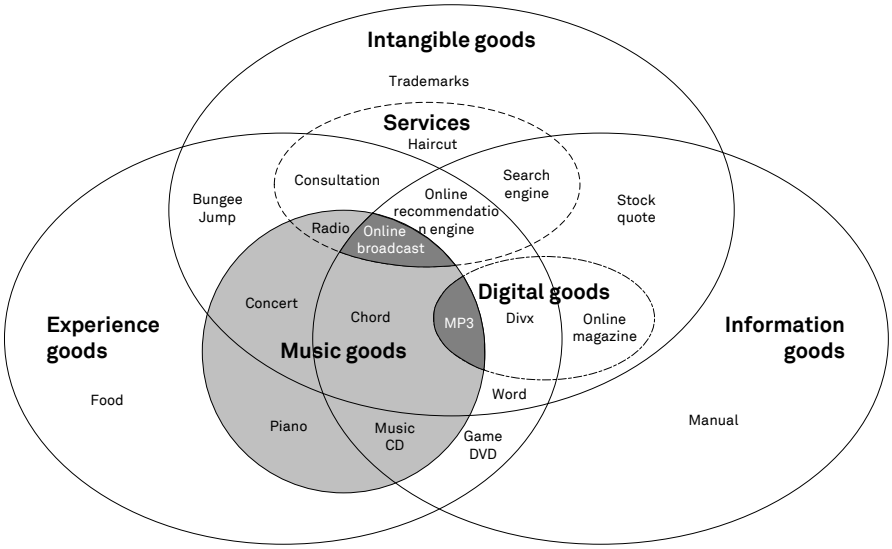


Figure 1 Music goods positioned

2.2 Characteristics

This section analyzes the characteristics of digital music goods. Economic, usage, recipient, and rivalry characteristics of information goods are applied to digital music in section 2.2.1. Digital music can be tailored by consumers to create derivative works. These derivative works characteristics are described in section 2.2.2. Finally, digital music goods are compared with music as artifact and music as experience in section 2.2.3.

2.2.1 Economic, usage, recipient, and rivalry characteristics

In literature, several sources describe characteristics of knowledge assets [Mull05], online delivered content [Loeb99], and intangible assets [Kopp99]. These characteristics can be roughly grouped into: economic, usage, recipient, and rivalry characteristics. A detailed list of definitions can be found in appendix A.

The economic characteristics encompass value determination, fixed costs, variable costs, and externalities. As explained in the previous section, digital music is an experience good and the value can be determined after the purchase. Digital music has high fixed costs and low variable costs [Shap99]. The fixed costs include the first copy costs to record and produce a creative idea. Variable costs of information goods are low, because whenever the good exists there are nearly zero reproduction and distribution costs. Also no capacity limits restrict the reproduction and distribution of information goods. When more people are using digital music, a positive externality is created because more samples exist, resulting in more sharing which further reduces the cost of distribution [Gopa06].

Usage characteristics are related to the way a good can be used. The different characteristics are: transfer mode, time dependence, extent, complexity, and exploitability. Digital music is delivered and no continuous interaction is required to completely experience the good. Delivered goods can be initiated by the supplier (push) or by the buyer (pull). For example, a radio broadcast is initiated by the supplier and a download is initiated by the buyer. Time dependence refers to the change in value when time expires. Music is to some extent related to time, because at a certain moment specific hits are more valuable than others.

Digital music is a multiple-use good. Demand for repeat views is typical for experience goods and allows selling it over and over again in different markets, via different digital music services [Shap99]. Digital music is easy to use; everyone can listen to music without specific training or interaction. The exploitability of digital music is high: products like MP3 players exist to listen to it. Moreover, digital music can be incorporated in other digital content, like movies, games, and websites.

The recipient characteristics describe the properties of the receiver of digital music. These characteristics include: recipient type, individualization, specifiability, excludability, and customization. Recipients of digital music are mainly large groups of persons and not individuals. It is almost impossible to specify the experience people will have after listening to music, despite the possibility to group music by rhythm or genre.

Digital music can to some extent be characterized as a non-exclusive good. Several attempts are done to protect digital music by technology and law. Up until now, these efforts were not very successful shown by the large amount of unprotected music available in file sharing networks. The large availability of unprotected music makes it almost impossible to completely exclude consumers. Customization explains the degree to which a good can be tailored to specific situations or consumer needs. Digital music, like all information goods, can be tailored on content, use value, and revenue level [Wijn06].

Rivalry characteristics encompass the degree of competition between the goods or the services that provide the good. Rivalry can be divided into substitutability, rivalry in consumption, and tangible equivalent. Digital music products are difficult to substitute, because related music is never completely the same as the original music. By contrast, digital music services are easy to substitute; obtaining music from iTunes or Rhapsody is, in fact, the same. Digital music is a non-rival good, because whenever music is made public the consumption of it does not preclude consumption by other consumers as for instance with bandwidth and food. Tangible equivalents exist both for digital music goods as services in the form of CDs and CD stores.

2.2.2 Derivative works characteristics

Digital production applications made it possible to produce music at nearly zero additional costs. These production applications allow not only artists, but also consumers to edit, or reproduce existing music. In literature, these works based on or derived from pre-existing work are defined as derivative works [Gass06]. The ability to change digital products post-purchase is called transmutability. Roughly two groups of practices exist to transmute digital products [Hugh06]:

- Practices not necessarily requiring significant musical creativity.
  - Unbundling: buying content in singles instead of for example bundled albums;
  - Re-bundling: consumer based music bundles or playlists;
  - Portability and distribution: re-encode and compress existing digital files for easier distribution or efficient storage;
  - Personalization: consumers modify, using digital editing resources, digital information goods to their personal tastes, often in an ongoing, continuous process, e.g. ringtones for telephone, skins for music player.
- Practices requiring a relatively high level of musical skill.
  - Re-contextualization: use of songs in a different context, e.g. music in a podcast or in games;
  - Editing/re-editing: edits of commercially released content, e.g. cover music;
  - Extension: modify and extend existing content, e.g. Wikipedia articles or creation of own characters and environments in games;
  - Recombination/remixing: combining loops of samples, small clips of existing music, from different sources, e.g. Hip Hop music.

In the next section, the characteristics of digital music goods are compared with music as artifact and music as experience.

2.2.3 Comparison

In Table 1 we compare the characteristics of digital music goods with music as experience (concerts) and music as artifacts (recordings). Music as information good differs in high exploitability, high customization, high transmutability, non-exclusivity, non-rivalry, low variable costs, and the availability of tangible equivalents.

Characteristics	**Music as experience**	**Music as artifact**	**Music as information**
Economic			
Value determination	After experience	After experience	After experience
Fixed costs	High	High	High
Variable costs	High	High	**Low**
Externalities	Positive	Positive	Positive
Usage			
Transfer mode	Delivered (Push)	Delivered (pull and push)	Delivered (pull and push)
Time dependence	Dependent	Dependent	Dependent
Extent	Single	Multiple	Multiple
Complexity	Low	Low	Low
Exploitability	Low	Low	**High**
Recipient			
Recipient type	Person	Person	Person
Individualization	Large group	Large group	Large group
Specifiability	Low	Low	Low
Content customization	Low	Low	Low
Use value customization	Low	Low	**High**
Revenue customization	Low	Low	**High**
Excludability	Easy	Easy	**Difficult**
Rivalry			
Substitutability	Low	High	High
Rivalry in consumption	High	High	**Low**
Tangible equivalent	No	N.a.	**Yes**
Transmutability			
Unbundling	No	Yes	**Yes**
Re-bundling	No	No	**Yes**
Portability/distribution	No	No	**Yes**
Personalization	No	No	**Yes**
Re-contextualization	No	No	**Yes**
Editing/re-editing	No	No	**Yes**
Extension	No	No	**Yes**
Recombination/remixing	No	No	**Yes**

Table 1 Characteristics of music as information compared to music as experience and artifact

Music as information offers a lot of opportunities to both suppliers and consumers of music. Suppliers can offer their music together with very specific use values completely tailored to individual needs. Moreover, producers are able to exploit digital music better because it can be more easily embedded in other products or services, especially in other digital content or websites. Consumers are also able to alter digital music to personal needs or create derivative works.

The Non-excludability and non-rivalrous characteristics make digital music to some extent a public good. Public goods result into the market failure of the free-riders problem. Free riders offer the good without paying remuneration to the rights owners, not allowing them to recover their creation, recording, and production costs. Moreover, hardly any consumer is willing to pay for the good because it is available to anyone and nobody can be excluded from its use [Bech01] [Gopa06]. Public goods could only be successfully priced based on the distribution costs. Therefore, public goods are potentially undersupplied because suppliers are not able to charge their fixed costs and receive compensation for their creative expression. [Lieb06]

The characteristic of near-zero variable costs makes it even more difficult to price digital music. Pricing based on variable distribution costs would lead to near-zero prices, so pricing should be done on the consumer's willingness to pay or based upon consumer value [Kauf01] [Shap99]. Finally, the availability of tangible equivalents further complicates pricing. Tangible equivalents could potentially lead to channel conflicts: sales of the tangible good decline as result of the rise in sales of the intangible good.

The characteristics of non-excludability, non-rivalry, and difficulty of pricing, make digital music a hyperdifferentiated good. Hyperdifferentiation is defined as: *"the art of reducing the importance of price as the principal determinant of customer's selection among alternative goods and services."* [Clem05]. Consumers will more and more choose products based on their delight, which provides value sufficient to their demands. [Clem05]

2.3 Conclusion

Goal of this chapter was to answer research question 1a and to find the characteristics of digital music which are important for the design of new digital music eBusiness webs:

What are the characteristics of digital music and how do they influence the ability of music actors to charge for digital music?

Digital music is positioned as intangible information, experience digital good or service and it has the characteristics of a public good. Moreover, digital music can be tailored to create derivative works or can be embedded in other content or products and services. These characteristics make digital music goods already very difficult to price. A final characteristic makes the pricing even more complicated. The variable costs are nearly zero and allow unlimited and almost free copying and distribution of music. Traditional pricing based on variable costs would therefore result into a near zero price.

It is suggested to not price the good itself but merely the way the good is delivered to and valued by the consumer. In other words, not digital music goods should be priced, but merely digital music services. In addition, the use values consumers receive after obtaining digital music goods can be charged differently. This is quite easy for digital music goods, because the use values can be tailored extensively (see also section 3.5).

For music actors this implies that charging for digital music is only successful if enough value is created for the consumers by the digital music services. In the next section eBusiness webs for digital music are extensively examined resulting into a set of constructs which can be used to tailor eBusiness webs and create value propositions for consumers.

3 Elements eBusiness web for digital music

The goal of this chapter is to explain what elements an eBusiness web for digital music should consist of. Section 3.1 defines eBusiness webs and identifies its elements based on eBusiness model literature. The remaining sections elaborate on these elements and identify the design variables which describe eBusiness webs for digital music. Finally, section 3.6 concludes and answers research question 1b.

3.1 Definition eBusiness web

In literature, no clear definition of an eBusiness model exists. Both Pateli and Osterwalder outline this discussion in their survey into business model literature [Pate04] [Oste04]. According to them, Timmers describes the most comprehensive definition. He defines business models as: architecture for the product, service and information flows, including a description of the various business actors and their roles, a description of the potential benefits for the various actors, and a description of the sources of revenue [Timm98]. This definition is extended with the major flows of product, information, and money between the actors by Weill and Vitale [Weil01].

Petrovic sees business models more as the core logic for creating value and puts more emphasis on the internal aspects of an organization [Petr01]. Rappa emphasizes the financial aspect of the business [Rapp07]. He sees a business model as the way organizations structure cost and revenue streams and perform activities, in order to generate revenue to sustain itself. Finally, Tapscott uses a network-centered approach where a business model describes a system of actors that use the Internet for their primary business communication and transactions [Taps00].

This research focuses on the assessment of new eBusiness webs where rights owners are compensated for the use of digital music by consumers. The main focus of this research lies on the increase or decrease in profit that actors in the new eBusiness web receive. In other words, a highly network and revenue oriented view on eBusiness models. Concluding, an eBusiness web should describe:

- The business actors and their roles (section 3.2);
- Their value activities (section 3.3);
- What revenue model is used (section 3.4);
- The value objects describing what content is delivered, under which conditions (use values) and for what revenues in return (section 3.5)

3.2 Actors

This section outlines the actors and their roles within digital music eBusiness webs. First the general actors within an eBusiness web for information goods are identified in section 3.2.1. Based on these general actors the digital music actors are identified in section 3.2.2.

3.2.1 eBusiness web actors

Section 2.1 positioned digital music as information good. The value web of an information service describes what content is transferred to whom, under which conditions (use values) and for what in return (revenue) [Wijn06]. Figure 2 visualizes the elements of this value web, where actors exchange content (C), use values (U), in return for revenue (R) is exchanged.

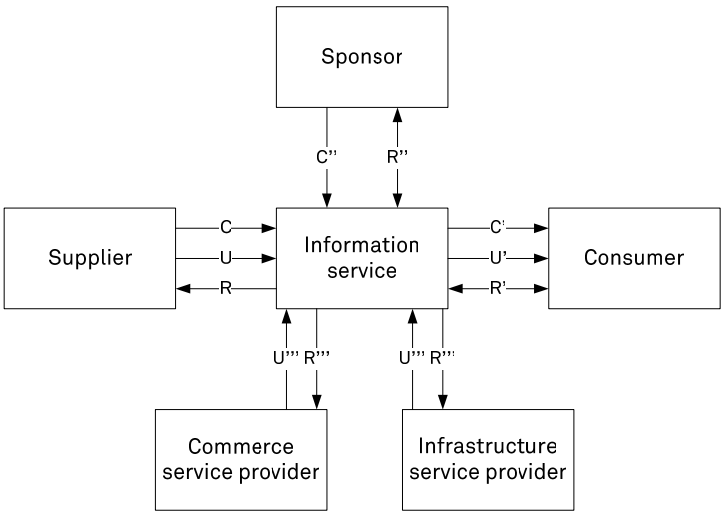


Figure 2 Actors within a value web of an information service

The supplier of content is the entity that delivers the content (C) to the information service together with some use features (U) in return for revenues (R). A sponsor also delivers a form of content (e.g. advertisements) together with mostly monetary revenues to the information service in return for mostly non-monetary revenues (e.g. exposure to a target group of consumers). The subcontractor increases the value by offering additional use value to both the information service and the consumer. For example, a payment service offered by a bank, or a communication platform for the efficient communication between consumers and information service. The information service offers the consumers the content together with the additional use values in return for exposure, information or money. [Wijn06]

Tapscott identifies five types of value contributors of which an eBusiness web should consist of: content providers, context providers, commerce service providers, customers, and infrastructure providers [Taps00]. Table 2 summarizes the major contribution of each of these value contributors in the eBusiness web. The last columns maps the actors within Wijnhoven's information service value net onto Tapscott's value contributors.

Value contributor	**Roles**	**[Wijn06]**
Content providers	Design, make, and deliver the intrinsic forms of value that satisfy consumer needs	Supplier
Customers	Obtain the value offered by the business web in return for a revenue	Consumer
		Sponsor
Context providers	Facilitates the interface between the consumer and the eBusiness web	Information Service
Commerce service providers	Support and enable the flow of business, including transactions and financial management, security and privacy, information and knowledge management, logistics and delivery, and regulatory services	Subcontractor
Infrastructure service providers	Deliver communications and computing, electronic and physical records, roads, building, offices, and the like	

Table 2 Value contributors in an eBusiness web according to Tapscott [Taps00]

The differences between the two models are the customer of the value web and the service providers that support the value web. Tapscott explicitly differs between commerce and infrastructure providers both

supporting the value web in different ways, where Wijnhoven defines them as one group. In contrast, Tapscott defines only one group of customers of the value web, where Wijnhoven differs between sponsors and consumers. The next section applies these roles to the distribution of digital music.

3.2.2 Digital music actors

This section maps the eBusiness web actors of the previous section to digital music actors. The content providers of an eBusiness web for digital music are the rights owners. The rights owners are music performers, composers, and writers, as well as the companies that produce, and publish music. Rights owners offer their music to digital music services. These services are the context providers and form the contact between the consumer and the rights owners. Customers of digital music are people who consume digital music for fun or as a profession.

Collecting agencies, payment services, and infrastructure providers are subcontractors who support the delivery of digital music goods. Collecting agencies act on behalf of rights owners to collect remuneration from digital music services. Payment services, e.g. credit card organizations, facilitate the payments from consumers to digital music services. The infrastructure provider facilitates access from the consumer to the digital music service's music library and facilitates to actually obtain digital music. An example infrastructure provider is a hosting service. Finally, advertisers promote their products to the consumer segments targeted by the eBusiness web as sponsors of the context provider. Figure 3 summarizes how these digital music actors relate to the eBusiness actors.

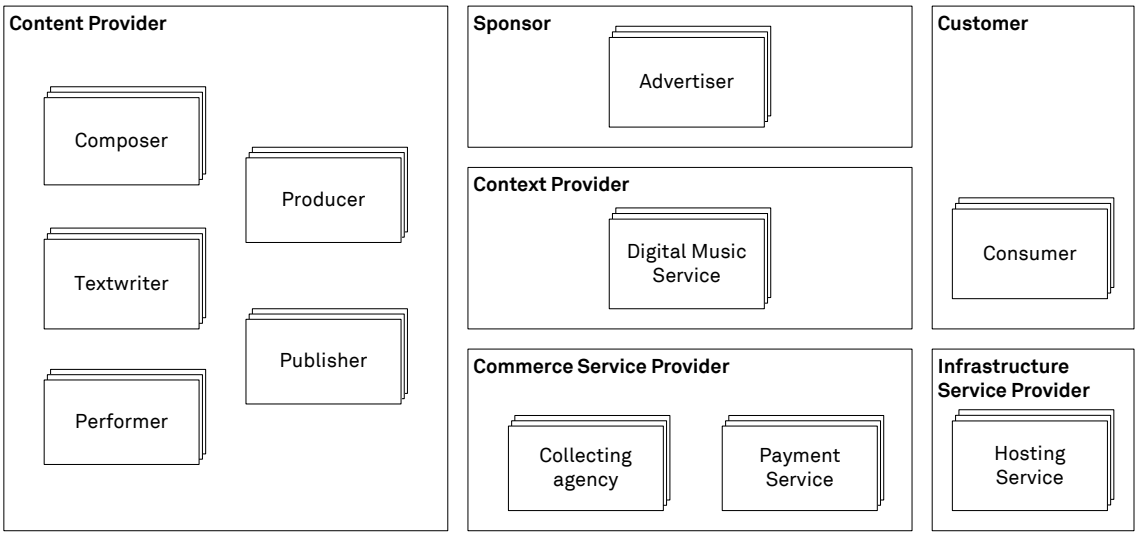


Figure 3 Digital music actors

3.3 Value Activities

Section 3.3.1 outlines the value activities that have to be performed to deliver digital music goods from artists via producers and digital music services to consumers. The actors who perform the activities are outlined in section 3.3.2.

3.3.1 Digital music value activities

The value activities of information goods are: creation, selection & certification, production, distribution, and consumption [Clem03]. Table 3 outlines how these activities add value to the delivery of information goods from creators to consumers.

Step	Value added	Economic function
Selection & certification	Filtering out inferior goods Quality control Product information Inform consumer	Reduce consumer search cost Match supply and demand Improve market coordination
Production	Manufacture consumable merchandise	Produce final output
Distribution	Deliver goods to market	Fulfill consumer demand

Table 3 Value-adds and their economic function in the information goods value chain [Clem03]

The selection & certification step adds value by filtering out the commercially viable creations. Thereby reducing consumer search costs, reducing risk associated with purchasing decisions and better matching supply and demand. Quality control categorizes and assesses the quality of the information good resulting in improved market coordination. Finally, the commercially viable creations are promoted and additional information is provided helping the consumer find the product they want. The production step refers to the actual production of the good into a form which can be delivered to the market. The distribution step delivers the goods to the consumer to actually fulfill consumer demand. [Clem03]

Chapter 2 concluded digital music is an information good. Therefore, we assume the value activities of information goods also apply to digital music. The steps in order to create and deliver digital music goods are as follows:

1 Creation: the artist has an idea, composes it and writes it down resulting in the song text and melody of a song;

2 Selection & certification: promising acts are identified, contracted, and promoted to the public;

3 Production: the song is recorded in a studio on a medium and produced into a song ready for distribution;

4 Distribution: the song is made available to consumers through digital music services;

5 Consumption: the consumer finally buys the digital music good and consumes it, or if allowed creates derivate works.

In addition to the primary value activities, several secondary value activities are necessary to successfully deliver digital music goods to the consumer. These activities include the support of financial transactions, copyright enforcement, and infrastructure provisioning. The next section outlines how the music industry changes in case of the delivery of digital music.

3.3.2 Actor's value activities

Traditionally with offline distribution, all activities were controlled by the producers. Digital value chains bring a lot of opportunities for both suppliers and consumers of information rich products like music and could potentially redistribute profits among actors [Benj95]. The redistribution of profits could also apply to digital music, because the value activities could be performed by other actors. This could potentially result into a change within the structure of the music industry. Table 4 illustrates for each actor the value activities for both traditional offline distribution and digital distribution of music goods and outlines the respective change in power [Bock05].

Player	Traditional value flows	Digital music value flows	Power change
Musician (composer, text writer, and performer)	Creation Performance Production	Creation Performance Production Distribution	More control of production and distribution Potential increase in profits Decreased copyright protection
Producer (record label)	Selection & certification Production Distribution Copyright enforcement	Selection & certification Copyright enforcement	Loss of control over production and distribution Potential decrease in profits
IP rights enforcement body	Limited intellectual property rights enforcement	Intellectual property rights enforcement Piracy prevention Prosecution of music piracy cases	Increase control over the legal distribution of digital music
Traditional retailer	Distribution to consumer Advertising	None	Loss of customers/sales Decrease in profits
Digital music service	None	Distribution to consumer Selection & certification Advertising	Growth of digital music market Potential increase in profits Increased competition
Consumer	Consumption in physical format	Consumption in physical or digital format or pirate digital format Creation Selection & certification Production Distribution	New supply channel More product choices More power over prices Create derivative works More control of distribution

Table 4 Power shifts among music actors, partly adapted from [Bock05]

The power within the music industry could move from the producer to both the artist and the consumer, who are themselves able to produce and distribute digital music goods. Moreover, the traditional retailer will become smaller and the digital music goods will be delivered by their digital equivalent, the digital music service. Digital music is easy to reproduce and therefore the need for property rights enforcement increases. The availability of technological solutions, e.g. watermarking, encryption, or traffic volume monitors, make it possible to limit the distribution of digital music. Moreover, a proper licensing and contracting system can increase control over the legal use of digital music goods. Copyright enforcement is seen as an important value activity for the producers and a newly introduced Intellectual Property rights enforcement body. [Bock05]

The selection & certification value activity also is taken care of by consumers and facilitated by digital music services. Digital music goods are offered to consumers based on consumer preferences, download statistics, and recommendations by other consumers. Examples are personalized radio stations (e.g. Pandora or Last.fm) and SellaBand. Personalized radio stations construct radio stations based on consumer input (e.g. genre, artist, or tag). SellaBand allows potential artists to attract enough consumers as shareholders (believers) [Sell07]. When an artist reaches five thousand believers, the music is produced and offered to the public as part of a CD and as free downloads. The revenues from the CD sales are shared fifty-fifty between the artist and the believers. The revenue gained from advertisements is shared equally between the believers, artists, and SellaBand.

3.4 Revenue Models

A revenue model describes how actors within the eBusiness web earn money and can be categorized into the following nine types of revenue models [Rapp07]:

- Brokerage: bring buyers and sellers together and facilitate transactions. Usually a broker charges a fee per transaction it enables;
- Advertising: an extension of the traditional media broadcast model. The broadcaster provides content mixed with advertising messages. This model works best when the volume of viewer traffic is large or highly specialized;
- Infomediary: assist buyers and sellers to understand a given market by collecting data about products and producers and offer consumers an independent view on all available options; and collect data from consumer consumption habits and analyze it for target marketing campaigns;
- Merchant: wholesalers or retailers of goods and services that make sales based on list prices or auctions;
- Manufacturer: direct channel of manufacturers to reach buyers directly and thereby compress the distribution channel. The model can be based on improved customer service, efficiency, and a better understanding of customer preferences;
- Affiliate: in contrast to the generalized portal, which tries to drive a high volume of sales through one site, the affiliate model provides purchase opportunities wherever people may be surfing. Affiliated partner sites receive a percentage of the revenues in return for advertisement space;
- Community: the viability of the community model is based on user loyalty. Users have a high investment in both time and emotion. Revenue can be based on the sale of ancillary products and services or voluntary contributions; or revenue may be tied to contextual advertising and subscriptions for premium services;
- Subscription: users are charged a periodic (daily, monthly or annual) fee to subscribe to a service. Subscription fees are incurred irrespective of actual usage rates;
- Utility: based on metering usage, or a "pay as you go" approach. Unlike subscriber services, metered services are based on actual usage rates.

Above revenue models can all be implemented in different ways and can also be mixed with one another. For example, an advertisement model is often blended with a subscription model. Each type of revenue model consists of several specific revenue models. These revenue models are listed in Figure 4. More detailed descriptions can be found in Appendix A.

Current digital music services implement merchant, utility, manufacturer, and community models, often blended with an advertising model. Appendix D shows the revenue models for all legal Dutch download services. The most well-known digital music service is the iTunes Music Store. This service fully operates on the Internet and has no physical stores, a typical Merchant bit vendor. In contrast, the Free Record Shop has physical stores that sell music CDs. Its online equivalent Freedownloadshop therefore is a typical Merchant click and mortar revenue model.

The manufacturer revenue model is used by Sony's connect.com. This download service sells the repertoire from Sony's music directly to consumers. eMusic.com has a Utility metered subscription revenue model. Consumers subscribe to the service and pay a monthly fee which allows them to download a fixed number of songs. Current unlimited subscription models, e.g. Planet Musicstream, do not allow unlimited downloads of music but merely unlimited streaming of music and the possibility to pay extra for downloads.

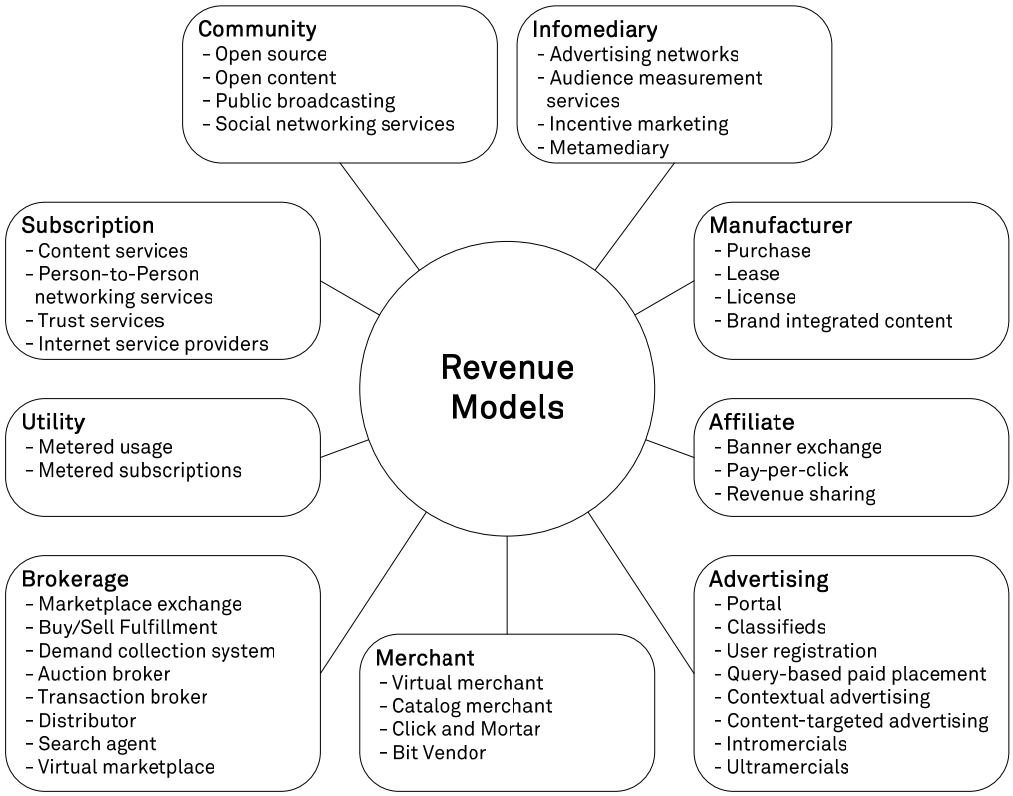


Figure 4 eBusiness revenue models

3.5 Value objects

Within eBusiness webs, value objects are part of value offerings between actors. Three types of value objects exist: content, use values, and revenues [Wijn06]. An actor offers a piece of content, under certain conditions (use values) in return for revenues. Value offerings of digital music goods are quite complex, because of the limitations by Intellectual Property Rights (IPR). These rights protect the commercial use of digital music and only allow it after authorization of rights owners. Section 3.5.1 describes content value objects for digital music. In section 3.5.2, the use values actors can obtain to use digital music content are described. Use values are provided after authorization by actors, section 3.5.3 describes how actors could authorize the use of digital music goods. Finally, the revenue required in return is described in section 3.5.4.

3.5.1 Content

A content value object is a good, service, or experience offered by an actor that is of value to the receiving actor. In an exchange different types of content objects can be exchanged: primary content, complementary content, and second-order value [Weig07]. The primary content is the core object exchanged between two partners. Complementary content is offered together with the primary content, e.g. a user manual or a CD cover. Second order value is a way the content is offered to the consumer, e.g. reliable, friendly, and conveniently.

Digital music services offer digital music goods as primary content objects in various forms of representation. In general, the representation of content can be altered on technical format, application format, and can be delivered as single tracks, packages, bundles, or integrated into other content. Technical formats vary in the technologies that are used to represent digital music, e.g. MP3 or WAV.

Digital music can also vary in the way it is going to be applied and used by consumers, e.g. as ringtone or to create derivative works.

Most digital music content is currently sold as single tracks, e.g. in Apple's iTunes Music Store. Historically, music is always sold in packages on CDs. Digital music is also sold in packages, e.g. albums and playlists. Digital music can easily be incorporated into other forms of content, e.g. movies or games, and be sold as completely different goods. Finally, digital music could be bundled with other goods for a single price, e.g. a digital music album bundled with a concert ticket.

3.5.2 Use values

Value offerings of digital music goods are restricted by IPR. IPR protect the interests of creators by giving them property rights over their creations. Two types of IPR exist: industrial rights and author's rights. Industrial rights protect inventions, for example industrial designs and commercial names, by patents and trademarks. Author's rights, on the other hand, protect creative works, for example books, music, movies, and art. Music is a creative work and is protected by copyright regulation.

Author's rights only protect the form of expression of ideas and not the ideas themselves. In other words, the choice and arrangement of musical notes are protected, not the musical notes selves. Author's rights only prevent unauthorized use of the works. The duration of the right is 70 years after the death of the author; it simply exists after the work is created; it does not have to be published in an official register; and costs no money. Author's rights consist of three underlying rights: copyrights, related rights, and database rights. Figure 5 summarizes what author's rights are protected. Here owners have the right to prohibit (P) people performing or authorize (A) a certain action. [WIPO07]

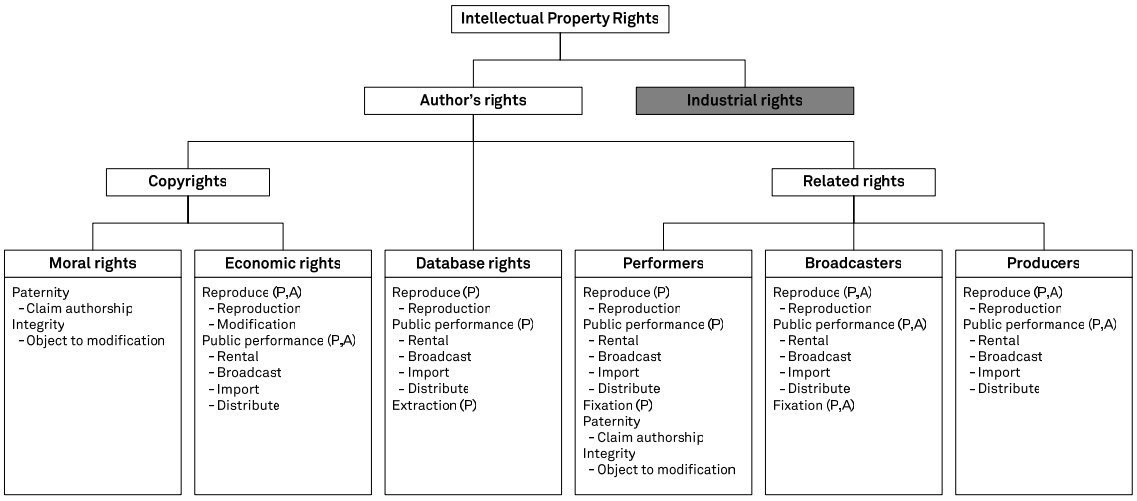


Figure 5 Author's rights breakdown

Copyrights protect the works created by the authors. These authors gain both economic as well as moral rights. The economic rights include the right to authorize or prohibit reproduction and public performance of the work. Reproduction of works means multiplication of the work and modification to create another work. Public performance includes the rental, translation, broadcasting, importation, and distribution of the work. Moral rights include the right to claim authorship (paternity), and the right to object to modification of the work (integrity. [WIPO07]

Related rights protect the legal interests of persons and legal entities who contribute to making works available to the public. For the music industry, these legal entities are: performers, broadcasting organizations, and producers. Performers have the right to prevent fixation of their live performance (e.g.

concert), reproduction of fixations, broadcasting to the public of their performances, and moral rights. Broadcasting organizations have the right to authorize or prohibit rebroadcast, fixation, and reproduction of their broadcasts. Producers have the right to receive an equitable remuneration for broadcasting and communication to the public of a certain work. Furthermore, they could authorize or prohibit reproduction, importation, and distribution of copies they produced. [WIPO07]

The final set of rights is associated to those legal entities that organize digital works in collections or databases. These legal entities have the right to prohibit reproduction, communication to the public, and extraction of substantial parts of the collection. [WIPO07]

Author's right use values only distinguishes between copying, distributing, translating, importing, renting, modifying, and broadcasting of music. In contrast, the use values of digital goods are more specific. Table 5 outlines the rights, constraints and requirements that specify the use values for digital goods.

Aspect	Categories	Use values
Rights	Usage rights	Print, play, execute, display
	Transfer rights	Sell, lend, give, lease
	Asset management rights	Move, delete, install, uninstall, duplicate, restore, save, backup, verify
	Reuse rights	Modify, excerpt, annotate, aggregate, adapt, diminish, embed, enhance, enlarge, reduce
Requirements	Payment requirements	Flat payment, pre pay, per use, post pay, metered, per interval
	Interactions requirement	Accept, register
	Usage requirements	Attribution, tracked, approval
Constraints	User constraints	Individual, group
	Device constraints	CPU, network, screen, storage, memory, printer, software, hardware
	Bound constraints	Count, range, spatial
	Temporal constraints	Interval, date time, accumulated
	Aspect constraints	Quality, watermark, format, unit
	Target constraints	Purpose, industry, re-context
	Rights constraints	Transfer permission

Table 5 Digital rights, constraints, and requirements within digital licenses [Iann02] [Wang05]

The use values are based on digital licenses. The most known well known are: Moving Pictures Expert Group's MPEG-21 and the Open Digital Rights Language (ODRL) [Iann02] [Wang05]. Both standards incorporate a kind of Rights Expression Language (REL) which describes what rights a certain person gets on a specific object and under which conditions and requirements they are allowed to use the object.

Four main rights on digital objects exist: usage, transfer, asset management, and reuse rights. Usage rights include the right to simply experience the digital content. Transfer rights allow the receiver to make money with the content. These rights are closely related to the reproduction and public performance author's rights. Asset management rights allow the receiver to maintain the asset. Finally, reuse rights allow the receiver to modify and use the object for derivative works. These rights are closely related to the reproduction author's right and the author's integrity. [Iann02] [Wang05] [Polo04]

Besides rights, the receiver of the use values can also receive some restrictions on the use of the digital content. These restrictions can include requirements, required actions before the use can start or, constraints, limitations to the use itself. Requirements on digital content mainly are payment, agreement

on constraints, registering of personal information and allowing the sender to keep track of the content. [Iann02] [Wang05] [Polo04]

Constraints on the use of the digital content include user, device, bound, temporal, aspect, target, and rights constraints. User constraints refer to the use as an individual or within a group. Device constraints prescribe on which devices the content can be used. Bound and temporal constraints prescribe when, where, how much, and how long the content can be used. Aspect constraints bound the digital content itself on quality, watermark, and format. Target constraints prescribe the purpose and industry the content can be used for. Finally, the rights constraints prescribe if the receiver has the right to transfer the content. [Iann02] [Wang05] [Polo04]

3.5.3 Use value authorization

Use values on digital music goods are authorized in three distinct ways: abandon, assignment, and license. The difference is who will be the owner of the right after authorization. The authorization of rights is limited to the economic rights. It is not possible to authorize moral rights; these remain with the author or performer. When an artist abandons its economic rights, simply no owner exists. Everybody can, with respect to the moral rights of the artist, use the work. Assignment of economic rights is a transfer of the right to another entity. In practice, performers assign their rights to producers and composers & text writers to publishers in return for royalty payments. Producers and publishers are after assignment the new owners of one, several, or all economic rights and could on their turn authorize other actors. [WIPO07]

Musicians can license their rights to another actor and remain owner of the right. The licensee has the ability to use the work according to the use values authorized. Licensing can be exclusive or non-exclusive. Exclusive licensing means there is only one licensee and the musician is not allowed to license other actors. Non-exclusive licensing allows the musician to also license other licensees.

A special form of licensing is the collective administration of rights where right owners grant exclusive licenses to a collecting agency. The collecting agency acts on behalf of the artists to grant licenses to other actors to collect and distribute remuneration, to prevent and detect infringement of rights, and to seek remedies for infringement. Appendix E outlines several licenses issued by Dutch collecting agencies.

Entities	Description	MPEG21	ODRL
Issuer	Party that licenses the rights under certain constraints and requirements	Issuer	Party
End user	Party that uses the object	Principal	
Object	Content acted upon by a principal	Resource	Asset
Right	Usages allowed over the objects	Right	Permission
Constraint	Limitations to the rights	Condition	Constraint
Requirement	Obligations needed to perform rights		Requirement

Table 6 Entities within a license based on MPEG-21 and ODRL [Iann02] [Wang05] [Polo04]

In the digital world, licenses are used to transfer use values. As explained in section 3.5.2, the most well known digital licenses are MPEG-21 and ODRL [Iann02] [Wang05]. Table 6 summarizes the entities within the structure of digital licenses. These digital licenses are mainly issued by digital music services and form a kind of contract which specifies the content, use values, and revenue as agreed upon in the service offering. The end user may use the object according to the rights, limited by the constraints, and only after achieving the requirements.

Fair use is the only exception where no authorization is required. Fair use includes: quoting from a protected work, use of works for teaching, use of works for news reporting, and right to reproduce a work

exclusively for their personal, private, and non-commercial use. Factors that should be taken into account are the nature and purpose of the use, whether it is for commercial purposes, nature of the work used, amount of the work used in relation to the work as a whole, and the effect on the commercial value of the work. [WIPO07]

Table 7 shows how actors could be authorized to use digital music goods. Several relations are possible within the table: owning the right (O), obligated to receive an author's license (L), obligated to receive a digital license (DL), allowed to fairly use the good (F), collective administration of rights (CA), and finally assignment of rights (A).

	Reproduction	Modify	Rental	Broadcast	Import	Distribute	Paternity	Integrity	Fixation	Extraction
	Reproduce		**Public performance**				**Moral**		**Other**	
Composer	O	O	O	O	O	O	O	O		
Text writer	O	O	O	O	O	O	O	O		
Publisher	A,L	A,L	A,L	A,L	A,L	A,L				
Performer	O		O	O	O	O	O	O	O	
Producer	O,A,L		O,A,L	O,A,L	O,A,L	O,A,L			O,A,L	
Collecting agency			CA	CA	CA	CA				
Digital music service	O	O	O,L	O,L	O,L	O,L				O
Consumer	F,DL	F,DL	F,DL	F,DL	F,DL	F,DL			F,DL	F,DL
Business	F,DL	F,DL	F,DL	L,DL	F,DL	F,DL			F,DL	F,DL

Table 7 Actors authorized rights on digital music goods

The copyright right owners include the composer and the text writers. Composers and text writers can assign or license their economic rights to the publisher. The related rights owners include the performers and producers. Often producers have a contract with the performer which makes them assign them the rights in return for royalties. In that case, the producer also is the owner of the performer's related rights. Producer could also be licensed the related rights by the performers. In that case the performer remains owner of the right. Collecting agencies act on behalf of the rights owners to collect remuneration. They have to obtain a collective administration of rights from the rights owners.

Digital music services have to obtain a license to rent, broadcast, reproduce, or distribute the music. Digital music services do own database rights on their collections. Consumers are allowed to fairly use music. They have to obtain a digital license showing they have rightfully obtained the digital music good. Businesses are also allowed to fairly use digital music, but have to obtain a license for the use of digital music on their website or other public environments, e.g. in a shopping environment or in pubs.

3.5.4 Revenue

Revenue describes the value objects actors receive in return for their offer of digital music content and use values [Wijn06]. Revenue can be monetary or non-monetary. Monetary revenues are always based on a certain pricing strategy. Pricing strategies can include fixed pricing or price discrimination. Fixed pricing means a standard price for all products offered, e.g. € 0.99 for a single digital music song or € 5 per month for a subscription. Price discrimination exists on three degrees: personalized pricing, versioning, and group pricing [Shap99]:

- Personalized pricing: sell to each consumer at a different price;
- Versioning: sell to each consumer the same price for different sets of related products and their use values. Let users choose the version that is the most appropriate to them.
- Group pricing: sell to groups of consumers the same products and their use values for different prices.

Non-monetary revenues are actions or information the consumer delivers to allow the receiving actor to earn monetary revenues from other sources. In an advertisement revenue model, the digital music service earns money from advertisers. These advertisers only want to pay if there are enough people, and in some cases even only when enough people click-through to the advertiser's site. The return the consumer pays in these cases is audience and actions, click-through, or affiliates. Information about the consumer, e.g. buying habits and personal characteristics, make it possible for the digital music service to offer personalized offers of new products. Furthermore, it allows them to offer personalized advertisements which are likely to be more successful and will result in more affiliates. [Wijn06]

3.6 Conclusion

The goal of this chapter was to explain what elements an eBusiness web for digital music consists of answering research question 1b:

What are the elements of an eBusiness web for digital music?

Based on a review into eBusiness model literature the elements are: the actors, their value activities; the revenue model; and the exchanged value objects. Table 8 summarizes the specific constructs of eBusiness webs for digital music. These constructs can be used to describe and tailor music actor's value proposition. Especially a choice in revenue model and offered value objects tailors the way value is created for consumers and thereby influences their willingness to pay (see conclusion chapter 2).

Elements	Constructs
Actors	- Content providers: composer, text writer, performer, producer, and publisher - Context providers: digital music service - Subcontractors: payment service, collecting agency, infrastructure provider - Consumers: consumer segments - Sponsors: advertiser
Value activities	- Primary: creation, selection & certification, production, distribution, consumption - Secondary: financial transactions, copyright enforcement, infrastructure provisioning
Revenue model	- Combination of brokerage, advertising, infomediary, merchant, manufacturer, affiliate, community, subscription, utility revenue models (a detailed list can be found in appendix B)
Value objects	- Content: types (primary, complementary, second order), format (technical and application), quantity (single tracks, packages, or bundles) - Use values: rights (usage, transfer, asset management, and reuse), constraints (user, device, bound, temporal, aspect, target, and rights), requirements (payment, interactions, and usage) - Use value authorization: abandon, assignment, or license - Revenues: monetary (fixed or variable), pricing strategies (personalized, versioning, or group), and non-monetary (actions, audience or information)

Table 8 Elements of an eBusiness web

In the next section a method is designed to validate the profitability of within eBusiness webs. The above constructs are used to structurally describe the elements of the eBusiness web for digital music under validation.

4 Economic validation method for eBusiness webs

This chapter designs an economic validation method that assesses eBusiness webs for digital music. This method is used to evaluate if the media levy solution is a feasible alternative to the current pay-per-download implementation. In section 4.1, validation research is explained and the norms are set which have to be achieved by the media levy solution in order to be a feasible solution. Section 4.2 describes the validation method. Finally, section 4.3 concludes this chapter and answers research question 1.

4.1 Economic validation

Validation research studies the properties of a solution and assesses its power to solve certain problems before the solution is implemented [Wier06]. Solution validation is part of the engineering cycle. The engineering cycle describes which steps should be undertaken to come from a problem to a viable solution for this problem. The steps include [Wier06]:

1 Problem analysis: knowledge is acquired about the problem domain. Results into a description of the goals to be achieved by the solution;

2 Solution design: creative task where solution alternatives are specified that can solve the problems. Results into a specification of the proposed solution in terms of desired properties and quality attributes;

3 Solution validation: predicts how a solution will behave when implemented. Assess if the solution solves the problems, under which conditions it succeeds, and under which it fails;

4 Implementation: the solution is applied in practice;

5 Implementation evaluation: the implemented solution is evaluated in terms of predicted behavior, the extent to which it solves the problem, and identifies new problems that should be solved.

The goal of this research is to evaluate if the media levy solution is a better solution to ensure compensation to the music actors compared to the current pay-per-download implementation. First, an implementation evaluation of the pay-per-download strategy is required to achieve this goal. This evaluation should describe to which extent the pay-per-download strategy ensures compensation to the music actors. In addition a solution validation is required to predict how the media levy strategy will behave in practice and to which extent it ensures compensation to the music actors. Finally it should be evaluated when the media levy's compensation is higher and when lower than the compensation within the current pay-per-download implementation.

The actors that should be more profitable or receive a higher compensation are the music performers and writers, as well as the companies that produce, publish, and distribute music. The media levy strategy is economically a better alternative to the pay-per-download strategy if: the total profitability of all these actors together is higher and the profitability of the actors individually is not lower compared to pay-per-download implementation. For an eBusiness web to sustain over a reasonable period of time all actors should make a profit or increase their economic utility [Gord02]. In summary the media levy strategy is an economic feasible alternative if the following norms are achieved:

1 Each music actor makes profit;

2 The profit of all music actors in total is higher in the media levy eBusiness web compared to the pay-per-download eBusiness web;

3 Each music actor increases its profit within the media levy eBusiness web compared to the profit within the pay-per-download eBusiness web.

In order to evaluate these norms both eBusiness webs should be validated on the compensation they generate for the music actors. In the next section a method is outlined which validates the profitability of eBusiness webs.

4.2 eBusiness web validation method

Both Osterwalder and Pateli researched the field of business models evaluation [Oste04] [Pate04]. They concluded that the most thoroughly described and applied method for modeling and assessing eBusiness webs is the e3value method [Gord02]. The e3value method can be used to explore, model, and economically evaluate ecommerce ideas. In order to achieve this, a value model is constructed which models the actors involved and the objects of value created, distributed, and consumed by these actors. The value model is used to generate profit sheets for all music actors in order to assess the potential profitability of these actors. The profit sheets are generated based on the outgoing and incoming value objects, as well as the expenses of each actor.

Implementation evaluation of the pay-per-download implementation and solution validation of the media levy solution both require an assessment of the profitability of the music actors. The e3value method can be used to determine the profitability of the music actors. The value model of both the pay-per-download implementation and the media levy solution has to be constructed. The eBusiness web elements as identified in chapter 3 can be used as a guideline to construct these value models.

After constructing a value model, the exchanged value objects and the expenses of actors have to be estimated. Based on these estimates the profitability of the music actors can be calculated. These estimates are likely to vary in reality and could affect the reliability and validity of the profitability calculations. For this reason a sensitivity analysis is applied to determine the conditions under which the media levy solution is more profitable compared to the pay-per-download implementation. In summary the steps include:

1 Description eBusiness web elements: describes the actors, their value activities & revenue model, and the exchanged value objects between the actors (section 4.2.1);

2 Value model construction: models and visualizes the actors and value exchanges (section 4.2.2);

3 Economic validation: estimates the exchanged value objects between actors and the expenses of actors. For each actor a profit sheet is generated to illustrate its economic profitability (section 4.2.3);

4 Sensitivity analysis: determines how the profitability of actors varies within the variances of the estimates used (section 4.2.4).

4.2.1 Step 1: Description eBusiness web elements

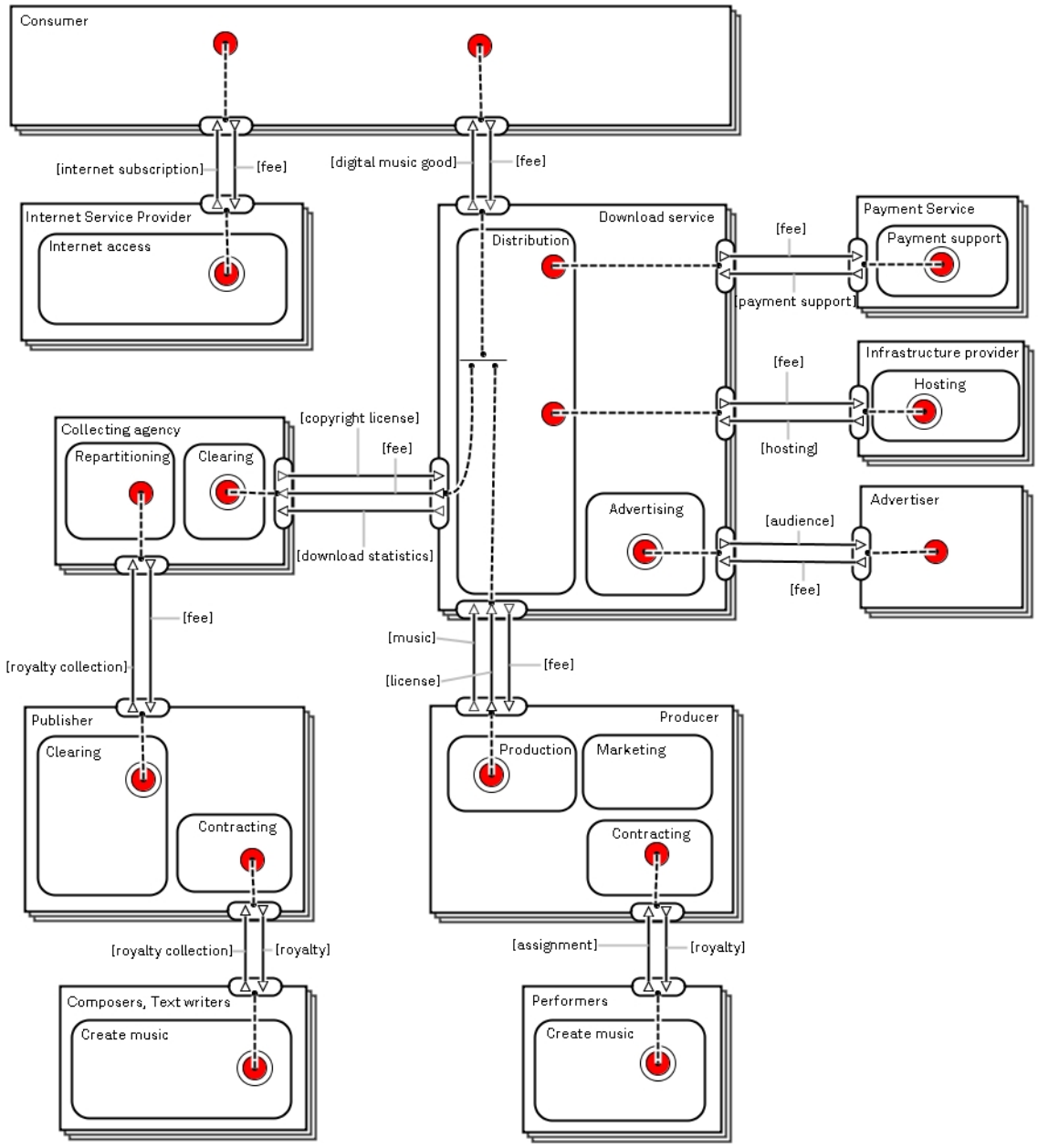
The first step analyzes all elements of the eBusiness web. In case of the evaluation of the pay-per-download implementation this encompasses the analysis of the current actors, the value activities they perform, the revenue model used, and the value objects exchanged between all actors. For the validation of the media levy solution this means the identification of the necessary actors, value activities, and value objects. Furthermore, alternative revenue models can be identified which are possible solution alternatives for the different actors. The eBusiness web constructs from chapter 3 are used as a guideline.

4.2.2 Step 2: Value model construction

The e3value modeling technique is used to conceptually visualize eBusiness webs. This technique represents actors and their value activities, which produce, distribute, or consume value objects. Value objects are exchanged via value interfaces. These value interfaces are part of actors or their value activities. Value interfaces have value ports that offer or request value objects. These value objects are

obtained from other value ports via value exchanges. Minimal two value exchanges, one incoming and one outgoing, make up a value offering. [Gord01]

Value offerings fulfill a certain consumer or organizational need. Within e3value, scenario paths are used to model which value offerings fulfill these needs. A scenario path consists of a start stimulus which represents the consumer need, a stop stimulus that indicates the end of the scenario path, and several connection elements that connect the start stimulus, stop stimulus, and the intermediate value offerings. A scenario path can consist of a pure linear process, but can also have several AND or OR elements which represent alternative paths that can be used to fulfill a particular need. For a detailed description of these modeling elements see Appendix C. [Gord01]



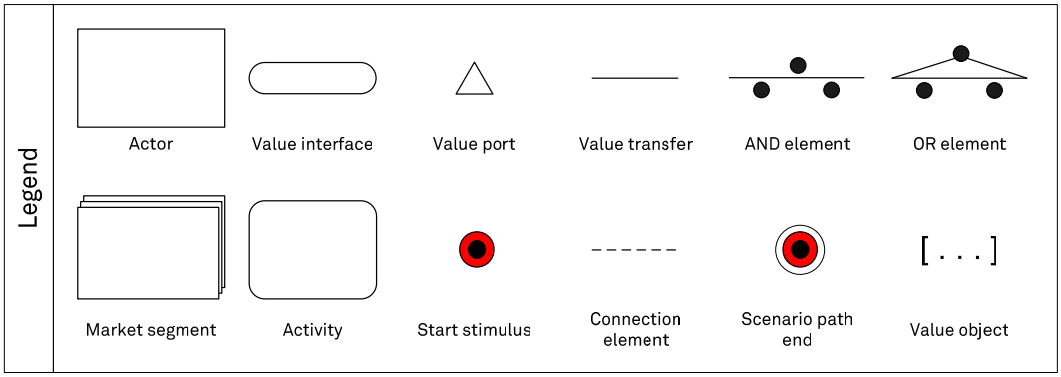


Figure 6 Example e3value model of an eBusiness web for digital music

Figure 6 visualizes an example value model of an eBusiness web for digital music. In this model the actor 'Consumer' has two start stimuli, one need for an internet subscription and one need for digital music. The need for internet access triggers ends at the scenario path end within the value activity 'Internet access' of the actor 'Internet Service Provider'. In this scenario path one value offering takes place between the value interfaces of the 'Consumer' and 'Internet Service Provider' actors. Each value interface has two value ports, one incoming and one outgoing. The incoming value port of the value interface of the actor 'Consumer' delivers the value object 'Internet subscription'. The outgoing value port offers a value object 'fee' in return. These value objects are offered and received the other way around by the value objects of the value interface of the actor 'Internet Service Provider'.

The digital music scenario path is triggered by the consumer need for digital music. This path ends with the delivery of a license to the digital music service by the producer and the collecting agency. The producer forwards the revenues to the music performers in the form of royalties. The collecting agencies divide the revenues among publishers who on their turn pay the music composers & text writers. In addition to the primary scenario, the digital music service obtains hosting and payment support and sells its audience to advertisers.

4.2.3 Step 3: Economic validation

The value model shows the value offerings between all actors within the eBusiness web in a structured way. These value offerings form the major incoming and outgoing revenues and costs of the actors. For this reason, the structure can be used to calculate the economic profitability of the actors within the eBusiness web. The incoming value objects represent revenues and the outgoing value objects, together with other expenses of actors, costs. Subtracting the total costs from the total revenues results in the profit of an actor or market segment in the eBusiness web. [Gord02]

The economic profitability can be generated from the value model when all value objects and fixed expenses and investments per actor are estimated. Estimation of these variables for the current pay-per-download implementation is different from the validation of the media levy solution. This is because the variables of the pay-per-download implementation are already known and can result in a model that should represent reality. The economic validation of the media levy solution requires more guessing of the variables relevant for the solution is validated.

Goal of the research is to validate if the media levy solution is an economically feasible alternative for the music actors. Within the value model these actors are: performers, composers & text writers, producers, content aggregators, and download portals. The other actors are supporting infrastructure or commerce service providers. In other words, they support the primary distribution channel and are merely costs to the music actors.

The publishers can either be seen as commerce service provider or as music actor. From the perspective of composers and text writers, publishers are very important to market their written music into recordings and performances. This function makes it partly responsible for the production of music. Alternatively, it collects remuneration from collecting agencies as compensation for the digital music sold of the composers and text writers, a commerce service provider role.

For the validation of the economic profitability of the music actors we have chosen to form two groups. The first group consists of download portals, content aggregators, and producers who have the largest costs in the delivery of digital music. The second group receives remuneration for the creation of digital music, and consists of performers, composers & text writers, and publishers. Hereby, we assume the publisher to support the creation of digital music and not the production. Both groups are validated in a different way. Download portals, content aggregators, and producers are validated on actual profits. Creators are validated based on net royalty payments as an indicator for profitability.

In addition to these two groups, the triggers have to be estimated also. The triggers in the eBusiness web for digital music are: number of downloads, advertisement income, and internet subscribers. These triggers initiate scenario paths and thereby the amount of exchanged value objects which result in a correct economic profitability calculation per actor. Triggers are likely to vary over time. Market research organizations report how triggers change over time and estimate for example the rise in downloads for the upcoming five years. This information can be used to project the profitability of an eBusiness web over time, assuming that the estimates of the exchanged value objects and expenses of actors will not change.

4.2.4 Step 4: Sensitivity analysis

The final step determines the variance of the profitability of the music actors. This is necessary because the profitability of the music actors is calculated based on estimates. These estimates could vary from reality and could affect the reliability and validity of the conclusions. Sensitivity analysis encompasses the effect of changing the estimated variables in the value model. These variables include the exchanged value objects, the expenses of actors, and the triggers.

Sensitivity analysis explores the extreme variances of the estimated variables in order to see if the proposed solution is also economic feasible in the most extreme cases. Based on this analysis the boundaries of a proposed solution can be found. In our case, it shows under which conditions the media levy solution is an economic feasible alternative to the current pay-per-download implementation.

Sensitivity analysis results into new economic profitability figures for all actors. The profitability is determined in a similar way as within the previous step. Estimates are determined for the value objects, expenses of all actors, as well as for the triggers. Based on these estimates the profit is calculated for each actor. The following sensitivities are analyzed:

- Effect of minimum estimates for the exchanged value objects and expenses of actors;
- Effect of maximum estimates for the exchanged value objects and expenses of actors;
- Effect of changes in size of the triggers: number of downloads, advertisement income size, and number of internet subscribers.

4.3 Case study methodology

The method described in the previous section is used to compare the pay-per-download implementation and the media levy solution in the Dutch download market. The media levy solution would influence the whole digital music market, because people are able to obtain and listen to digital music from every digital music service, and share it with others. In return they pay a fixed levy each month surcharged to products and/or services that support copying of music.

We have chosen to compare the pay-per-download implementation and the media levy solution on a country and product abstraction level. Currently, the music industry is unable to charge all providers of music downloads, especially the ones offering music in file-sharing networks, resulting in a loss in compensation to the music actors. Moreover the media levy solution would be initiated on country level. For these reasons, we focus on the Dutch online music downloads market.

The downloaded music content focuses on single tracks and packages (e.g. albums, playlists, or libraries) obtained with the purpose to sample or listen to. The digital music is obtained by Dutch internet users from digital music services. This excludes other types of digital music content (e.g. ringtones), mobile music downloads, and streaming of digital music content (e.g. online radio), digital music incorporated in other content or bundled with other products, and finally the effect on physical records sales.

In practice it is very hard to distinguish between these types of content and it is to be expected that the media levy allows all downloaded content. Furthermore, there is likely to be an effect of digital music use on physical records sales. But for practical reasons we limited our scope to profitability of music actors purely from music downloads sales. The units of analysis within the Dutch download market are the actors, their value activities, revenue models, exchanged value objects, and estimates of incoming & outgoing exchanged value objects and expenses of actors.

The case study is conducted in a time frame of three months (April 2007 until June 2007) and analyses the profitability of music actors for the year 2006 and projected up until 2010. We focus on the evaluation of the profitability most recent and in the future, because the media levy solution only affects the profitability within the future. The case study was performed in a desk research setting.

As data sources we use both documentation and interviews. Documentation has the advantage of being stable and with a broad coverage. On the other hand, it is not easy to retrieve the right documentation: it could be confidential, may be biased by the author, and can be wrongly interpreted. Interviews have the advantage of being specifically targeted at the case study. But can also be biased due to interviewer opinions, poorly constructed questions, recall inaccuracies, and reflexivity (interviewee gives what interviewer wants to hear). [Yin03]

The documentation consists of quantitative and qualitative sources, including market statistics, market forecasts, websites, and literature sources on the music industry. The documentation is used to describe the elements of the eBusiness webs and to estimate the exchanged value objects and expenses of actors. In addition we analyzed the websites of Dutch download service and collecting agencies in order to determine what actors they deal with, what value activities they perform, and what revenue model they use. The results of this screening can be found in Appendix D and E. The obtained knowledge is used to describe and construct a first version of the eBusiness web elements and value model.

The interviews are used to validate the actors, value activities, value exchanges, and estimates of exchanged value objects and expenses of actors from the eBusiness webs derived from the documentation. For a list of interview questions see Appendix F. The four interviewees are (or were) part of the Dutch download market:

- Manager public relations and communication of the Dutch association of producers and importers (NVPI), hereafter: [NVPI]
- Vice president global royalties and a manager new media from a major producer, hereafter: [Producer]
- Business developer from a former Dutch download service that recently stopped its activities, because they saw no future in the sales of music downloads anymore, hereafter: [Portal].

After each interview we update the eBusiness webs of the pay-per-download implementation and the media levy solution and use it as input for the upcoming interview. The interviews are recorded, summarized and send back to the interviewee allowing them to comment on misinterpreted information.

The estimates of incoming and outgoing exchanged value objects as well as the expenses of actors are synthesized in Appendix G.

The data analysis is driven by steps three and four of the validation method described in the previous section. Based on the synthesized estimates in Appendix G values are assigned to the exchanged value objects and expenses of actors. These values are visualized and projected on the value model. Moreover, the estimates used to calculate the economic profitability, as well as the profitability per actor, are summarized in Appendix H for the pay-per-download implementation, Appendix I for the media levy solution, and Appendix J for the sensitivity analysis. The whole research including the case study was reviewed by the master thesis's supervisors.

Case studies are a widely applied research approach within the Information Systems discipline, although it was considered one of the least systematic approaches. Analysis of research articles from 1990 until 1997 showed that the case study approach was not applied very rigorous and could be improved on the case study design, data collection, and data analysis. [Dubé03]. Table 9 summarizes the recommendations and the way they are dealt with in our case study.

Area	Recommendation	Our approach
Design issues	Identify clear research questions	Research questions are described in section 1.3
	Rationale for single or multiple case selection	The music downloads market is an extreme case, because it showed the inability of music actors to charge providers of their creations and ensure remuneration.
	Take advantage of pilot cases	Not applied because the complete research is applied in a limited time frame of six months for a Master's thesis.
	Conduct more longitudinal case studies for examining phenomena as they unfold	
	Specify constructs a priori and start with a clean theoretical slate	The elements of an eBusiness web for digital music as well as digital music were defined based on a literature review. These constructs were used as a guideline to structurally describe the case study results and collect data.
Data collection	Provide detailed information on data collection methods and procedures	This section described the data sources and the way they are used.
	Use tables to summarize information about data collection	The estimates of the exchanged value objects and expenses of actors from the different data sources were synthesized in Appendix G.
	Triangulate data	Documentation and interviews are used as data sources. The information included both quantitative and qualitative information.
Data analysis	Provide descriptions of analytic methods and give opportunities to follow the chain of evidence	The method used to calculate the profitability of the music actors is described in this chapter. Appendices H, I, and J summarize the raw data used to calculate, and the resulting, profitability of the music actors in the case study.
	Use of preliminary data analysis techniques for reflecting on data	The value model was used to visualize the estimated exchanged value objects and expenses of actors which allowed structured calculation of the profitability per music actors
	Compare findings with literature to increase confidents in the findings	This is done in discussion and conclusion's chapter 8.

Table 9 Recommendations for rigor in the case study research approach [Dubé03]

4.4 Conclusion

The goal of this chapter was to construct a method which can be used to validate the economic profitability of actors within eBusiness webs for digital music, in order to answer research question 1:

What method can validate and compare the economic profitability of actors within eBusiness webs for digital music?

Determining the economic profitability of actors requires implementation evaluation of the pay-per-download implementation and solution validation of the proposed media levy solution. Both analyses result into economic profitability estimates for all music actors. For the media levy solution to be a better alternative compared to the pay-per-download implementation the following norms should be achieved:

1 Each music actor makes profit;

2 The profit of all music actors in total is higher in the media levy eBusiness web compared to the pay - per-download eBusiness web;

3 Each music actor increases its profit within the media levy eBusiness web compared to the profit within the pay-per-download eBusiness web.

Economic profitability of music actors can be determined based on the construction of value models. First the actors, value activities, revenue model, and exchanged value objects of all actors within the eBusiness web should be analyzed. Based on this information the value model can be modeled using the e3value technique. The value model forms the basis for the economic validation. Exchanged value objects result into incoming revenues and outgoing costs per actor. After subtracting the other expenses of actors the economic profitability can be calculated.

Before the economic profitability can be calculated, all variables have to be estimated. These estimates always vary from the real world. For this reason, sensitivity analysis is used to determine under which conditions the media levy solution is a better alternative. Finally, the norms are assessed resulting in a conclusion if, and under which conditions, the media levy solution is a better alternative compared to the pay-per-download implementation.

In the next part of this research, this method is applied to the Dutch download market. Case studies are a widely applied research approach, but are also considered one of the least systematic approaches. Section 4.3 described the case study design, data collection, and data analysis approaches. It also evaluates recommendations on rigor in case study research and the way they are dealt with in our research.

5 Pay-per-download implementation evaluation

This chapter determines the economic profitability of music actors within the current Dutch music download market. Section 5.1 describes the current elements of the eBusiness web within the Dutch download market. All actors are described, as well as, their value activities, revenue model, and the value objects exchanged between the actors. These elements are modeled into a value model in section 5.2. Section 5.3 evaluates the value model and determines the economic profitability of the music actors based on estimates. Finally section 0 concludes with the profitability of the music actors within the pay-per-download implementation.

5.1 Description eBusiness web elements

This section describes the actors, value activities, and revenue models used within the Dutch download market. These elements are structured by type of eBusiness web actor within: content provider, digital music service, commerce service provider, infrastructure service provider, and sponsor.

5.1.1 Content providers

As described in chapter 3, the content providers are the music performers, composers, and text writers, as well as the companies that produce and publish music. The Dutch producer's market segment is dominated by four firms: Sony/BMG, Universal Music Netherlands, EMI Music Netherlands BV, and Warner Music Benelux BV. In total, the four large producers own approximately 75% of the market; see Figure 7 [NVPI05]. A range of independent labels and independent artists complete the market. The value activities a producer performs within the download market are: marketing & promotion of artists, music recording & production, and selection & contracting of performers. In this case study we assume all performers authorized producers by assigning them their reproduction and public performance rights in return for royalties. The revenue model of producers is manufacturer license. Digital music goods are provided to digital music services together with the right to sell it to consumers.

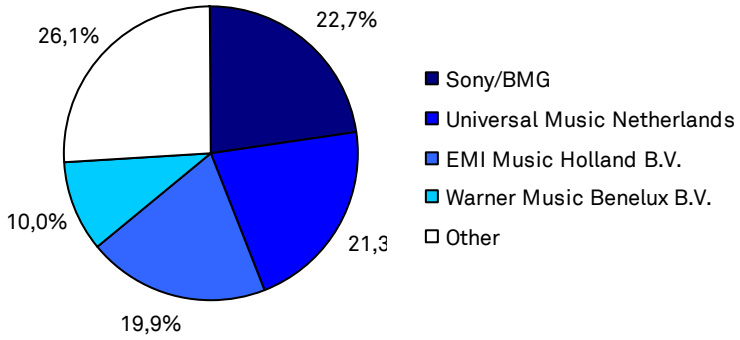


Figure 7 Dutch producer's market segmentation in 2005 [NVPI05]

Music publishers collect royalties on behalf of their composers and text writers and pay the composers and text writers upfront. The royalties are collected from collecting agencies, which on their turn charge digital music services. Composers and text writers compose or write music for different performers. Moreover, the songs are sold in different countries. In theory, each composer and text writer should subscribe at all collecting agencies of the countries where the music of the performers they write for is sold. Music publishers add value to the web by centralizing and administering copyright payments from a

composer and text writer perspective. Furthermore, they market their composers and text writers and acquire deals from producers or motion picture organizations. [Producer] [Berg04]

Music publishers are either large worldwide organizations (e.g. Universal Music Publishing) or independent publishers. Especially the independent publishers do not have foreign offices to exploit their libraries. Because of this they sometimes contract sub-publishers in a specific country to promote their composers and text writers and collect royalties. The revenue model used by music publishers is revenue sharing. Publishers, composers and text writers share the royalties one third each. When publishers use sub-publishers, they also demand part of the royalties. We assume this to be 10%. [Producer] [Berg04]

5.1.2 Digital music services

The digital music services segment is not very transparent. Download services can perform two different roles: content aggregator and context provider. The content aggregator is a kind of intermediary between the content providers (producers) and the context provider. Their value activities are receiving authorization to distribute digital music from producers, digitization of music into digital music goods, and the hosting of music libraries. Example content aggregators are OD2, Digital Media Power, Lyzia, and Aim4Music.

Content aggregators often ask a minimum of hundred albums from producers before they will include the music into their libraries. Small producers are not able to offer these amounts and could therefore miss potential revenues from download sales. Here specific content aggregators form intermediaries between small producers and the large content aggregators in order to minimum of hundred albums. [NVPI]

The context provider fulfils the real contact between the consumer and the eBusiness web. Their value activities are the actual distribution, promotion of artists, and advertising. In this case study the context providers are divided into two different groups: download portals and illegal sharing services. The key differences between the two types are their distribution rights and their product offering. Download portals were authorized to legally distribute digital music because they obtained licenses. Sharing services were not authorized to legally distribute digital music and thereby also do not compensate music actors.

Both download portals and sharing services offer digital music goods, but vary in the quality, the use values a consumer gets and the return of revenues a consumer has to offer. Download portals restrict the use of digital music, but offer their music reliably, conveniently, and with lower search costs [Peit05]. Illegal sharing services only facilitate the distribution of digital music. Consumers do not have to pay for the music exchanged, but simply have to offer part of their computer resources (bandwidth and storage) for other consumers to download music.

The revenue models used by download portals are: merchant bit vendor (e.g. iTunes), merchant click-and-mortar (e.g. Kruidvat Entertainment), manufacturer license (e.g. Sony's connect.com), subscription content services (e.g. MP3tunes.com), and utility metered subscription (e.g. eMusic.com). The merchant and manufacturer models are mainly pay-per-download: a single track is offered for € 0.99 and an album for € 9.99. Some offer prepaid bundles of downloads for a fixed price where consumer are able to download tracks within this price bundle. The subscription models allow consumers to listen to music and download it for mobile use in return for a fixed fee per month. Obtaining music adds additional costs per download, again pay-per-download. Within the utility metered subscription model, consumers pay a fixed fee per month and are allowed to download a fixed number of single tracks. For a complete comparison and classification of legal Dutch download portals see Appendix D.

5.1.3 Commerce service providers

The commerce service providers consist of collecting agencies and payment services. Collecting agencies collect remuneration from commercial users of music and divide it among their member rights owners. The added value is centralized administration of author's right payments. Commercial users of music are

able to pay to one organization for all music they commercially used and do not have to obtain licenses from al individual rights owners. Rights owners on their turn do not have to license all commercial users.

The revenue model used by collecting agencies is manufacturer license. Collecting agencies either collect remuneration for composers and text writers (copyright) or producers and performers (related rights). The Dutch collecting agencies are Buma/Stemra (copyright) and Sena (related rights). For a complete overview of the licenses issued for the commercial use of digital music by both Buma/Stemra and Sena see Appendix E. [Buma07] [Sena07]

The distribution license issued by Buma/Stemra is the only license required for commercial distribution of music downloads in the Netherlands. This license only ensures royalties for composers and text writers. New download services are required to pay 10% of the price a consumer pays (excluding sales tax) with a minimum amount of € 0.06 per track and € 0.90 per album downloaded [Buma07]. Current services have a license which requires them to pay around 8% of the price a consumer pays [Producer] [Portal] [NVPI]. Moreover, download statistics have to be reported regularly, including the rights owners, origin, number of times downloaded, and the price per track. These download statistics are used to divide the collected money to the correct composers and text writers. In return download portals are allowed to commercially distribute and thereby sell digital music.

In Europe, commercial users of music are allowed to obtain a distribution license at one central collecting agency authorizing their commercial distribution of music for the whole of Europe. On the other hand, only country specific collecting agencies are allowed to divide royalties to composers and text writers for the music sold in that specific country. For example, iTunes is allowed to obtain a license from GEMA, the collecting agency in Germany. But GEMA is only allowed to divide royalties for the part sold in the German iTunes shop. The part sold in the Dutch iTunes shop has to be transferred to the Buma/Stemra, who on their turn, divide royalties to their member publishers, composers, and text writers. [Producer]

The second commerce service provider is the payment service. Payment services add value by facilitating a secure and trustworthy payment from consumer to download portal. Services used by download portals are: creditcard, bank transfer (e.g. iDeal), phone, SMS, coupons (e.g. iTunes gift certificates), online prepaid (e.g. MiniTix), and online credit (e.g. ClickandBuy).The revenue model used by these services is mostly utility metered usage, resulting in a fixed subscription fee per month and a fee per transaction. The transaction fee is, in most cases, paid by the consumer in addition to the total transaction and varies according the transaction's size. An exception is Apple's iTunes Music Store which does not surcharge transaction costs [Producer].

5.1.4 Infrastructure service providers

The infrastructure service providers consist of hosting services and Digital Rights Management (DRM) technology providers. Hosting services provide web hosting, storage, and data transmission. These services can be used to store digital music databases and make them accessible for consumer download. Hosting services add value to the web by actually storing the music catalog of content providers and distributing the music downloads to the consumer. The revenue model is utility metered usage, resulting in a fee per GB of data stored per month and a fee per GB per data uploaded or downloaded [Amaz07].

Producers require content aggregators to compress music downloads with DRM technology as part of their license agreement [Producer]. DRM technology embeds the use values of digital music goods into the good itself. Currently, Apple's Fairplay is used within the iTunes Music Store and Microsoft's PlayForSure within all other download portals. Fairplay compressed downloads can only be played on iPods also sold by Apple. PlayForSure is a more open standard and is licensed to different content aggregators. The PlayForSure compressed downloads can only be played in Windows Media Player and can be transferred to MP3 players, but not to Apple's iPod.

5.1.5 Sponsors

The sponsors within the digital music eBusiness web are producers promoting their artists or third party advertisers. From the interviews it did not became clear if producers paid for their advertisements. [NVPI] argued that producers paid for their advertisements placed on the context provider. On the other hand, [Portal] explained there was no money involved: producers were able to promote their artists and the portal was allowed to use the artist's brand as promotion. The producer explained that advertisements within the download portal from the producers can be compared with promotion in physical stores [Producer]. There are a limited number of promotional spaces where producers can promote their artists for free.

Furthermore it is not clear how much money was gathered from third party advertisers except from the statement that it allowed the former owners of a download portal to break even [Portal]. The producer explained download portals are obligated to share 50-70% of the advertisement income with the producers. The main reason for this is that people are going to the portal because of the content and not because of the portal. The content is owned by the producers, and therefore should they receive a share of the advertisement income. A website comparison of Dutch download portals (see Appendix D), turned out that hardly any portal had third-party investments. The next section models all actors into a value model of the Dutch download market.

5.2 Value model construction

Based on the analysis in the previous section, a value model which visualizes all actors, their value activities, and the value exchanges between them can be constructed. Figure 8 shows the value model of the current Dutch download market.

Consumers are able to fulfill their need for digital music by downloading music from illegal sharing services or download portals. Before being able to use these context providers, consumers need internet access. Therefore they have to obtain an internet subscription from an Internet Service Provider.

Download portal sells downloads to consumers. The use values are embedded by means of DRM technology. Payment services are used to securely transfer the money from the consumer to the download portal. Portals obtain music downloads from the music catalog of their content aggregator. Furthermore, they have to obtain a copyright license from a central collecting agency, which ensures remuneration to composers and text writers. In addition to the download revenues, download portals offer advertisement space to third-party advertisers and to promotional places to producers.

Content aggregators obtain authorization for their commercial distribution of music from producers. Moreover they digitize and compress digital music into music catalogs. These catalogs are stored at hosting services which provide storage and delivery of downloads towards the consumer. During the digitization music is compressed with DRM technology. Content aggregators have to obtain a license from a DRM technology provider in order to use their technology. Performers get paid for each download sold by the producers.

The central collecting agency collects remuneration together with download statistics from the download portal for all music downloads that are sold. In return download portals are authorized to commercially distribute music. This central collecting agency could be Buma/Stemra, but also a foreign collecting agency. In case of a foreign collecting agency, they have to transfer the remuneration sold in the Dutch download portal to the Buma/Stemra. Buma/Stemra divides the remuneration and pays royalties to the publishers of the composers and text writers. These publishers are either the direct publishers or sub-publishers. The direct publishers pay the composers and text writers for each download sold in the download portal.

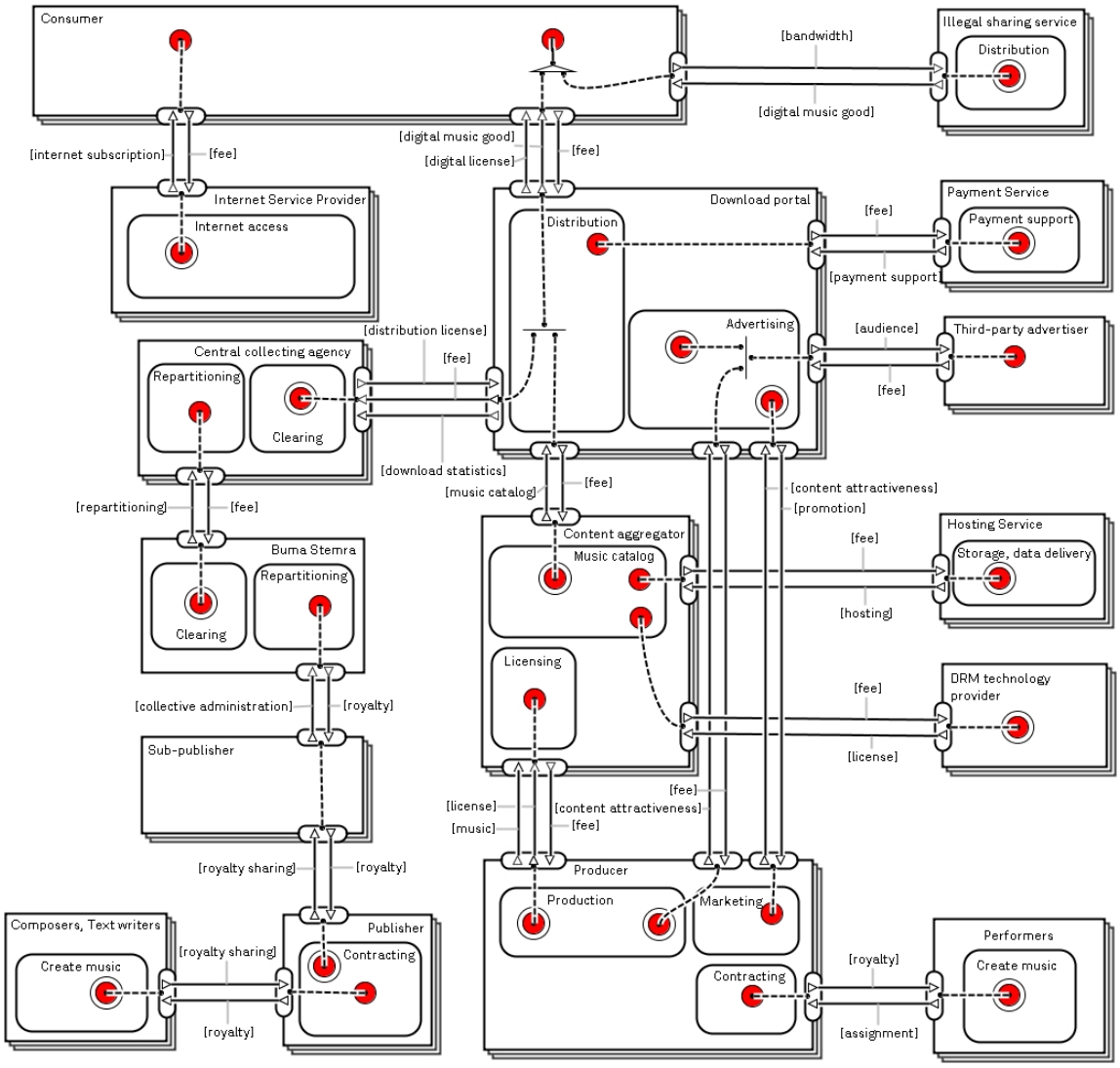


Figure 8 Value model pay-per-download implementation

In reality the value model is much more complex because each market segment consists of several different organizations. Moreover, organizations could operate in different market segments. For example, Planet music stream is both Internet Service Provider and download portal; Apple's iTunes Music Store is download portal, content aggregator, and DRM technology provider; and Sony is producer, but also has a download portal and content aggregator in the form of Connect.com. For practical reasons, market segments are used to represent all organizations, assuming that the economic profitability of a market segment represents the economic profitability of all organizations within the market segment. In addition several other assumptions are made in this value model:

- Third-party advertisers and producers only target download portals for advertisements;
- All download portals obtain their music from a content aggregator;
- All publishers have a Dutch sub-publisher;

The next section determines the profitability of all music actors within the eBusiness web.

5.3 Economic validation

The value model as constructed in the previous section forms the basis for the economic validation of the current Dutch music download market. Section 5.3.1 estimates the triggers, exchanged value objects and expenses of actors. Based on these estimates the profitability of the music actors is calculated in section 5.3.2.

5.3.1 Estimates

Within the value model four triggers influence the profitability of all actors involved: the number of downloads, the fraction of legal downloads, the number of consumers having a broadband connection, and the third-party advertisement spending. These triggers start scenario paths resulting into value offerings within the value web. These value offerings represent revenue for the incoming value ports of actors and costs for the outgoing value ports of actors. In addition, each market segment has operating expenses in order to add value to the web. In order to determine the economic profitability of all actors these variables have to be estimated.

Music downloads come from download portals and illegal sharing services. The number of legal downloads are yearly reported by the NVPI in their estimated value of the Dutch music industry. In 2006 the total Dutch music market is estimated at € 317 million, see Table 10. Downloads account for approximately three percent of this market, resulting in a total of € 10.1 million or 10.1 million downloads [NVPI07a].

	Revenues (millions)			Amounts sold (millions)		
	2006	2005	%	2006	2005	%
Albums	€ 247,9	€ 266,8	-7	19,5	20,6	-5
Singles	€ 6,4	€ 8	-20	1,7	2	-18
Music videos	€ 52,5	€ 63,6	-18	3,5	4,6	-24
Downloads	**€ 10,1**	€ 4,3	135	10,1	4,3	135
Total	€ 316,9	€ 342,7	-9			

Table 10 Market value Dutch music industry in 2005 and 2006 [NVPI07a]

The number of illegal music downloads or swaps are estimated based on the number of files swapped globally multiplied by the percentage of Dutch file-sharers. In 2005, 20 billion songs were swapped globally [IFPI06]. The percentage of Dutch file sharers in 2003 was estimated at 1% [OECD05] based on the monitoring of peer-to-peer networks performed by [BigC07]. Thus, the number of illegal downloads swapped by Dutch file sharers are estimated at 200 million.

The Netherlands is one of the countries with the highest broadband penetration in the world. In December 2006, the number of broadband subscribers was approximately 5.2 million [OECD07] of the total of 7 million households [CBS07]. Each broadband subscriber pays a subscription fee of around € 25 per month [Bree07] Thus the total broadband market is worth around € 1.56 billion.

The final external trigger of the Dutch download market is the amount of advertisements sold to third-party advertisers. As is clear from the comparison of Dutch download services only 4 from the in total 34 portals have advertisements from third-party advertisers, see Appendix D. These four portals also are small players within the download portal market segment and the income from third-party advertisers is therefore assumed to be zero. The main reason for this is that producers demand a percentage (50-70%) of the income generated from advertisements [Producer]. Most download portals therefore do not choose to advertise within the download shops, but on earlier pages.

Appendix G summarizes the estimates for the exchanged value objects and expenses of actors of the download portal, content aggregator, and producer. Moreover, the profit margins of the collecting agencies and the publishers are estimated. These estimates are based on literature sources and were validated during the interviews. Figure 9 maps all variables on the corresponding elements of the value model. The variables are all estimates per download, except from the internet subscription which is the internet subscription fee per month. For each actor these figures result into a profit margin per download.

The download portal receives € 1.09 from consumers for each download. This is the download price of € 0.99 surcharged with transaction costs of € 0.10 paid to the payment service. Over the € 0.99, the portal has to pay a sales tax of € 0.16, a distribution license fee of € 0.07 (8%), and a music catalog access fee of € 0.75. The expenses for platform and marketing are € 0.10. The advertisement income from third-party advertiser was assumed to be zero. The profit margin of the download portal therefore results in a loss of € 0.09 per download.

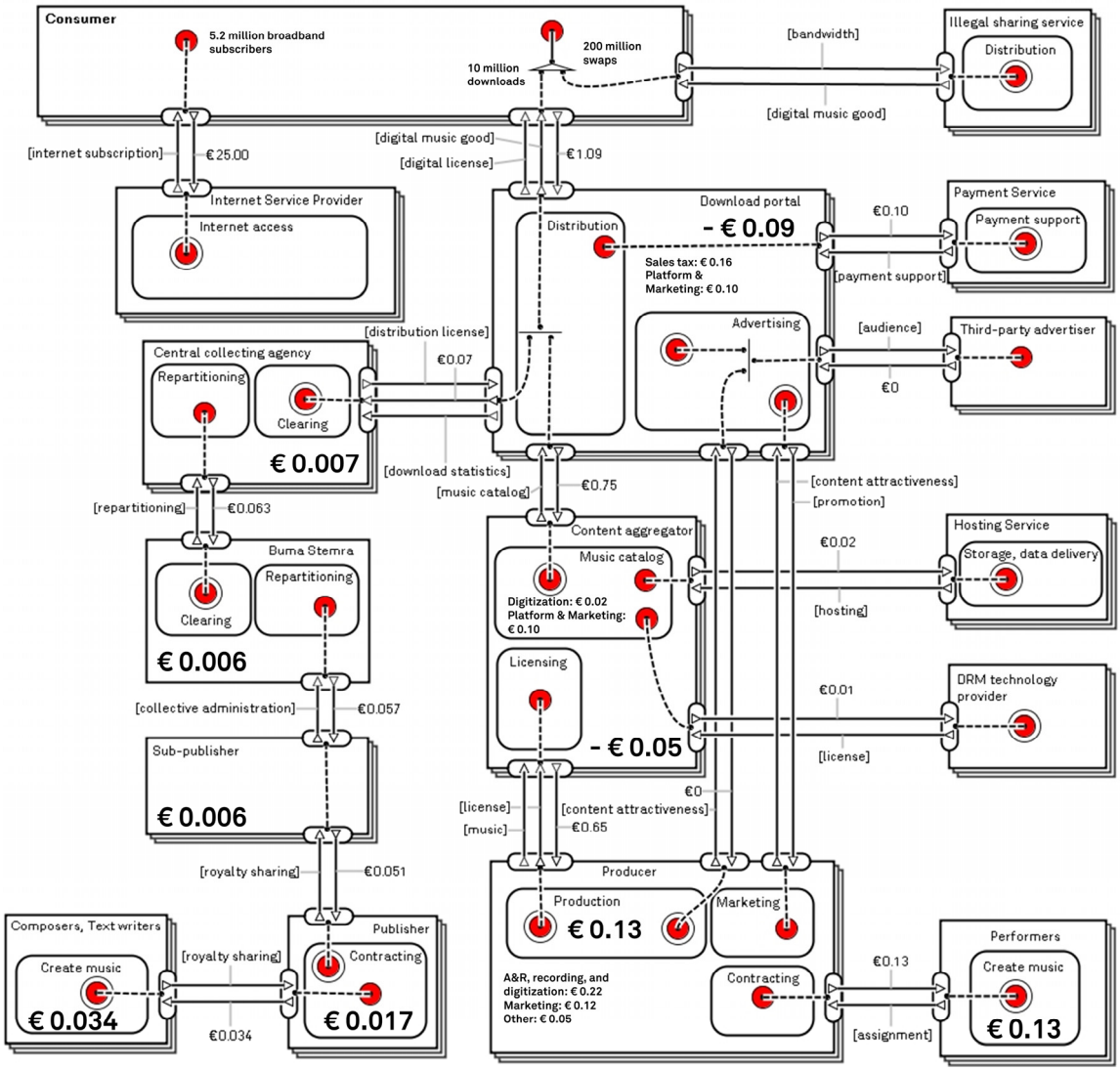


Figure 9 Estimates of the pay-per-download implementation's exchanged value objects and expenses of actors

The music catalog fee of € 0.75 is received by the content aggregator. This income is used to digitize music for € 0.02, license a DRM technology for € 0.01, and host the music catalog with a hosting provider for € 0.02. The largest cost for the content aggregator is the obtaining of music and the authorization to distribute it paid to the producer of € 0.65. Finally, also the content aggregator has expenses in the form of platform and marketing costs of € 0.10. The profit margin of the content aggregator results into a loss of € 0.05 per download.

Producers receive € 0.65 from the content aggregator for each download. Of this the performers get 20% or € 0.13 as royalty payments. The main costs for the producer are the costs of producing a song. These costs include the selection and certification of artists, also called Artist & Repertoire (A&R), the recording of songs, and the digitization of songs. Together these costs are estimated at € 0.22 per download. The second major task of producers is the marketing of performers. These costs are estimated to be € 0.12 per download. Finally, several indirect costs (e.g. accommodation, facilities, human resources) add up to € 0.05 per download. The profit margin of producers therefore results into a profit of € 0.13 per download.

From the € 0.07 paid by the download portal to a central collecting agency, € 0.034 is received as royalty payments by the composers and text writers. In this case the download portal has a central distribution licensing agreement with a collecting agency other than Buma/Stemra. Moreover, the composers and text writer of a song sold via the respective download portal has a contract with a publisher demanding a royalty sharing of 33%. This publisher has a contract with a Dutch sub-publisher demanding a royalty sharing of 10%.

This is a worst case scenario because composers & text writers do not necessary have to sign up with a publisher and the Buma/Stemra can license the central distribution licensing agreement with a download portal. For example, Radio538 pays directly to Buma/Stemra and a composer of a music download sold via Radio538 is a direct member of Buma/Stemra. In this case, Buma/Stemra asks its margin of about 10% and the composer receives the remaining €0.063 as royalty payments.

It should be noticed that the margins per actor can only be interpreted as profit margins for the download portal, content aggregator, and producer. The expenses are only from these actors estimated. The margins for the composers & text writers and the performers should be interpreted as salary; for collecting agencies and publishers as royalty sharing margins; and for the payment service, hosting service, and DRM technology provider as turnover. In the next section all estimates are used to calculate the economic profitability of the music actors.

5.3.2 Music actor profitability

Based on the estimates of the previous section the profitability can be calculated per music actor for the year 2006. It is much more useful to see how the economic profitability will evolve over the upcoming years. In order to project the economic profitability we use market forecasts for the amount of legal downloads, the number of broadband subscribers, and advertisement income.

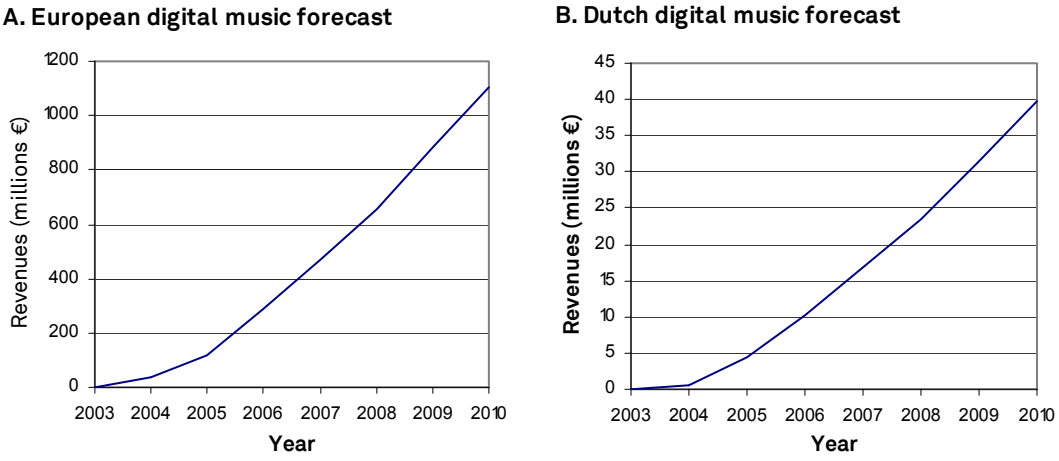


Figure 10 Total EU online music revenues forecast [Scree06] projected on Dutch online music revenues

Screen Digest forecasted the online music revenues in Europe up until 2010 for a research initiated by the European committee. Their forecast is displayed in Figure 10a. We assume the Dutch download market to grow in a similar way as this projection, because no clear information exists on the projection of the Dutch download market. Moreover, the Dutch music market historically grew a bit slower than other European music markets, making the projection a slightly too positive forecast. The resulting revenues are displayed in Figure 10b.

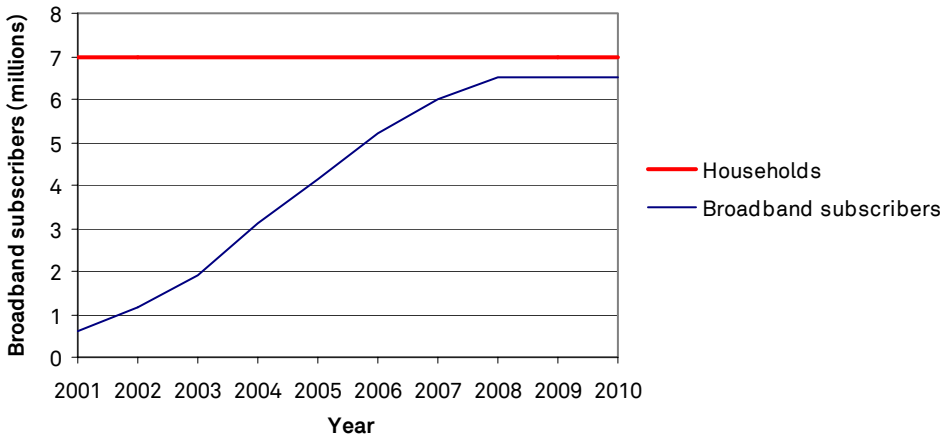


Figure 11 Number of broadband subscribers in the Netherland up to 2006 [OECD05] projected to 2010

The amount of broadband subscribers increased heavily in the last five years, making the Netherlands the country with one of the highest broadband penetration rate in the world [OECD05]. Figure 11 displays the growth in broadband subscribers. This amount is assumed not to rise heavily anymore in the upcoming years, because 5.2 of the in total 7 million households already have a broadband subscription. We assume this variable to rise to a maximum of 6.5 million in 2008, with 6 million subscribers at the end of 2007. This projection is visualized in Figure 11.

The evolving of advertisement income is very hard to forecast. The International Federation of Phonographic Industry (IFPI) reports that advertisement based revenue models are set to make an impact in 2007 [IFPI07]. These models are licensed by producers in a different way. Producers are paid 50-70%

of the revenues from advertisements and subscriptions according to their market share within the portal [Producer]. We will not include this trend in our analysis and focus on the comparison of the current pay-per-download implementation and the media levy solution. Mainly because the services are not implemented yet and therefore hardly any empirical data is available. We do discuss the possible impact of these models in the discussion, see section 8.1. The estimated variables are used to generate profit sheets per actor. For a complete overview of the total costs and benefits per actor see Appendix G.

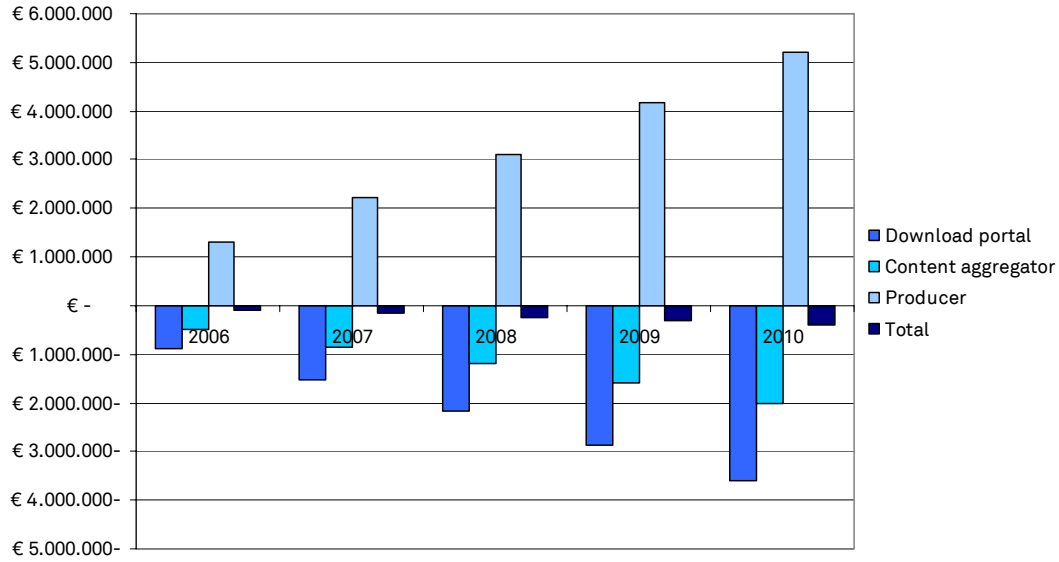


Figure 12 Projected profits download portal, content aggregator and producer 2006 - 2010

Figure 12 displays the current profits of the download portal, content aggregator, and producer market segments and their expected growth until 2010. Also the total profits of all market segments are shown. Both the download portal and the content aggregator segments have negative results now, but also in the future. This was also validated in the interviews. [Portal] explained that their main reason for their drawback from the download portal market segment was the high direct costs, especially the extraordinary high price for the music license charged by producers. [Producer] also reasoned that download services will not be able to make a profit. They explained that portals cannot be the core business for organizations, but merely a kind of promotion for other products or services.

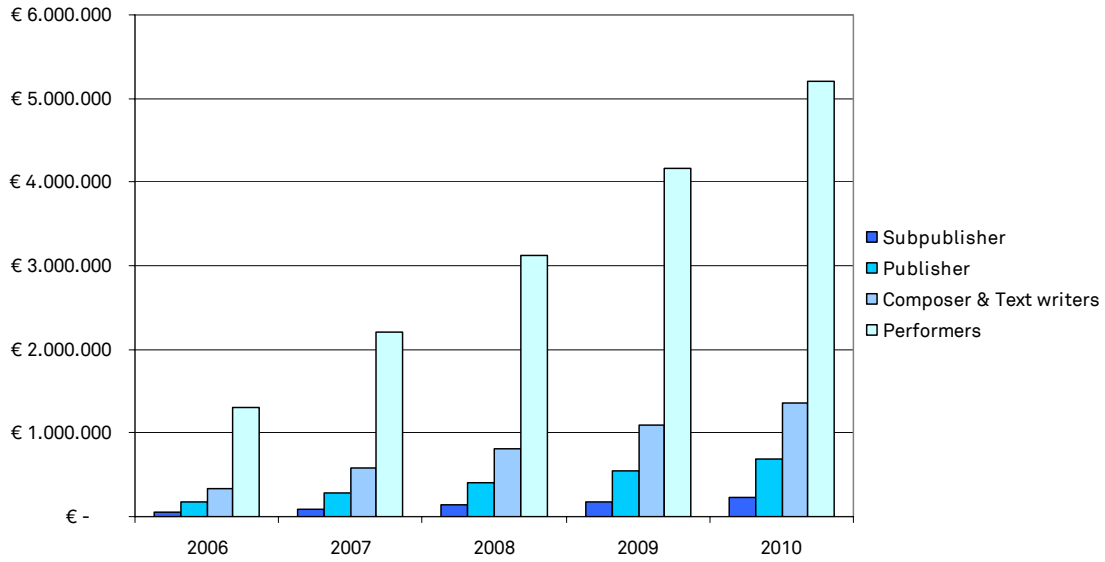


Figure 13 Projected royalty income publishers, composers & text writers, and performers 2006 – 2010

The royalties collecting agencies, publishers, composers & text writers, and performers received in 2006, and are expected to receive until 2010, are projected in Figure 13. As already explained in the previous section, this represents the worst case scenario where the central collecting agency and Buma/Stemra as well as the sub-publisher and a publisher are involved.

5.4 Conclusion

This chapter assessed the economic profitability of all music actors within the current pay-per-download implementation of the Dutch download market and answers research question 2b:

What is the profitability of the music actors within the current pay-per-download eBusiness web?

The profitability of the music actors within the current pay-per-download implementation within the Dutch download market can be found in Figure 12 and Figure 13. The results show that the eBusiness web is not feasible with respect to the norm: “each music actor makes profit”. Both the content aggregator and the download do not make profit. In the next chapter the profitability estimates of this chapter are used to assess the media levy solution.

6 Media levy solution validation

In the previous section the current pay-per-download implementation is evaluated for the Dutch download market. This chapter predicts how the same Dutch download market would behave when a media levy solution is implemented. The resulting profitability of music actors are compared with the norms set in section 4.1. First, section 6.1 explores the media levy solution based on literature sources. The eBusiness web elements are described in section 6.2 and modeled into a value model in section 6.3. Section 6.4 evaluates the value model and determines the economic profitability of the music actors based on estimates. Finally, section 6.5 concludes if the media levy solution is a better strategy compared to the pay-per-download implementation within the Dutch download market.

6.1 Proposed media levy solutions

The core characteristic of the media levy solution is the unbundling of digital music exchanges and remuneration exchanges. Digital music is distributed via content aggregators and download portals or via sharing services, similar to the current pay-per-download implementation. The remuneration to the rights owners are gathered via a media levy surcharged to products or services that enable the use of digital music. In practice this means digital music is freely distributed and used during a specific period of time. The total stack of remuneration is divided among the various producers, performers, and their music performers, composers, and text writers. The solution works as follows [Neta02] [Fish04] [Oksa05]:

1 A musician or producer who wishes to collect compensation should register his music at a central organization (agency);

2 The agency raises, through compulsory media levies, sufficient remuneration to compensate registrants for making their music available to the public;

3 The agency estimates the share each registrant should receive in the given period;

4 Each registrant will be paid periodically by the agency a share of the remuneration.

This approach is beneficial to almost all actors within the music industry. Consumers enjoy large cost savings, have more convenient access to more diverse music, are free from price discrimination, and have greater opportunities to participate in the creative process. Artists have a reliable source of income, greater choice in selecting the intermediaries that distribute their works. Producers remain financially compensated for their investment into performers and recordings. Manufacturers of electronic devices have an increased demand for their products and are not bounded by copy-protection constraints upon the design of their devices. Finally, society as a whole benefits from a reduction in the costs associated with enforcing copyright law and is released from the culturally unhealthy practice of widespread lawbreaking. [Fish04]

On the other hand, this strategy also has several disadvantages. The agency potentially has a lot of power within the industry. When this agency is under government surveillance, there is a risk that power is repressively and the money gathered is used for other means. Musicians can lose control over the use of their individual works. In addition, the practical implementation brings up some issues, it is quite difficult to [Fish04] [Neta02] [Lieb03a]:

- Determine the use values a consumer receives after paying the media levy;
- Charge the actual consumers of digital music. There is always a group of people who is paying, but does not have the benefits (e.g. in case of a levy on internet access, not all internet users download music);
- Determine the products or services that should be surcharged;

- Estimate the total amount of money that should be gathered to represent a proper compensation for all musicians in a given period;
- Determine the fractions which are available to the composer, text writer, performer, producer, and publisher;
- Decide which actor should fulfill the agency role.

Netanel, Fisher, and Oksanen proposed different solutions to overcome these issues. Table 11 outlines the characteristics of the media levy solutions proposed [Neta02] [Fish04] [Oksa05].

Characteristic	[Neta02]	[Fish04]	[Oksa05]
Use values	Sharing	Non-commercial use	Sharing
Total remuneration	Loss from CD sales	Loss from CD sales	Loss from CD sales
Levy source	All kind of devices and services	Tax Broadband connections	Broadband connections
Repartition basis	Download popularity	Download popularity	Consumer subjective opinions & anonymous sampling
Agency actor	Government	Government	Government
Repartition receiver	Producers and publishers	Producers and publishers	Musicians

Table 11 Characteristics of proposed media levy solutions

Both Netanel and Oksanen, propose to offer consumers the right to share digital music goods. Fisher goes one step further and also wants to allow all non-commercial digital use of music, including the creation of derivative works, public performance via a digital audio transmission, and all distribution over the Internet. All three authors agree on the total amount of remuneration that should be raised. As an indicator the loss of revenues in CD sales can be used. The remuneration should only compensate musicians and the costs to record, produce, and market CDs.

The source upon which the levy should be surcharged also varies in the proposed solutions. Netanel wants to surcharge all kind of products and services with a percentage of approximately 4% of the total revenues. Examples are Internet access, P2P software & services, computer hardware, consumer electronic devices used to copy, store, transmit, or perform downloaded files, and storage media used with those devices. Fisher and Oksanen both see broadband connections as alternative sources. A media levy for digital music would benefit broadband subscribers most. They are able to download and share digital music fast and conveniently. A final candidate is provided by Fisher who proposes taxes as alternative source of revenue. This would be extremely efficient but also politically unpopular.

The proposed alternatives to estimate the registrant's shares are: relative download popularity and consumer's subjective opinions. Relative download popularity means rights owners get compensated based on the relative usage of their digital music in a given period [Fish04] [Neta02]. Relative usage can be based on download statistics gathered from content aggregators or media measurement organizations (e.g. Nielsen or BigChampagne) [Fish04]. Techniques that can be used are monitoring peer-to-peer services and sampling the users' listening habits [Fish04] [Oksa05]. Dividing based on consumer's subjective opinions means consumers can vote to which musician their media levy has to be divided. The main argument for this method is that number of downloads does not represent value to the consumer. For example, someone can download 200 Rolling Stones songs and just one song from a new emerging musician, but might value the one song more than those 200 songs. [Oksa05]

All three authors agree that the government as an independent actor should fulfill the agency's actor role. More in particular the copyright office is proposed, because it already runs a registration system for copyrighted works. The final solution characteristic is the receiver of the remuneration after

repartitioning. Fisher and Netanel propose the receivers to be the producers and publishers. They can divide the money among the musicians based on the contractual royalty agreements. Oksanen prefers to leave out the intermediaries and wants to pay directly to the performers and composers & text writers. The musicians themselves can pay producers and publishers for the value they add to the production and distribution of digital music.

6.2 Description eBusiness web elements

The previous section described several media levy solutions proposed in literature. In section 6.2.1, a choice is made between the suggested solutions for use values, total remuneration, levy source, repartition base, agency actor, and repartition receiver. Section 6.2.2 describes the effect of these choices on the eBusiness web for the Dutch download market.

6.2.1 Media levy solution elements

The media levy solution should give consumers more use values than the current pay-per-download solution. The use values proposed in literature are sharing and optionally the non-commercial creation of derivative works and public performance. Almost the same rights are part of the Creative Commons license agreements [CC07]. Creative commons distinguishes between the following rights: to copy, distribute and transmit the work (share); to adapt the work (adapt); and to make derivative works (derivatives). In our opinion, consumers must be able to share and adapt digital music. In addition, musicians must be able to allow consumers to create derivative works and to commercially exploit the music, but this should not be the standard situation.

The amount of money that should be raised by the agency should be a compensation for all downloads of digital music, including file sharing and downloads from legal services. It is very difficult to estimate this figure and even harder to determine how it should grow over time [Lieb03a]. The proposed indicator of loss in revenues of physical record sales is not a completely correct indicator. The main reason is that file sharing does not account for the complete decline in record sales [Ober07]. Other factors that are mentioned as possible reasons for the decline in sales revenues are: the volume strategy, end of atypical high sales from people switching format, and a shift in entertainment spending towards movies. Furthermore, file sharing also has a positive impact on record sales. It is a form of sampling music before actually buying the physical record. [Lieb03b]. Although these comments suggest another amount of money to be raised, our goal is to validate the media levy solution. Key solution element is the amount of money to be raised to equal the loss in CD sales.

A media levy for digital music would benefit broadband subscribers most. They are able to download and share digital music fast and conveniently. A levy bundled into the broadband subscription price would target this group of consumers. Still, not all broadband subscribers want to download music, but do have to pay the levy. An optional levy would solve this problem, but also leads to lower revenues and higher costs due to a necessary distinction between levy payers and non-levy payers. Therefore we will validate a compulsory media levy for all broadband subscribers.

The total remuneration should be divided based on the relative number of times a song is played in a period [Fish04]. The proposed solution of the number of downloads does not represent this figure, because one is not very selective anymore [Producer]. High broadband speed and peer-to-peer services like eDonkey and Bittorent allow consumers to download complete libraries and be selective afterwards. Moreover, musicians could easily game the system and download their own music more often in order to receive a higher remuneration [Fish04] [Lieb03a]. The other alternative, consumer voting, requires a very high consumer involvement, involvement is however unlikely to be very high. In our validation download and play statistics are obtained from content aggregators. These statistics are supplemented by statistics obtained from media measurement organizations. These organizations sample households on their digital music use.

The central agency which has to divide the money from levies should be an independent authority which is supported by all actors within the music industry. This could either be a consortium governed by representatives from all market segments, the current collecting agencies, or a government agency. Also a structure can be used, where a central government agency transfers the money to the collecting agencies each representing a part of the music industry. For practical reasons we assume the central agency to be a single actor dividing directly among the rights owners.

The rights owners could be producers, publishers, but also musicians depending on who owns the right on the digital music good. Each of these rights owners receives a percentage of the total media levies collected. Determining the size of these percentages is likely to be very difficult [Lieb03a]. For this reason, we assume, similar to the current pay-per-download implementation, all performers have assigned their rights to producers and all composers & text writers having a publisher. In our validation the central agency divides the money among the publishers and producers.

6.2.2 eBusiness web changes

The solution elements have an effect on the eBusiness web of the Dutch download market. The media levy solution does not drastically affect producers and publishers. The only difference for producers is that they receive their remuneration from the central collecting agency and not from content aggregators. For other collecting agencies the change can be very radical, because a central agency takes over their task of collecting and dividing of remuneration. The collecting agencies either have to merge or have to differentiate towards other kinds of collection, e.g. webcasts, or radio and television.

An additional value activity of the central collecting agency is the authorization of content aggregators to commercially distribute digital music. Content aggregators are obligated to deliver their download and play statistics which can be used to divide the total remuneration. The copyright enforcement value activity changes into a media levy enforcement value activity. The central collecting agency has to be a kind of control organization who tracks and fines people who did not pay their levy.

Download portals are not allowed to ask a monetary remuneration from their audience anymore, leaving only advertisement and community revenue models as possibilities. Content aggregators, on the other hand, are still able to ask a subscription fee, but can also perform revenue sharing of the advertisement income. Because download portals have no transactions anymore, their need for payment support disappears, as also the payment service actor. Also, the need for DRM protection on music disappears, resulting in the removal of the DRM technology provider actor. Sharing music is legal in the media levy solution, which legalizes sharing services.

A completely new supporting actor is the media measurement service. This service monitors households on their use of digital music. These statistics can be used to determine the relative usage of digital music. The central collecting agency buys the information from the media measurement service. This revenue model is a typical infomediary audience measurement revenue model.

The Internet Service Providers have to collect the levies as part of their broadband subscriptions. Three alternative revenue models exist to charge the consumers: subscription, utility metered subscription, and utility metered usage. The first one is a fixed fee per month which is the easiest and also the proposed alternative within all media levy solutions. The other two can be used to price discriminate between large users and smaller users. This can be useful, but also leads to higher administration costs. In this research the subscription fee is used as revenue model for the levy.

Finally, the advertisers form an important actor within the media levy eBusiness web. Download portals can only make money from advertisements, so these revenues will rise. The producers are already compensated via the levy and will not ask any margins on the advertisement income of the download portal [Producer]. This open ups the market for third-party advertisers and could potentially lead to a lot of income for the download portals. In the next section the value model is constructed for the media levy solution.

6.3 Value model construction

The change in value actors, value activities, revenue models, and value activities result in a new value model for the Dutch download market. This value model is displayed in Figure 14. The new or changed value exchanges are emphasized by more solid lines.

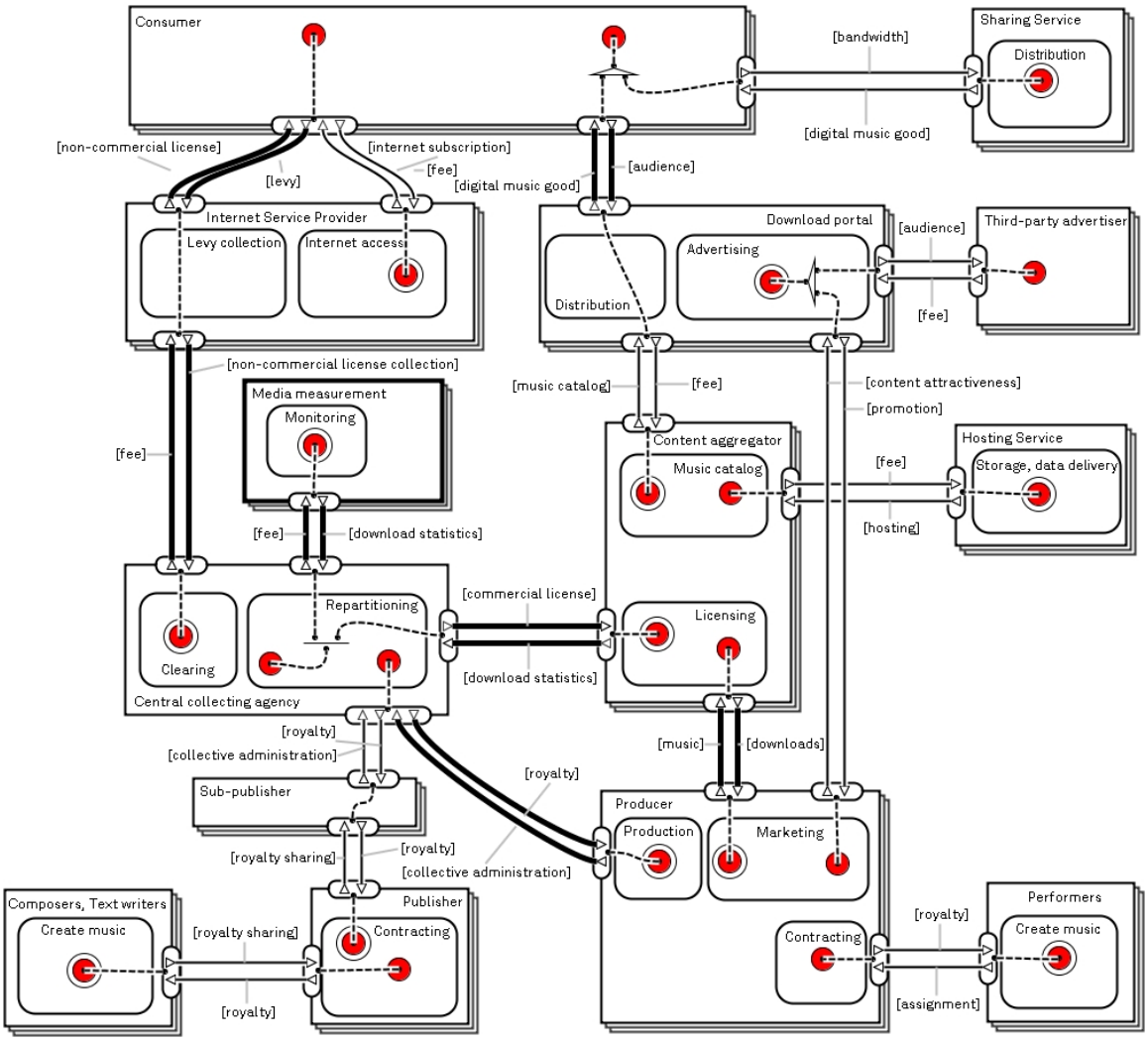


Figure 14 Value model media levy solution

Consumers are still able to fulfill their demand for music from download portals and from yet legalized sharing services. Consumers pay for their use of digital music via a levy bundled to their broadband subscription. These levies are transferred from the ISPs to the central collecting agency. This agency divides the levies among the rights owners. The repartitioning is done based on download statistics gathered from content aggregators. These statistics do not represent all music use. For this reason and for independent figures on consumer behavior, also statistics are bought from media measurement organizations.

Content aggregators receive a commercial license if they offer their download and play statistics. The commercial license allows them to distribute digital music and charge download portals for the use of

their music catalogs. Producers offer their music to the context aggregators in return for downloads by consumers. Since, the more downloads by consumers, the larger the part divided to the producer. To generate even more exposure, producers remain promoting their performers at download portals. In contrast, they do not receive part of the advertisement income from download portals.

It is still assumed that performers assign their rights with producers, because they have a big marketing power which indirectly result in more downloads and therefore more revenues. Also real organizations can still operate in different market segments. Apple iTunes can still be a content aggregator and a download portal and Planet Music Stream can still be an Internet Service Provider and a download portal.

6.4 Economic validation

This section determines the economic profitability of the music actors in the media levy solution. First, section 6.4.1 estimates the total amount of money that should be collected and the fractions for each rights owner. In sections 6.4.2 the estimates are used to calculate the economic profitability of the music actors. The resulting profit sheets can be found in Appendix I.

6.4.1 Estimates

A Non-commercial use download market requests estimates for the total amount of levies that should be collected to represent a proper compensation for artists and producers in a given period. Moreover, the fractions available to the publishers, composers & text writers, performers, and producers have to be determined. Finally, the levy should compensate musicians, publishers, and producers who invest in music and make it available to the public.

As an indicator we use the loss in sales of recordings in the period of 1998 up until now. In this period file-sharing begun and the music industry suffered from the loss in revenues. NVPI reports on their website a list of academic and non-academic sources that have calculated this loss in revenues. They concluded the total loss in the period 1998 to 2004 was 22 % [NVPI07b]. BREIN, the Dutch anti-piracy organization, reports approximately the same figure: 15-20% [Brei07].

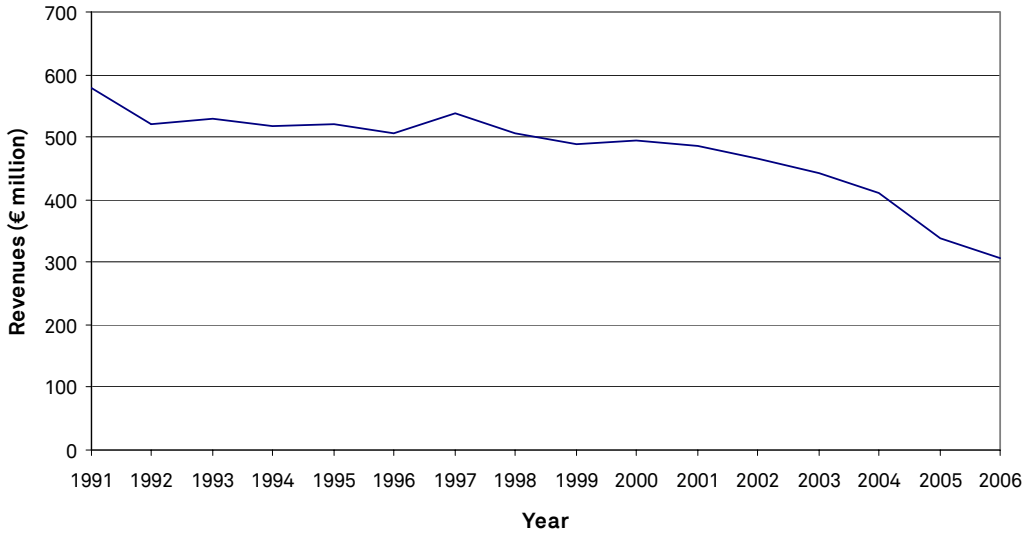


Figure 15 Revenues physical record sales from 1991 to 2006 [NVPI05] [NVPI07a]

The drop of 20% is also visible in the record sales in that period from 1998 to 2004, see Figure 15. In the period from 2004 to 2006, the record sales dropped even further. The loss in sales of recordings now grows to 40% or € 200 million. Making this figure the total levies that should be collected by Internet Service Providers is not completely correct. It is based on the sales price of CDs and includes retailer margins, distribution costs, and sales tax in total approximately 40% of the revenues. These costs do not have to be covered by the levy resulting in a total of 60% of € 200 million or € 120 million that does have to be collected per year. The levies will be collected on broadband subscriptions (5.2 million) and would result in a rise of around € 20 per year.

Figure 9 visualizes the estimates per value exchange within the Media levy solution. The new or changed value exchanges are emphasized by more solid lines. For the download portal, content aggregator, and producer the profit margin per download are still shown. In addition it shows how the levies are distributed among the actors as percentages per market segment. The used estimates can be found in Appendix I.

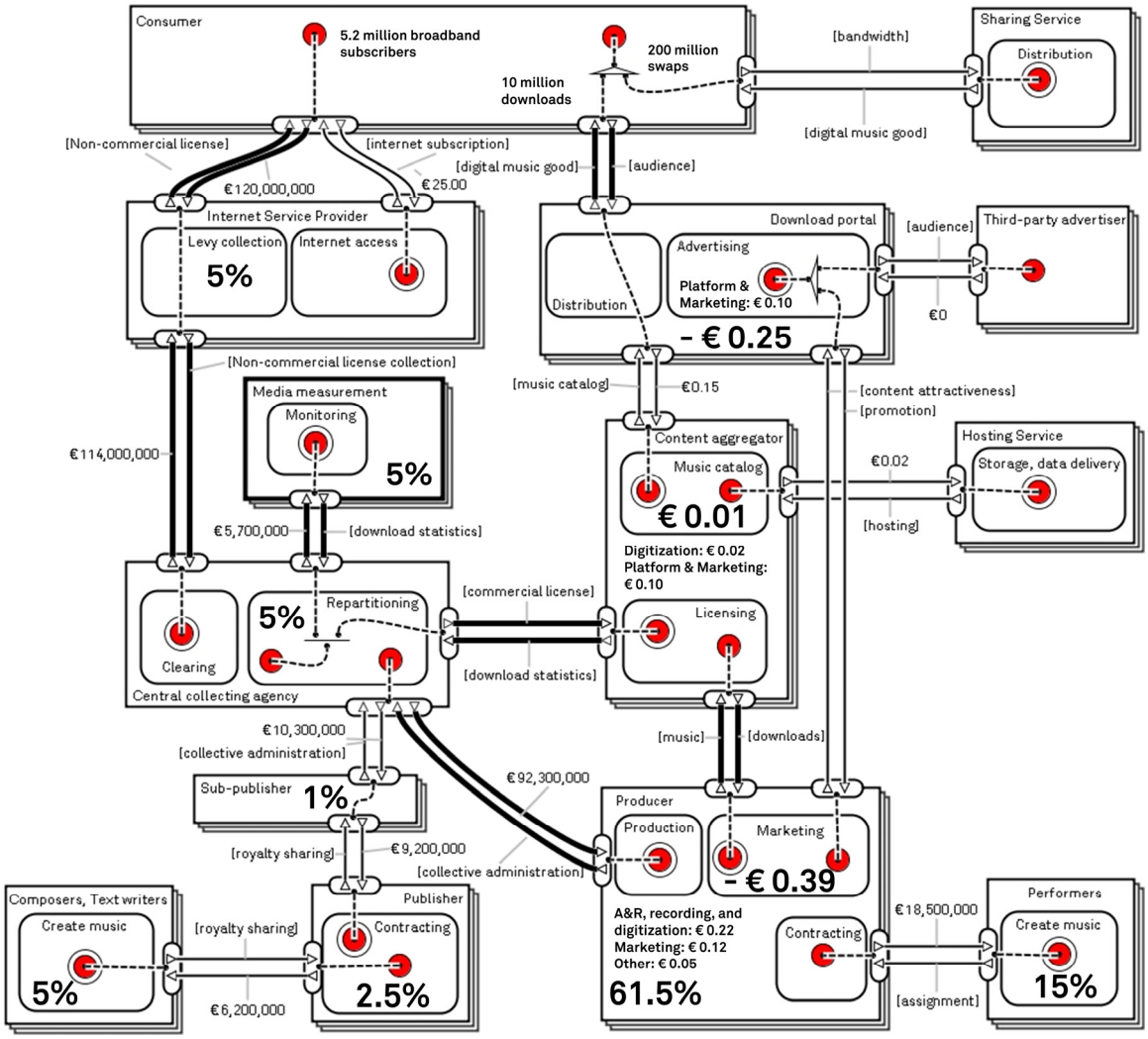


Figure 16 Estimates of the media levy solution's exchanged value objects and expenses of actors

Consumers pay for their digital music use as part of their broadband subscription and can not be charged a price per download or subscription anymore. Therefore, download portals have to sustain itself from advertisement income. In the current situation there are no third-party advertisers. In order to compare both models correctly we also assume no advertisers in the media levy solution. The costs of a portal consist of platform and marketing costs and music catalog costs paid to the content aggregator. We assume the content aggregator to ask a music catalog price of € 0.15 which allows them to make a small profit per download. Altogether the download portal has a negative result of € 0.25 per download.

€ 120 million of levies is collected by the ISP. 95% of this money is transferred to the Buma/Stemra and 5% is used to recover administrative and other costs. Buma/Stemra buys download statistics from media measurement services for 5% of the levies and uses another 5% again for administrative costs. The total fraction of 15% was also validated during the Interviews as a rough estimate for all administrative costs necessary to implement the media levy solution [Producer].

The remaining 85% is divided among the producers and publishers. As a guideline we used the same fractions as within the current pay-per-download implementation: 0.08 (10%) to publishers and 0.65 (90%) to producers. Publishers and producers divide the money among the composers & text writers and performers using similar contracts as within the current situation. The next section uses the estimated value model to determine the profitability of business actors.

6.4.2 Music actor profitability

Based on the value model and the estimates the profit margins per business actor can be calculated. In order to compare the media levy solution with the pay-per-download implementation, the same values for legal downloads, broadband subscribers, and advertisement income are used to forecast how the profitability will evolve up until 2010. Appendix H summarizes the profit sheets calculated from the value model.

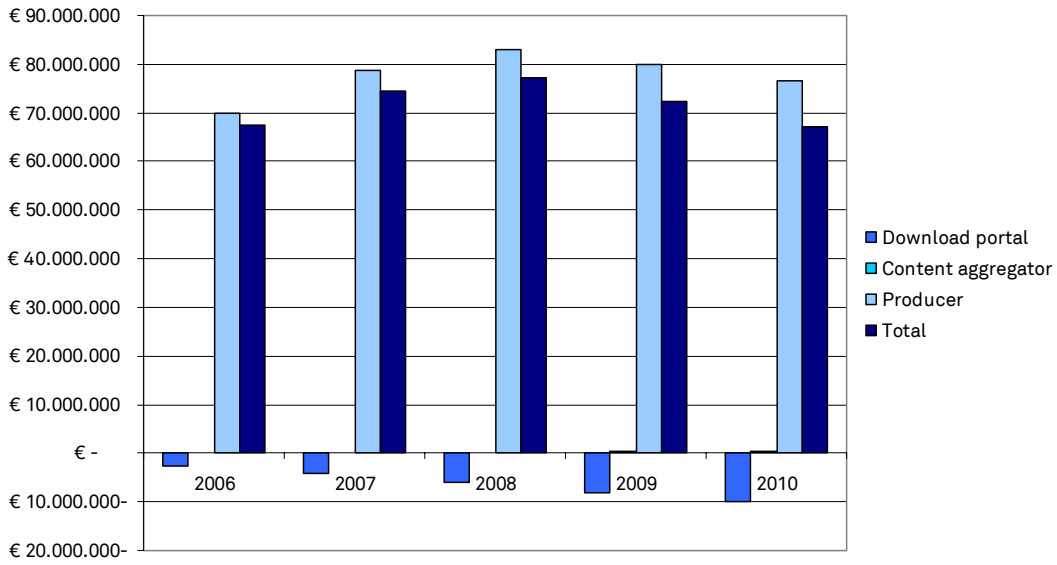


Figure 17 Projected profits download portal, content aggregator and producer 2006 - 2010

Figure 17 shows the profit margins of the download portal, content aggregator, producer, and the total profits of these segments. The market segments in total became more profitable compared to the pay-per-download implementation. Also individually the producer and the content aggregator have higher profits.

In contrast, the download portal has an even higher loss compared to the pay-per-download implementation.

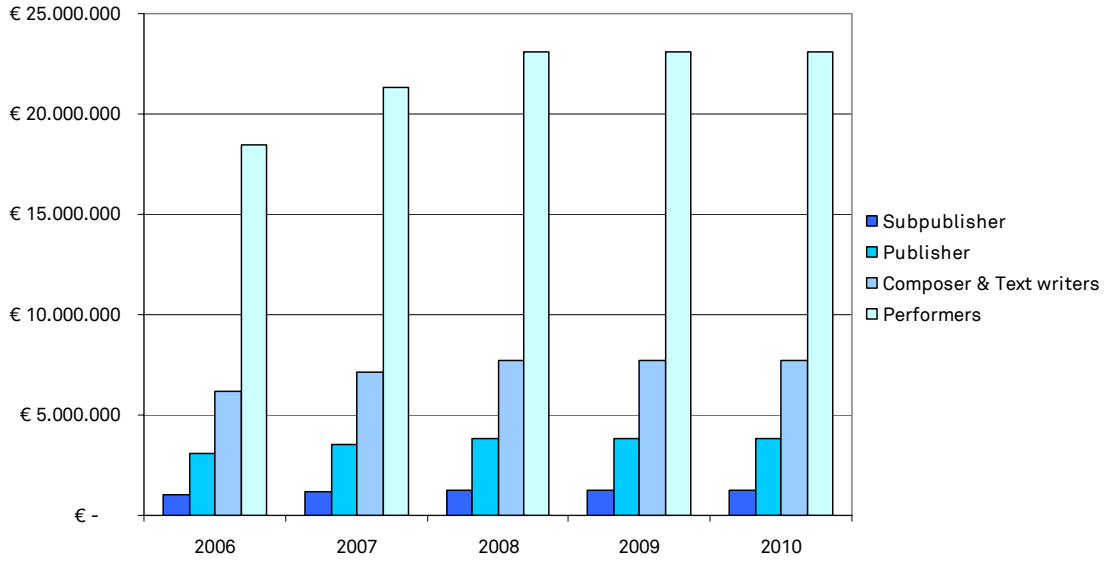


Figure 18 Projected royalty income publishers, composers & text writers, and performers 2006 – 2010

Figure 18 displays how the royalties are divided among the publishers, composers & text writers, and performers. All actors receive more royalties than within the pay-per-download implementation. Furthermore, they also have higher margins on the total revenue. For example performers receive 15% of the levies compared to the € 0.13 per € 0.99 of each download sold.

6.5 Conclusion

This chapter determined the economic profitability of the proposed media levy solution to ensure remuneration to music actors for music downloads and answers research questions 2b:

What is the profitability of the music actors within the media levy eBusiness web?

The economic profitability of the music actors within the media levy solution applied to the Dutch download market is shown in Figure 17 and Figure 18. Based on these figures and the result of the previous chapter, research question 2c is answered:

Is the media levy strategy an economically better alternative compared to the pay-per-download strategy?

In order to answer this research question the norms as set in section 4.1 are applied. These norms are:

- Each music actor makes profit;
- The profit of all music actors in total is higher in the media levy eBusiness web compared to the pay - per-download eBusiness web;
- Each music actor increases its profit within the media levy eBusiness web compared to the profit within the pay-per-download eBusiness web.

The first norm is not reached, because the download portal is not profitable. This was also the case in the current pay-per-download implementation. The main reason for the loss is its inability to recover the distribution, platform, and marketing costs. Moreover, we assumed the advertisement income to be zero

to compare the two models correctly. In the media levy solution, advertisement income is the only possible source of revenue for download portals resulting in zero revenues.

The total profit of the music actors within the media levy solution is higher than the total profit of the current pay-per-download implementation. The total profit of the producers, content aggregators, and download portals is higher, because of the high profitability of the producers. The total royalties available to the publishers, composers & text writers, and performers is also higher. The main reason is the much higher total market value compared to the pay-per-download implementation.

Although the total profit of the music actors is higher, not all actors increase their profit or economic utility. The profitability of the download portal is lower. Again the reason is their inability to recover costs and the zero revenues from advertisements. Although download portals had a negative result in the pay-per-download implementation, especially because of high music license costs, they still were able to use part of the revenues per download to recover its own costs.

In summary, the media levy solution is not an economically feasible alternative compared to the pay-per-download implementation, because the download portal is not profitable and even has a higher loss. In the next chapter a sensitivity analysis is applied to find the conditions in which the media levy solution might be an economic feasible alternative.

7 Sensitivity analysis

In the previous sections the economic profitability of music actors is determined based on estimates. In reality these estimates vary. Sensitivity analysis studies how these variations have an effect on the profitability of music actors in the current pay-per-download implementation as well as the media levy solution. In appendix G, minimal and maximal estimates are given for a specific variable. For example, the music license price asked by producers varies from € 0.34 to € 0.70. These minimal and maximal estimates are used to calculate the profitability of music actors in its most extreme situations.

Section 7.1 interprets the effect of applying the minimum estimates and section 7.2 of applying the maximal estimates to the pay-per-download implementation and media levy solution value models. Appendix J outlines the profit sheets which were generated based on the minimum as well as the maximum estimates, again for both value models. In addition to the variation in estimates of exchanged value objects and expenses of actors also the number of downloads, broadband subscribers, and advertisement income can vary. The broadband subscriptions are already near its maximum of 7 million subscribers. In contrast, downloads and advertisement income can have an impact on profitability of music actors. These influences are examined in section 7.3 and 7.4. Finally in section 7.5 the boundaries are summarized under which the media levy solution is a better alternative compared to the pay-per-download implementation.

7.1 Minimum estimated value model

The effect of using the minimum estimates to determine the profitability of the download portal, content aggregator, and producer are shown in Figure 19 and Figure 20. Figure 19 shows the profitability of the actors in the pay-per-download implementation and Figure 20 in the media levy solution.

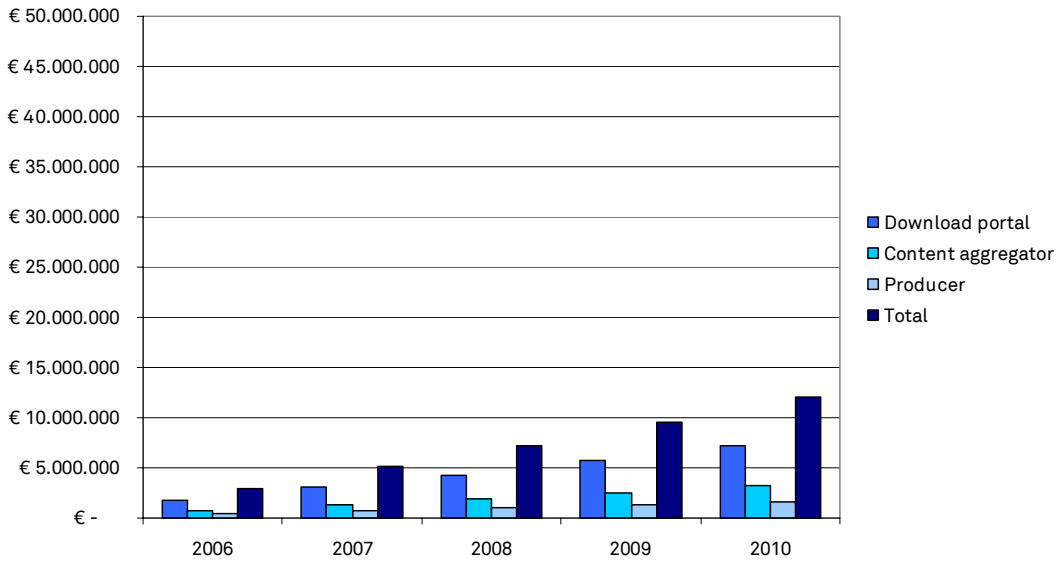


Figure 19 Pay-per-download projected profits download portal, content aggregator and producer using minimum estimates

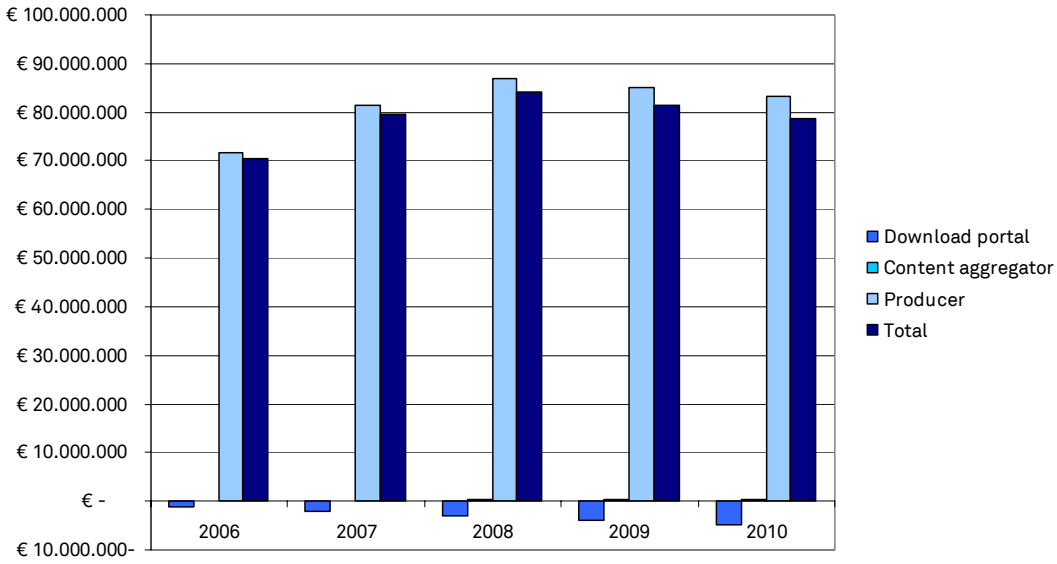


Figure 20 Media levy projected profits download portal, content aggregator and producer using minimum estimates

Result of the minimum estimates is that all music actors are profitable in the pay-per-download implementation. The main reasons for this are the much lower music license price asked by producers and the much lower expenses of all actors. The media levy solution is, similar to the results of the average estimates, much more profitable in total. In contrast, the download portal is not profitable and both the download portal and content aggregator are less profitable compared to the pay-per-download implementation.

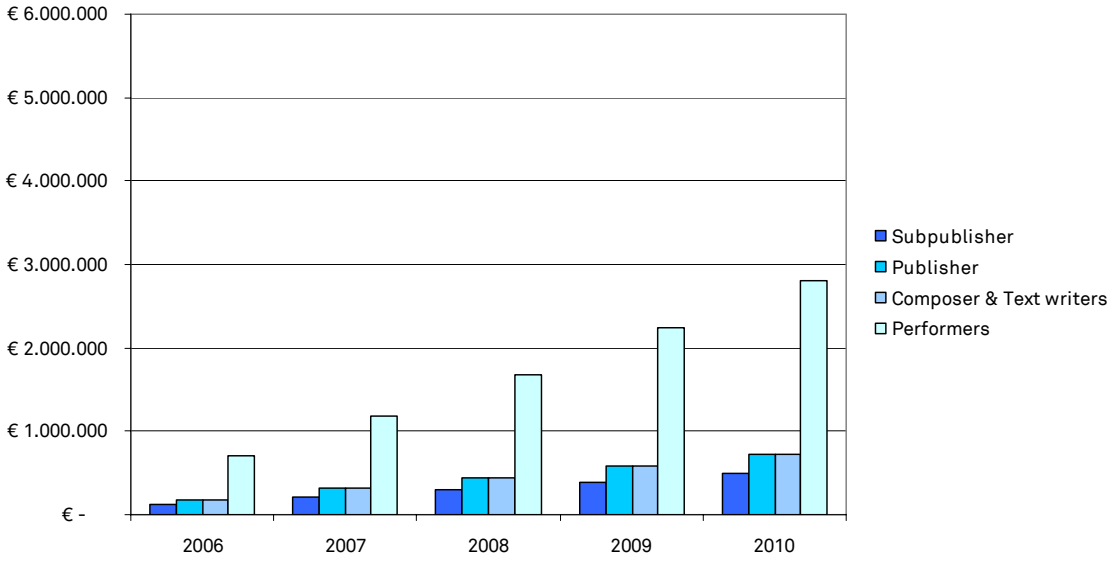


Figure 21 Pay-per-download projected royalty income publishers, composer & text writer, and performer minimum estimates

The effect of using the minimum estimates on the pay-per-download implementation's royalty distribution is shown in Figure 21. In total fewer royalties are divided, because of the lower copyright license price paid by download portals and the lower royalties a producer pays to their performers. In the media levy solution, the minimum estimates only affect the profitability of producers, download portals, and content aggregators. In other words, there is no variation in the royalty distribution within the media levy solution. The media levy solution is more profitable and results into higher royalties and shares to the actors compared to the pay-per-download implementation.

7.2 Maximum estimated value model

Figure 22 and Figure 23 show the effect of using the maximum estimates as basis for the calculation of the profitability of the download portal, content aggregator, and producer. Figure 22 displays the profitability of the music actors in the pay-per-download implementation and Figure 23 in the media levy solution.

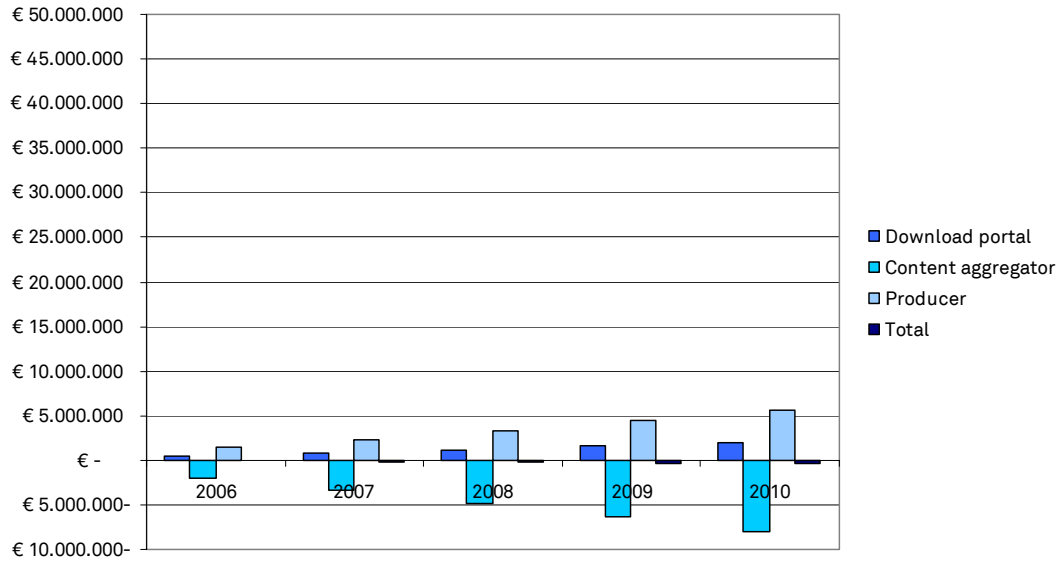


Figure 22 Pay-per-download projected profits download portal, content aggregator and producer using maximum estimates

Applying the maximum estimates to the pay-per-download implementation results into a profitable download service. The main reason for this is the high download price that is asked from consumers. This price even allows the download portal to recover the higher expenses. The content aggregator has much higher costs, but no higher music catalog revenues compared to the situation where average estimates were used. For the producer the maximum estimates result into a slightly higher profit.

In the media levy solution, download portals and producers have a higher loss resulting into lower total profit compared to the average estimates. The main reasons are the higher expenses and no higher revenues from the media levy. The use of the maximum estimates still results into more profits of the media levy solution compared to the pay-per-download implementation.

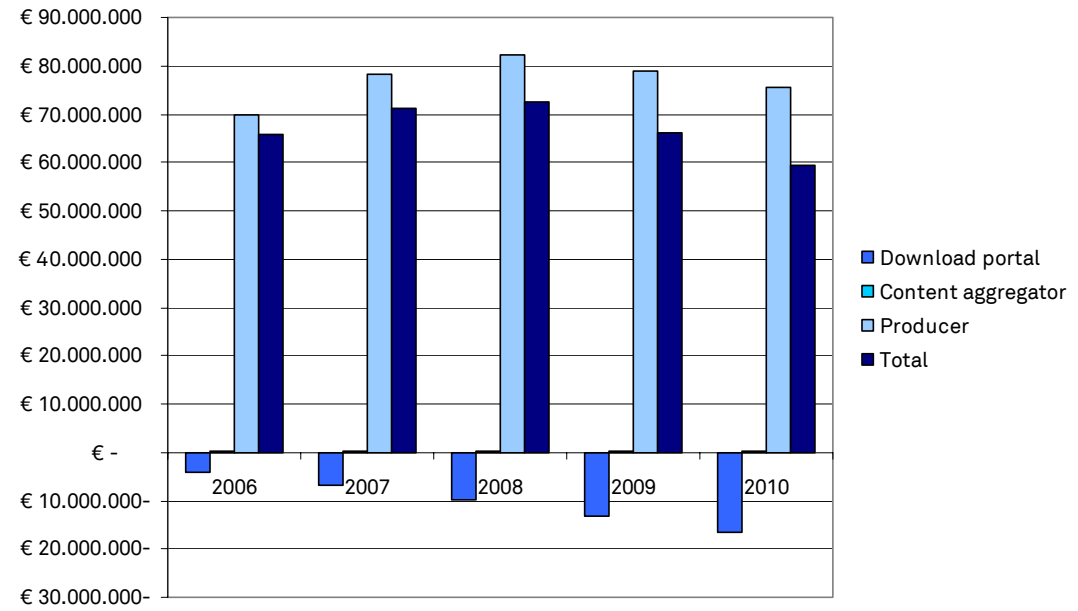


Figure 23 Media levy projected profits download portal, content aggregator and producer using maximum estimates

The use of maximum variation to estimate the royalty distribution within the current pay-per-download implementation is shown in Figure 24. All actors receive a slightly higher portion compared to using the average estimates. The main reason is the higher price for the download license and the higher amount of royalties paid by producers. Similar to using minimum variation, there is no effect on the royalty distribution within the media levy solution. Also the media levy solution is more profitable and results into higher royalties and shares to the actors compared to the pay-per-download implementation.

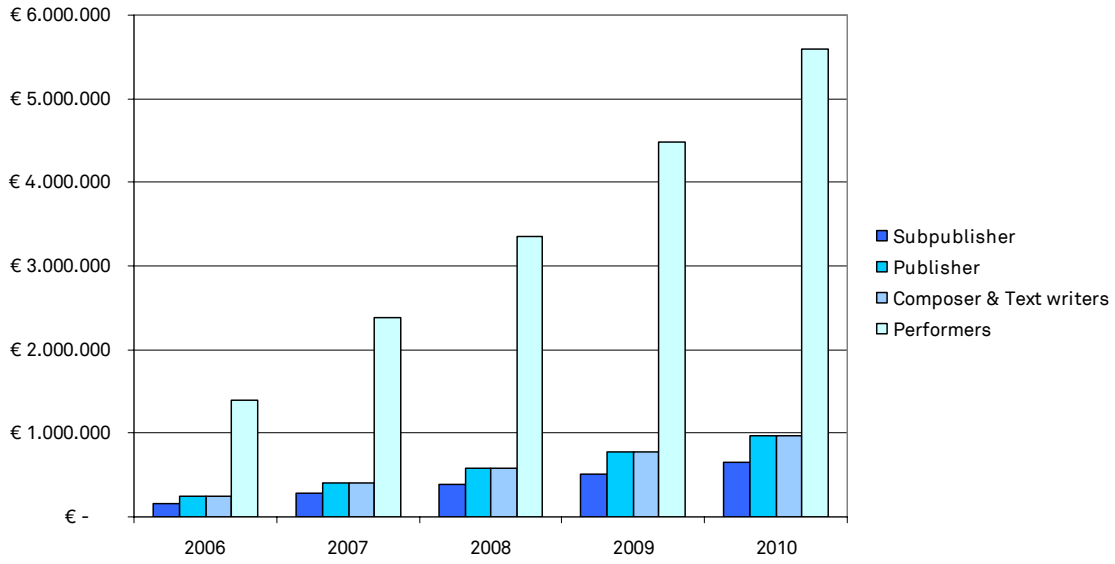


Figure 24 Pay-per-download projected royalty income publishers, composer & text writer, and performer maximum estimates

7.3 Variance number of downloads

Variation in the number of downloads influences the revenues and costs in both the pay-per-download implementation and the media levy solution. The effect also depends on the estimates (minimum, average, or maximum) used within the value model. For these reasons the minimum, average, and maximum estimates are used to visualize the effect of variation in number of downloads. Figure 25 visualizes these effects for the royalty income of the publishers, composers & text writers, and performers in total for both the pay-per-download implementation and the media levy solution.

In the media levy solution royalty payments depend on the number of internet subscribers and not on the number of downloads sold. This effect is also visible in Figure 25. In the media levy solution the total royalty income is fixed at approximately € 36 million. The media levy solution is a better alternative if the total royalties of the current situation is lower than this € 36 million. Again this differs using the minimum, average, and maximum estimates. The boundary of number of downloads are approximately:

- 260 million downloads when minimum estimates are used;
- 180 million downloads when average estimates are used;
- 140 million downloads when maximum estimates are used;

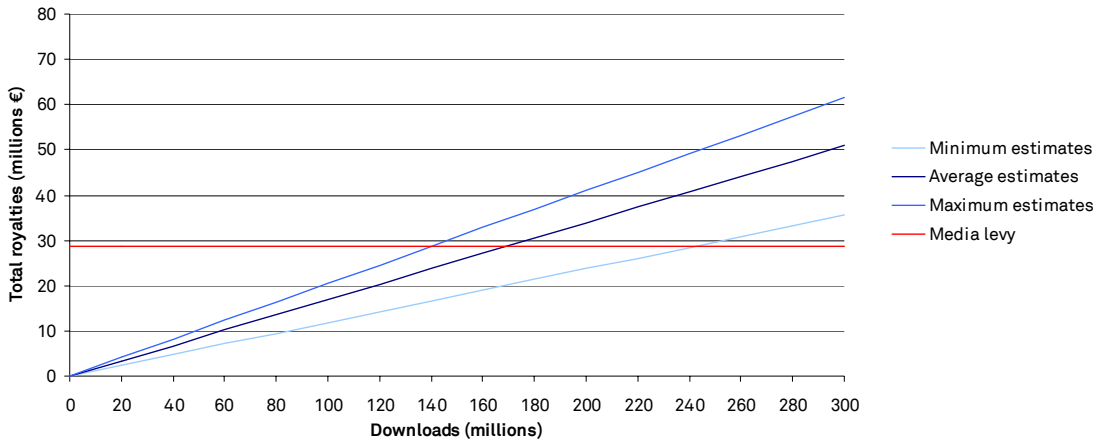
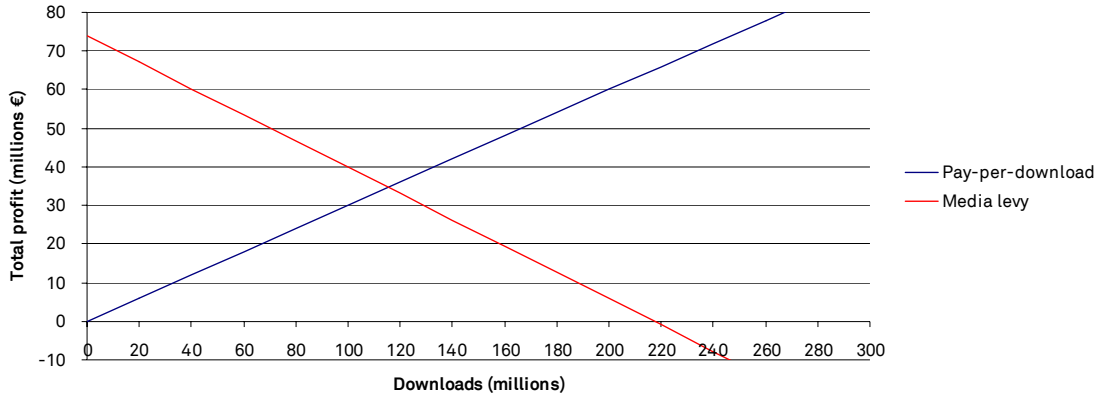


Figure 25Projected total royalty income publisher, composer & text writer, and performer varying number of downloads

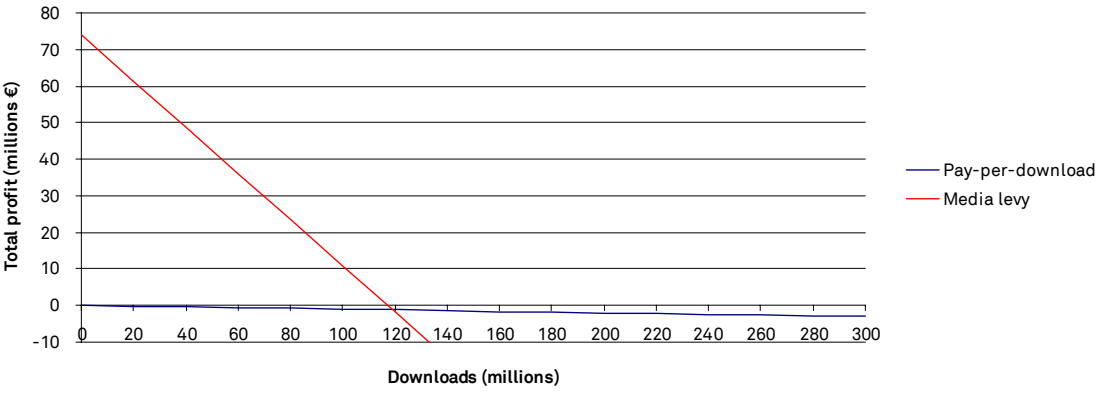
The number of downloads also influence the total profits of the download portal, content aggregator, and producer. Figure 26 visualizes the profits of these actors in total, for minimum estimates (A), average estimates (B), and maximum estimates (C). The results can be used to determine the ranges of downloads where the media levy solution is more profitable than the pay-per-download implementation. From the graphs the number of downloads can be determined where the total profits from the media levy solution are lower than the total profits of the pay-per-download implementation. The boundaries are approximately:

- 120 million downloads when minimum estimates are used
- 120 million downloads when average estimates are used;
- 90 million downloads when maximum estimates are used.

A. Minimum estimates



B. Average estimates



C. Maximum estimates

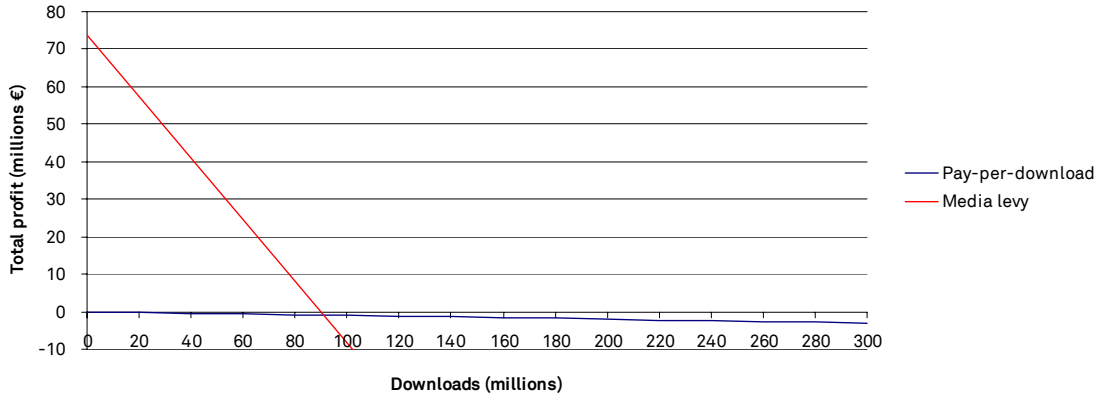


Figure 26 Projected total profits download portal, content aggregator and producer varying number of downloads

7.4 Variance advertisement income

Third-party advertisement income results into more revenue for the download portal. In the current pay-per-download implementation, producers also receive 50-70% of the advertisement income. In the media levy solution download portals do not have to pay this percentage. In other words, they will have to place advertisements to make money from operating a download portal.

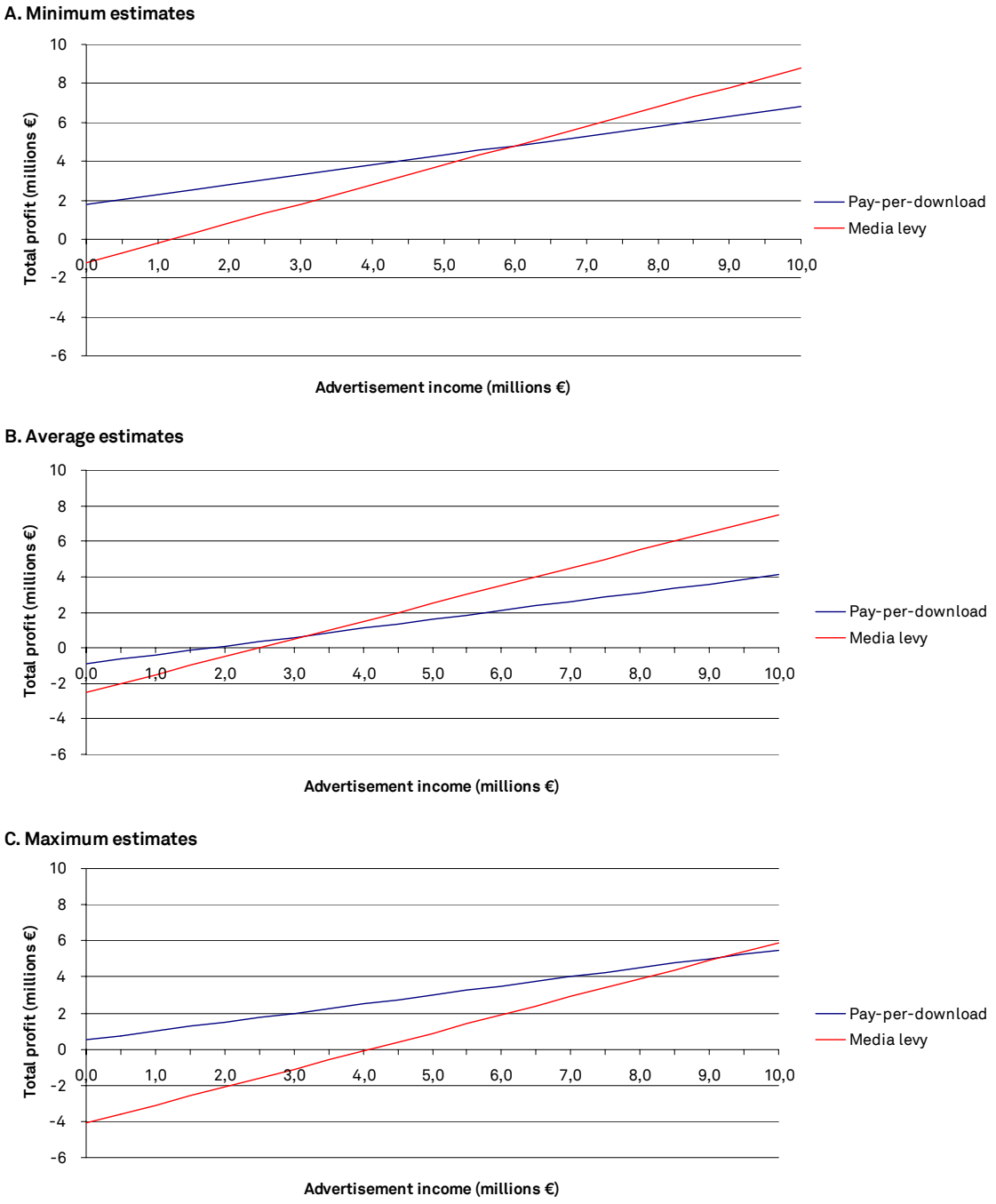


Figure 27 Projected total profits download portal, content aggregator and producer varying advertisement income

Figure 27 shows under which amount of advertisement income the download portal will be profitable in the current pay-per-download implementation and the media levy solution. For these figures the current number of downloads is used (10 million) and the fraction of the advertisement income that should be offered to the producer is assumed to be fifty percent. Because of the advertisement income, the download portal is able to be profitable in the pay-per-download situation using the average estimates with € 1.75 million on advertisement income. In the media levy solution, the download portal is profitable with:

- € 1.2 million when minimum estimates are used;
- € 2.5 million when average estimates are used;
- € 4.2 million when minimum estimates are used;

The media levy solution results in higher profits for the download portal compared to the pay-per-download implementation when the advertisement income becomes higher. The reason being that in the media levy solution situation no revenues have to be shared with the producer. The boundaries are:

- € 6 million when the minimum estimates are used;
- € 3 million when average estimates are used;
- € 9.2 million when maximum estimates are used.

7.5 Conclusion

Goal of this chapter was to find the conditions in which the media levy solution is a feasible alternative to the pay-per-download implementation answering research question 2d:

Under which conditions is the media levy an economically better alternative compared to the pay-per-download strategy?

After comparing the pay-per-download implementation and the media levy solution in the previous chapter, we concluded the solution to be not economically feasible. Main reason for this was the loss and even larger loss of the download portal in the media levy solution. In this chapter we analyzed the variation in the estimates used to calculate profitability for the music actors:

- Using minimum estimates for the exchanged value objects and expenses of actors;
- Using maximum estimates for the exchanged value objects and expenses of actors;
- Changes in size of the triggers: number of downloads, advertisement income size, and number of internet subscribers.

The use of minimum estimates results in a profitable download portal and content aggregator for the pay-per-download implementation. Reasons are the much lower fixed expenses on marketing and platform and the low price producers ask for their music. In the media levy solution not all actors are profitable. The download portal is not able to recover its expenses because it is not able to charge for music resulting in a loss. The total sum of the profits is higher in the media levy solution resulting in a pass of the second norm. Finally, the third norm is not achieved, because both the download portal and the content aggregator are less profitable compared to the pay-per-download implementation.

The use of maximum estimates results in a profitable download portal within the pay-per-download implementation. The main reason is the much higher price consumers pay for digital music. This allows the download portal to recover the also higher costs. In the media levy solution, the download portal is not profitable anymore, because they have no revenues. The total profit of all music actors is higher in the media levy solution, resulting in a pass of norm two. The third norm is not achieved because the download portal is less profitable compared to the pay-per-download implementation.

Only changing the exchanged value objects and expenses of actors make the media levy solution not an economically better alternative. The final variables that are changed are the number of downloads and advertisement income. For producers, download portals, and content aggregators an increase in number of downloads means higher costs. In the pay-per-download implementation it also means higher revenues. The effect varies according to which estimates (minimum, average, or maximum) are used. In case of the minimum estimates it results in an increase in profits and in case of the average and maximum estimates in a small decrease in profits.

In the media levy solution an increase in the number of downloads has no effect on the revenues from media levies. On the other hand, an increase in the number of downloads that is sold does lead to higher costs for the download portal, content aggregator, and producer. This effect is the highest when maximum estimates and the lowest when minimum estimates are used. At a certain moment, the media levy solution is in total less profitable compared to the pay-per-download implementation. This results into not passing of the second norm and therefore the media levy solution will not be feasible anymore. These boundaries are:

- 120 million downloads when minimum estimates are used;
- 120 million downloads when average estimates are used;
- 90 million downloads when maximum estimates are used.

An increase in downloads also results in more royalties to the publisher, composer & text writer, and performer within the pay-per-download implementation. In the media levy solution the increase in downloads does not affect the royalty income. Similar to the total profitability of producers, download portals, and content aggregators, the second norm is at a certain moment not achieved. The boundaries are:

- 260 million downloads when minimum estimates are used;
- 180 million downloads when average estimates are used;
- 140 million downloads when maximum estimates are used;

A rise in advertisement income affects the total profit of the producer, content aggregator, and download portal. This effect is the same within the pay-per-download implementation and the media levy solution, not affecting norm two. In contrast, an increase in advertisement income does have an effect on norms one and three. Download portals are able to become profitable and meet norm number two. Download portals only have to share their advertisement revenues with producers in the pay-per-download implementation. Therefore, the profits increase faster in the media levy solution compared to the pay-per-download implementation and download portals can meet norm number three. The boundaries for 10 million downloads are:

- € 6 million when the minimum estimates are used;
- € 3 million when average estimates are used;
- € 9.2 million when maximum estimates are used.

In summary, the media levy solution is:

- Not feasible if minimum estimates are used, because the content aggregator makes less profit in comparison with the pay-per-download implementation (norm 3 is never achieved).
- Feasible if average estimates are used up until 120 million downloads and with a minimum of € 3 million of advertisement income to compensate 10 million downloads.
- Feasible if maximum estimates are used up until 90 million downloads and with a minimum of € 9.2 million of advertisement income to compensate 10 million downloads.

8 Discussion and conclusion

This final chapter concludes the research and assesses the overall research goal. First the outcomes of the case study are discussed in section 8.1. It also considers several limitations on the case study results. In section 8.2 the research goal is assessed and a conclusion is drawn if the media levy strategy is a better alternative compared to the pay-per-download strategy. Sections 8.3 and 8.4 describe research and practical implications. Finally section 8.5 outlines suggestions for future work.

8.1 Discussion

The goal of this research was to validate if the media levy strategy is a better alternative compared to the pay-per-download strategy. From the case study can be concluded that the media levy solution is only a better alternative under certain conditions. This chapter elaborates on this outcome and discusses some of its limitations. The topics we want to discuss are:

1 The negative result of download portals in the pay-per-download implementation as well as in the media levy solution;

2 The limitation of assuming that the repartitioning of the media levies to the rights owners can be based on consumer usage of digital music;

3 The effect of the media levy solution on digital music consumer's utility;

4 The likeliness of the boundaries in which the media levy solution is a better alternative;

5 The limitation of leaving out the advertisement and subscription based revenue models;

6 The limitation of leaving out other types of digital music goods and services and the impact on physical record sales.

In the case study the download portal made the media levy solution not a better alternative under most conditions. The download portal was not profitable in the current pay-per-download implementation, and was even less profitable in the media levy solution. This is quite strange for several reasons. First, a non-profitable actor is likely to stop its activities because it is not able to sustain itself. Second, in the media levy solution the download portal only has to pay the distribution costs and does not have to pay remuneration to the rights owners. In literature, distribution costs of information goods are assumed to be zero [Shap99]. Finally, it is not very likely that all download portals loose profits. [Producer] reasoned that Apple's iTunes Music Store manages to offer downloads in a profitable manner, because:

- The software platform was developed in-house and could be build upon the experience of other Apple software;
- It is a large volume business allowing good negotiating with hosting services;
- They operate from Luxemburg, the country with the lowest sales tax in Europe (15%);
- The very low transaction fees. Their bargaining position is very strong, because of the large volumes, limited payment options (only creditcard & ClickandBuy), and the transactions are part of a larger amount of transactions from Apple's online and physical stores;
- The relative small number of transactions, because of the buying cycle which only charges a consumer once for all purchases in 48 hours.

On the other hand it is also validated during the interview that download portals have a negative result [Portal] [Producer]. A reason why they could sustain is they are using digital music to attract consumers and sell them other more profitable products [Producer]. Here an analogy can be made with physical

distribution of music: large grocery stores subsidize music CDs in order to attract consumers for other products they sell [Producer]. A second reason therefore is that only a limited number of download portals (including iTunes) is profitable and the others sell downloads for promotional reasons. The assumption made in literature that variable costs are nearly zero was also seen in the case study: hosting and distribution of downloads was almost free. On the other hand, all other costs, including platform investments and maintenance, marketing, and digitization, make the distribution actually quite expensive.

In the description of the media levy solution elements (section 6.2.1), we suggested to divide the media levies among rights owners partly based on monitoring household's digital music use. [Producer] agreed that this is likely to be the best alternative to gather statistics. On the other hand, this method does have several doubts: the large scale of available digital music, many different versions of a same piece of digital music, privacy of the monitored consumers, and the consumer willingness to join the monitoring [Producer]. The last two aspects can be solved by offering the voluntary consumers additional service, higher broadband speed, or other advantages [Producer]. The first two aspects require a technical solution. These doubts have to be solved before the media levy solution can be implemented.

The media levy solution requires all broadband subscribers to pay an additional levy surcharged onto their broadband subscription fee. In total these levies are much higher than the current digital music spending. Consumers should therefore have more benefits compared to the pay-per-download implementation. The main benefits of digital music are: easy transfer, mobile use, large base of available music, sampling before obtaining it, and easy sharing with friends [Peit05]. Moreover, recommendation engines support consumers to discover music by suggesting related music [McGu05]. These benefits are not all available to consumers of pay-per-download portals, especially the mobile use, sampling, and sharing of goods are not always supported.

Sharing services do offer these benefits, but also have higher costs. Downloads could be incomplete, badly compressed, and could consist of worms, viruses, adware, or spyware [Peit05]. The quality can only be assessed after downloading the file resulting in higher search costs. Moreover, sharing services indirectly require consumers to upload digital music to other consumers. The costs associated with uploading are: use of computer resources (storage, bandwidth), the risk of being sued, and moral costs [Peit05]. Because of these costs it is assumed that sharing service's users have a low opportunity cost of spending time online [Peit05].

In the media levy solution, consumers are allowed to download, share, and if noticed, edit music downloads regardless of the download service they use. In other words, they can have all benefits of digital music by obtaining downloads from download portals without the costs and disadvantages of sharing services. It is therefore to be expected that also consumers with high opportunity cost of spending time online obtain digital music from the download portal. The media levy solution is therefore assumed to be a better alternative for digital music consumers. They are able to use digital music for only a small fee per month. Broadband subscribers not obtaining digital music have to pay more, but do not have any benefits. For them the media levy solution is not a better alternative.

From the sensitivity analysis it was concluded that the media levy solution was only economically feasible up until a maximum number of downloads and with a minimum amount of advertisement revenues. In the analysis we used the same estimates for the triggers as in the pay-per-download implementation evaluation. The effect being that the media levy solution was only feasible under certain conditions. We want to examine if these conditions are likely to happen when the media levy solution is implemented.

Broadband subscribers are able to have all benefits of digital music from the download portal they prefer. This is expected to give an enormous boost in the number of downloads from download portals. Let us assume that 75% of the music downloads currently obtained from sharing services than is obtained from download portals. This would result in 150 million additional, and a total of approximately 160 million downloads. For the download portal and content aggregator to break even about € 0.24 per download should be obtained from advertisement income. In total this is around € 40 million.

Producers receive around € 80 million from the media levies resulting in a margin of 50% per download. This margin is not as high as the average margin within the pay-per-download implementation (65%). This is also clear from the sensitivity analysis where more than 120 million downloads result into the conclusion that the media levy solution is not a better alternative. But in total the amount of money is much higher than the most extreme scenario, where consumers buy 40 million downloads and producers ask € 0.70, resulting in a total of € 28 million in download revenues. In other words, if the download portals are able to gather € 40 million advertisement income to sustain, the media levy solution results in much higher benefits despite the lower margin for producers.

In our analysis we left out other types of revenue models because they are currently not implemented and it is very uncertain how the models will evolve over time. We do expect these models to have quite an impact on the amount of revenues generated for the music actors. The main reason is that consumers are able to have almost the same benefits as within the media levy solution. They are able to sample music for free from the advertisement based services and could opt-in to subscription based services and can even access music for mobile use. Furthermore, it is very likely to happen that both services allow users to share their playlists and recommend related music. These services have several advantages opposing the media levy solution.

- The repartitioning of remuneration can be done in a similar way it currently is performed;
- Producers have high margins of approximately 50-70% of the total of advertisement income and subscription fees based on the producer's share within the service;
- Pay-per-download services can coexist and can be used to sell premium downloads or bundles with complementary goods for higher margins;
- The revenues are not fixed and based on media levy revenues, but rise according to the advertisement and subscription income.

Based on the above advantages the potential benefits are higher than the media levy solution. Assume that 160 million downloads are obtained from the subscription and advertisement based services. This estimate is similar to the boost expected when the media levy solution is implemented. For the media levy solution to be sustainable, € 40 million must be gathered from advertisement income. If the same amount is gathered by the subscription and advertisement based services, the producers receive € 20 million to € 28 million from advertisement revenues.

Compared to the € 80 million received in the media levy solution this is € 60 million short. In addition producer would obtain part of the subscription fees. These fees are likely to be higher than the media levy (€ 20 per year), assume a subscription fee of € 60 per year. In that case the remaining € 60 million have to come from only one million subscribers. Finally, producers are able to obtain even additional profits from pay-per-download portals. This strategy does have several disadvantages compared to the media levy solution:

- The subscription fees are not compulsory which does not ensure the remuneration;
- The problem of illegal file sharing is not solved;
- Publishers and composers & text writers still have their low margins.

Finally, in the case study design we limited our research to music downloads of singles and albums in the Netherlands. In reality the digital music market is much more complex including other types of content (e.g. ringtones), streaming services (e.g. online radio), digital music embedded in other content, and mobile music. Moreover, digital music sales also have an effect on physical record sales. Finally, digital music use can even have an effect on consumer's willingness to join concerts.

These aspects certainly complicate the whole picture and make it almost impossible to draw a conclusion if the media levy solution is the best strategy to charge for digital music use. Consumers are likely to value these other types of digital music goods and services differently, allowing music actors to charge

for them in a different way. At the moment it is not certain how consumers value these services and what their willingness to pay is. It is therefore even harder to estimate the total amount of media levies that should be gathered as compensation for all digital music use. Moreover, versioning among the use values, types of digital music services and revenue models could maybe result in higher benefits for music actors.

In summary, the results of the case study give insight into the economic feasibility of the media levy solution for music downloads of singles and albums. After interpreting the outcomes and discussing the limitations, the media levy solution showed to be a feasible alternative generating more money than the best case pay-per-download implementation scenario. Also for digital music consumers the media levy solution is likely to be better. A barrier of the solution is the practical implementation of the solution, especially the repartitioning of remuneration and estimation of the levies' amount that should be collected. Moreover, the media levy solution is likely to be applied in a broader context of digital music use. The effects on this broader implementation are not straightforward and have to be further examined.

On the other hand, the strategy in which pay-per-download portals are complemented by advertising and subscription based services is very promising. This approach does not have the practical implementation problems, incorporates growth, offers similar benefits to consumers, offers high profit margins to producers, and allows the co-existence of higher margin pay-per-download portals. Furthermore, it allows music actors to version their value offerings on use values and revenue models to target different consumer segments. In contrast it does not solve the problem of illegal file sharing, does not guarantees a total amount of remuneration, and publishers, composers, and text writers still have low margins. In the next section, the research goal is evaluated and a conclusion is drawn if the media levy solution is an economically better alternative.

8.2 Conclusion

Music actors are worried that digital music affects their ability to charge consumers to recover their costs. The goal of this research was to evaluate if the media levy strategy is an economically better alternative to the current pay-per-download strategy, more specific the goal was:

To evaluate the economic feasibility of a media levy strategy as alternative strategy compared to the current protection, copyright, and pay-per-download based strategy, to ensure music performers and writers, as well as the companies that produce, publish, and distribute music, to receive compensation in order to recover their production costs.

Our first result is an economic validation method, which can be used to compare the profitability of actors within alternative eBusiness webs for digital music. In the first step all elements of the eBusiness web are described, including the actors, value activities, revenue models, and value exchanges. Next, a value model structurally visualizes these elements. This structure is used to determine the profitability for each actor after estimating the exchanged value objects and expenses of actors. The final step examines the effect of changing the estimates as part of a sensitivity analysis.

The economic validation method was applied to the Dutch download market of singles and albums. This resulted into estimated profitability of music actors in both the pay-per-download implementation and the media levy solution. We concluded that the media levy solution was unfeasible, because the download portal had a negative result and also a lower result compared to the pay-per-download implementation. Sensitivity analysis showed that the media levy solution was only economically feasible up until a maximum number of downloads and with a minimum amount of advertisement income. In addition, the media levy solution has some practical limitations that have to be solved before implementation

First, it is very hard to determine the amount of media levies that should be collected in total and how it should rise over time. The amount should be a compensation for all downloads of digital music, including file sharing. The in literature proposed indicator of loss in revenues of physical record sales is not

completely feasible. Reasons are that file sharing does not account for the complete decline in record sales and it also has a positive effect on record sales.

Second, the repartitioning of the total amount of money is very hard to realize. The best alternative seems to be the gathering of download and play statistics from content aggregators complemented with statistics from monitoring household's digital music use. The monitoring of households does have some doubts: the large scale of available digital music, many different versions of a same piece of digital music, privacy of the monitored consumers, and the consumer willingness to join the monitoring.

It is very likely that the entry of advertisement and subscription based services result into more legal use of digital music and therefore higher remuneration to music actors. This strategy has several advantages opposing the media levy solution and does not have the above practical limitations. Moreover, the strategy allows the coexistence of the pay-per-download services and is therefore a far less radical alternative.

The media levy solution is likely to cover more than only music downloads of singles and albums, but also for example other types of content, streaming services, and mobile content. Moreover, digital music use can influence physical record and concert ticket sales. These aspects were not considered in the case study but do influence the profitability of music actors. It is therefore uncertain if the media levy solution is the best strategy to charge for digital music use. One of the most important reasons is that it is at the moment unknown how consumers value these services and what their willingness to pay is. This is also complicates the amount of media levies that should be collected if all digital music use is compensated by media levies.

Concluding, the media levy solution is at this moment not a better strategy to ensure remuneration for the music actors to recover their costs. The media levy solution is only feasible for music downloads of singles and albums, if the download portals are able to collect enough advertisement income. At the moment advertisement income is zero, likely to rise, but it is very uncertain to what extend. Furthermore, the media levy strategy would radically change the eBusiness web and is not certain to work properly because of several practical limitations. Finally, the advertisement and subscription based services are likely to result in similar benefits with more advantages and without the practical limitations. These services also allow music actors to differentiate their value offerings. We therefore suggest first exploring this differentiation strategy. The media levy solution can be used as second best alternative if this strategy fails.

8.3 Research implications

This research used the e3value methodology as a guideline to evaluate eBusiness webs. This method is originally aimed at exploring, modeling, and evaluating ecommerce ideas. The strongest aspect of the method is its communication strength. It allowed fast and structured communication of the eBusiness webs during the interviews. On the other hand, the method does not provide any guidance in structurally constructing a value model. It suggests deriving the value model directly from stakeholder's ideas and does not utilize literature constructs which can be used to structure eBusiness webs. Moreover, the economic validation is not very strong. Especially the sensitivity analysis only explores the effect of variation of triggers.

Our validation method attempts to improve the e3value method. First, the method was used not only to validate a proposed eBusiness web, but also to evaluate an existing eBusiness web. Second, norms were extended and allow the comparison of profitability of actors within the alternative eBusiness web with one another. Third, we have seen that a more structured approach, when the idea is first described in terms of the necessary eBusiness web elements (actors, value activities, revenue models, and exchanged value objects) helps to model a complete eBusiness web. Fourth, the communication strength was improved by value models representing the estimates of the exchanged value objects, expenses of actors, and triggers. Finally, the economic validation is extended with analysis of minima and maxima for the

estimates of exchanged value objects and expenses of actors within the value model. In addition to these methodological improvements, the e3value tool can also be improved with:

- Functionality which shows or hides estimates of exchanged value objects or expenses of actors;
- More choice in representation of the profit sheets and support of graphs;
- Functionality to assign minimum, average, and maximum estimates to exchanged value objects and expenses of actors;
- Functionality to assign a range instead of a single number to a trigger as basis for sensitivity analysis;
- Functionality to change estimates per actor and not per value port;
- Support for total profit calculations of more than one actor.

The validation method is applied in the Dutch download market as mechanism to estimate music actors' profitability. The method, especially the value model construction, economic validation, and sensitivity analysis steps, can be applied to assess and compare other kinds of eBusiness webs. In contrast, the literature constructs, used as a guideline to structure the eBusiness web elements, are specific for digital music goods. Some elements could be used to structure other types of eBusiness webs for information goods, including actors, revenue models, use value objects, and revenue objects. The value activities as well as the content value objects are specific for digital music and have to be changed when applying the method on other types of information goods.

The results of the case study have some implications for the research on levies as alternative way to compensate creators of information goods. The media levy showed not to be a better alternative to the pay-per-download model for music downloads of singles and albums. Main reason was the decline in profits of the download portal and content aggregator.

It is assumed in literature that the distribution costs of information goods are almost zero. This assumption can be validated within the case study: hosting and distribution of downloads are almost free and are even entirely free in sharing services. On the other hand, all other costs, including platform investments and maintenance, marketing, and digitization, make distribution via download services quite expensive.

A media levy as alternative strategy to compensate music actors does not take these relatively high distribution costs into consideration. Digital music services are only able to recover these costs from sponsors because consumers are not likely to pay twice. This potentially has a large effect on the availability of digital music services and the choice consumers have among the services that offer the digital music and the use values that best suit their needs.

8.4 Practical implications

As reasoned in the conclusion, the media levy solution is at the moment not likely to be the best strategy to ensure remuneration to music actors. The practical problems of estimating the total amount of levies and the repartitioning to music actors should be first solved. Download portals and content aggregators have to offer better use values to consumers and have to gather advertisement income to sustain itself. The alternative strategy of download portals that offer music pay-per-download, subscription, and advertisement based are likely to have a positive effect on the current profitability. The strategy also has several advantages compared to the media levy solution. For these reasons we suggest to adopt this strategy before adopting the media levy solution.

In chapter 2 we concluded that not digital goods, but digital music services and their use values should be priced. The pricing mechanisms or revenues required in return could vary for each digital music service. For example, a streaming service could allow consumers to listen to digital music for free and generate revenues from advertisers. Consumers that want to use digital music on their MP3 players have to

subscribe to a digital music services allowing them to transfer music. The right balance in use values, revenue model, and target consumer result in value for the consumers and triggers their willingness to pay. Besides, it far better exploits the customization possibilities of digital content and allows versioning and differentiation.

If this strategy fails to result into remuneration to music actors to produce music, the media levy solution can always be used as backup solution. In between, the practical problems can be researched and solved. More information is available on the advertisement revenues download portals are able to gather, allowing better estimation on the profitability of the download portal. Finally, more information is available on consumer's willingness to pay for certain use values and services. This information can be used to define the scope of what content and use values the media levies compensate.

8.5 Future work

In this final section we would like to suggest directions for further research. Based on our research outcomes and discussion we suggest three directions for future research: the media levy strategy, the differentiation strategy of combined revenue models, and improvement of the validation method.

The media levy strategy turned out to have some practical limitations. These limitations include the repartitioning among rights owners and the estimation of the total amount of remuneration that should be collected. It would be very useful to explore alternative solutions to address these limitations. Moreover a similar validation research could be done in other content markets (e.g. movies) or other digital music markets (e.g. online radio or ringtones). The results can be used to determine the types of content and use values the media levy compensates.

The entry of advertisement and subscription based services potentially has a large impact on the profitability of music actors and on the digital music experience of consumers. Research on how actors could differentiate their digital music offerings among these services could help to understand the effect on their economic profitability. Moreover, research into consumer's use of digital music and their willingness to pay for certain use values is useful information to differentiate and create new value offerings. The validation method can be used to examine these value offerings and estimate the potential profits of music actors.

In this research we improved the e3value methodology as method to assess economic profitability of actors within eBusiness webs. We applied the resulting method onto a single case study. This method's sensitivity analysis examines extreme scenarios of the estimates used. Statistical techniques like variance analysis could be used to improve this part and give better insight in the reliability of the results. In addition, the method can be applied in other case studies to determine its value for the assessment of new or already implemented eBusiness webs.

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Appendix A: Characteristics of information goods

Characteristic	Description	Reference
Economic characteristics		
Value determination	Search, experience or credence good (e.g. telephone numbers/movies/medical advice)	[Kopp99] [Mull05]
Fixed costs	The height of the first copy costs	[Mull05]
Variable costs	The height of the reproduction and distribution costs	[Mull05]
Externalities	Positive/Negative if value increases/decreases when more people are using the good (e.g. language/stock information)	[Kopp99] [Loeb99]
Usage characteristics		
Transfer mode	Delivered products are downloaded (either push or pull) at once and after delivery there is no more need to interact, whereas interactive products require more or less continuous interaction (e.g. news/expert advice)	[Kopp99] [Loeb99] [Mull05]
Time dependence	Value decreases when time expires: time dependent or time independent (e.g. stock information/dictionary)	[Kopp99] [Loeb99] [Mull05]
Extent	Single or multiple use (e.g. result search engine/software product)	[Kopp99] [Loeb99]
Intensity	The degree of concentration and devotion needed to completely experience the good	
Complexity	Ease of consumption (e.g. movie/expert advice)	[Kopp99] [Mull05]
Exploitability	Opportunities that can be used to exploit the digital good (e.g. film idea can be used in videos, websites, and games)	[Kopp99]
Recipient characteristics		
Recipient type	Is the recipient a person or a service (e.g. banking service)	[Kopp99]
Individualization	Intended for a large group or individuals	[Mull05]
Specifiability	Degree of accuracy at which a consumer can assess, whether the good will satisfy the purpose it is purchased for (word processor/movie)	[Kopp99]
Excludability	Non-excludable if it is hardly impossible to exclude anyone from its consumption (e.g. lighthouses, national defense)	[Mull05]
Content customization	Degree of tailoring to a specific situation or consumer preference (e.g. personalized online newspaper)	[Kopp99] [Loeb99]
Use value customization	Degree of tailoring to a specific situation or consumer preference (e.g. right to play, change, or share)	[Kopp99] [Loeb99]
Revenue customization	Degree of tailoring to a specific situation or consumer preference (e.g. monetary (pay-per-use, subscription) or non-monetary (e.g. information, audience)	[Kopp99] [Loeb99]
Rivalry characteristics		
Substitutability	The degree at which a good or a service can be replaced by competing goods or services with the same functionality	[Kopp99]
Rivalry in consumption	Non-rival if its consumption by one recipient does not reduce the amount available to other recipients (e.g. bandwidth)	[Mull05]
Tangible equivalent	The existence of an identical tangible equivalent (e.g. CD, DVD for goods or a store for services)	[Kopp99]

Table 12 Characteristics of information goods

Appendix B: Revenue models

Revenue Model	Description	Example
Brokerage Model		
Marketplace exchange	Offers a full range of services covering the transaction process, from market assessment to negotiation and fulfillment. Exchanges operate independently or are backed by an industry consortium.	Orbitz
Buy/Sell fulfillment	Takes customer orders to buy or sell a product or service, including terms like price and delivery.	CarsDirect
Demand collection system	The patented "name-your-price" model pioneered by Priceline.com. Prospective buyer makes a final (binding) bid for a specified good or service, and the broker arranges fulfillment.	Priceline
Auction broker	Conducts auctions for sellers (individuals or merchants). Broker charges the seller a listing fee and commission scaled with the value of the transaction. Auctions vary widely in terms of the offering and bidding rules.	eBay
Transaction broker	Provides a third-party payment mechanism for buyers and sellers to settle a transaction.	PayPal
Distributor	A catalog operation that connects a large number of product manufacturers with volume and retail buyers. Broker facilitates business transactions between franchised distributors and their trading partners.	
Search agent	A software agent or "robot" used to search-out the price and availability for a good or service specified by the buyer, or to locate hard to find information.	
Virtual marketplace	A hosting service for online merchants that charges setup, monthly listing, and/or transaction fees. May also provide automated transaction and relationship marketing services.	Merchant Services at Amazon
Advertising Model		
Portal	Usually a search engine that may include varied content or services. A high volume of user traffic makes advertising profitable and permits further diversification of site services. A personalized portal allows customization of the interface and content to the user. A niche portal cultivates a well-defined user demographic.	Yahoo
Classifieds	List items for sale or wanted for purchase. Listing fees are common, but there also may be a membership fee.	Match.com
User registration	Content-based sites that are free to access but require users to register and provide demographic data. Registration allows inter-session tracking of user surfing habits and thereby generates data of potential value in targeted advertising campaigns	NYTimes Digital
Query-based paid placement	Sells favorable link positioning (i.e., sponsored links) or advertising keyed to particular search terms in a user query, such as Overture's trademark "pay-for-performance" model.	Google
Contextual advertising	Freeware developers who bundle adware with their product. For example, a browser extension that automates authentication and form fill-ins, also delivers advertising links or pop-ups as the user surfs the web. Contextual advertisers can sell targeted advertising based on an individual user's surfing activity.	Claria
Content-targeted advertising	Pioneered by Google, it extends the precision of search advertising to the rest of the web. Google identifies the meaning of a web page and then automatically delivers relevant ads when a user visits that page.	Google

Intromercials	Animated full-screen ads placed at the entry of a site before a user reaches the intended content.	CBS
Ultramercials	Interactive online ads that require the user to respond intermittently in order to wade through the message before reaching the intended content.	Salon and Mercedes-Benz
Infomediary Model		
Advertising networks	Feed banner ads to a network of member sites, thereby enabling advertisers to deploy large marketing campaigns. Ad networks collect data about web users that can be used to analyze marketing effectiveness.	Doubleclick
Audience measurement services	Online audience market research agencies	Nielsen
Incentive marketing	Customer loyalty program that provides incentives to customers such as redeemable points or coupons for making purchases from associated retailers. Data collected about users is sold for targeted advertising.	Coolsavings
Metamediary	Facilitates transactions between buyer and sellers by providing comprehensive information and ancillary services, without being involved in the actual exchange of goods or services between the parties.	Edmunds
Merchant Model		
Virtual merchant	Retail merchant that operates solely over the web.	Amazon
Catalog merchant	Mail-order business with a web-based catalog. Combines mail, telephone and online ordering.	Land's End
Click-and-Mortar	Traditional brick-and-mortar retail establishment with web storefront.	Barnes & Noble
Bit vendor	A merchant that deals strictly in digital products and services and, in its purest form, conducts both sales and distribution over the web.	Apple iTunes Music Store
Manufacturer (Direct) Model		
Purchase	The sale of a product in which the right of ownership is transferred to the buyer.	
Lease	In exchange for a rental fee, the buyer receives the right to use the product under a "terms of use" agreement. The product is returned to the seller upon expiration or default of the lease agreement. One type of agreement may include a right of purchase upon expiration of the lease.	
License	The sale of a product that involves only the transfer of usage rights to the buyer, in accordance with a "terms of use" agreement. Ownership rights remain with the manufacturer.	Software licensing
Brand integrated content	In contrast to the sponsored-content approach (i.e., the advertising model), brand-integrated content is created by the manufacturer itself for the sole basis of product placement.	Bmwfilms
Affiliate Model		
Banner exchange	Trades banner placement among a network of affiliated sites.	
Pay-per-click	Site that pays affiliates for a user click-through.	
Revenue sharing	Offers a percent-of-sale commission based on a user click-through in which the user subsequently purchases a product.	
Community Model		
Open source	Software developed collaboratively by a global community of programmers who share code openly. Instead of licensing code for a fee, open source relies on revenue generated from related services like systems integration, product support, tutorials and user documentation.	Red Hat

Open content	Openly accessible content developed collaboratively by a global community of contributors who work voluntarily.	Wikipedia
Public broadcasting	User-supported model used by not-for-profit radio and television broadcasting extended to the web. A community of users supports the site through voluntary donations.	The classical station WCPE.org
Social networking services	Sites that provide individuals with the ability to connect to other individuals along a defined common interest (professional, hobby, romance). Social networking services can provide opportunities for contextual advertising and subscriptions for premium services.	Flickr
Subscription Model		
Content services	Provide text, audio, or video content to users who subscribe for a fee to gain access to the service.	Listen.com, Netflix
Person-to-Person networking services	Are conduits for the distribution of user-submitted information, such as individuals searching for former schoolmates.	Classmates
Trust services	Come in the form of membership associations that abide by an explicit code of conduct, and in which members pay a subscription fee.	Truste
Internet service providers	Offer network connectivity and related services on a monthly subscription.	America Online
Utility Model		
Metered usage	Measures and bills users based on actual usage of a service.	
Metered subscriptions	Allows subscribers to purchase access to content in metered portions (e.g., numbers of pages viewed).	Slashdot

Table 13 Rappa revenue models, copied from [Rapp07]

Appendix C: Concepts within e3value modeling technique

E3-value concepts	Description
Actor	An actor is an independent economic (and often legal) entity. By carrying out value activities, an actor makes a profit or increases its utility. In a sound, viable, e-business model, each actor should be capable of making a profit.
Value object	Actors exchange value objects, which are services, products, money, or even consumer experiences. A value object is valuable to one or more actors.
Value port	An actor uses a value port to show that it wants to provide or request value objects. The concept of port enables us to abstract away from the internal business processes and focus only on how external actors and other components of the e-business model can be plugged in.
Value interface	Actors have one or more value interfaces, grouping individual value ports. A value interface shows the value object an actor is willing to exchange in return for another value object through its ports. The exchange of value objects is atomic at the level of the value interface.
Value exchange	A value exchange connects two value ports with each other. It represents one or more potential trades of value objects between value ports.
Value offering	A value offering is a set of value exchanges that shows which value objects are exchanged via value exchanges in return for other value objects. A value offering should obey the semantics of the connected value interfaces: Values are exchanged through a value interface on all its ports or on no ports at all.
Market segment	A market segment is a concept that breaks a market (consisting of actors) into segments that share common properties. Accordingly, our concept of market segment shows a set of actors that for one or more of their value interfaces, value objects equally.
Composite actor	For providing a particular service, several actors might decide to work together and to offer objects of value jointly by using one value interface to their environment. We call such a partnership a composite actor.
Value activity	An actor performs a value activity for profit or to increase its utility. The value activity is included in the ontology to discuss and design the assignment of value activities to actors. As such, we are interested in collecting activities that can be assigned as a whole to actors. Consequently, such an activity should be profitable or increase utility.

Table 14 Concepts of e3-value [Gord01]

Appendix D: Dutch digital music services

Name	Owner	Content aggregator	Collection size	Format	Quality	Licenses	Registration required	Software required	Revenue model	Revenues	Producer advertisements	Third-party advertising	Creditcard	iDeal	Vouchers	Phone	SMS	Microcredit	Online credit
Casema Entertainment	Casema	Digital Media Power	> 600,000	WMA	128 Kbps	Playforsure	N	Y	Merchant bit vendor	Pay-Per-Download	Y	N	Y	Y	Y	Y	N	N	N
Commodore World	Tulip	Yeahronimo	> 2,000,000	WMA	-	Playforsure	Y	N	Subscription content services	Subscription	Y	N	Y	Y	N	N	N	N	N
Compuserve	Compuserve (America Online)	Digital Media Power	> 800,000	WMA	128 Kbps	Playforsure	Y	Y	Merchant bit vendor	Pay-Per-Download	Y	Y	Y	Y	N	Y	N	N	N
Connect.com	Sony	n.a.	> 100,000	ATRAC3	132 Kbps	Sonicstage	Y	Y	Manufacturer license	Pay-Per-Download	Y	N	Y	N	N	N	N	N	N
CountDownload	Veronica	Lyzia	> 100,000	WMA	128 Kbps	Playforsure	Y	Y	Merchant bit vendor	Pay-Per-Download	Y	N	Y	Y	Y	N	N	Y	N
Dance Tunes	ID&T	n.a.	> 500	MP3	192 Kbps	None	Y	N	Merchant bit vendor	Pay-Per-Download	Y	N	Y	Y	Y	N	N	N	Y
eMusic	eMusic.com	n.a.	> 1,500,000	MP3	-	None	Y	N	Utility metered subscription	Subscription	Y	N	Y	N	Y	N	N	N	N
Freedownloadshop	FreeRecordShop	n.a.	> 400,000	WMA	192 Kbps	Playforsure	N	Y	Merchant click & mortar	Pay-Per-Download	Y	N	Y	Y	Y	Y	N	Y	Y
GlandigoMusic	Glandigo.com	Aim4Music	> 100,000	WMA	256 Kbps	Playforsure	N	Y	Merchant bit vendor	Pay-Per-Download	Y	N	Y	Y	N	Y	Y	Y	Y
iTunes	Apple	n.a.	> 2,000,000	AAC	128 Kbps	Fairplay	Y	Y	Merchant bit vendor	Pay-Per-Download	Y	N	Y	N	Y	N	N	N	Y
Kruidvat Entertainment	Kruidvat	n.a.	> 100,000	WMA	128 Kbps	Playforsure	Y	Y	Merchant click & mortar	Pay-Per-Download	Y	N	Y	Y	N	Y	N	N	N
Legaldownload	Legaldownload	n.a.	> 100	MP3	192 Kbps	None	Y	N	Merchant bit vendor	Pay-Per-Download	Y	N	Y	Y	Y	N	N	N	Y
Media Gigant	IVI Veenendaal	Aim4Music	> 100,000	WMA	128 Kbps	Playforsure	N	Y	Merchant bit vendor	Pay-Per-Download	Y	N	Y	Y	Y	Y	Y	Y	Y
MP3downloaden	CyberSalesMedia	n.a.	> 1000	MP3	-	Non	N	N	Merchant bit vendor	Pay-Per-Download	Y	N	Y	Y	N	Y	N	Y	N
MP3tunes	MP3Tunes.com	n.a.	> 300,000	MP3	-	None	Y	N	Subscription content services	Subscription	Y	N	Y	N	N	N	N	N	N
MSN Music	MSN	OD2	> 400,000	WMA	128 Kbps	Playforsure	Y	Y	Merchant bit vendor	Pay-Per-Download	Y	N	Y	N	N	N	N	N	Y
MTV SonicSelector	MTV	OD2	> 400,000	WMA	128 Kbps	Playforsure	Y	Y	Merchant bit vendor	Pay-Per-Download	Y	N	Y	N	Y	N	N	N	N
Multikabel	Multikabel	Digital Media Power	> 600,000	WMA	128 Kbps	Playforsure	N	Y	Merchant bit vendor	Pay-Per-Download	Y	N	Y	Y	N	Y	N	N	N
Music Store Tones	Music Store	Digital Media Power	> 600,000	WMA	128 Kbps	Playforsure	Y	Y	Merchant click & mortar	Pay-Per-Download	Y	N	Y	Y	Y	Y	N	N	N
MusicMinutes	MusicMinutes	n.a.	> 700,000	WMA	128 Kbps	Playforsure	Y	Y	Merchant bit vendor	Pay-Per-Download	Y	N	Y	Y	N	N	N	N	Y
Muzikism	Muzikism.com	n.a.	> 100	MP3	320 Kbps	None	Y	N	Merchant bit vendor	Pay-Per-Download	Y	N	Y	N	N	N	N	N	Y
Planet Music Stream	Planet	OD2	> 1,500,000	WMA	128 Kbps	Playforsure	N	Y	Subscription content services	Subscription	Y	N	Y	N	N	N	N	N	Y
PlaymeLoud	PlaymeLoud	n.a.	> 300	MP3	192 Kbps	None	N	N	Merchant bit vendor	Pay-Per-Download	Y	N	Y	N	N	N	N	Y	Y
Radio538	Radio538	Aim4Music	> 100,000	WMA	320 Kbps	Playforsure	N	Y	Merchant bit vendor	Pay-Per-Download	Y	Y	Y	Y	Y	Y	Y	Y	Y
Simuze	Simuze	n.a.	> 1,000	MP3	128 Kbps	Creative Commons	N	N	Community open content	Free	Y	Y	N	N	N	N	N	N	N
SterMusic	Stervideotheek	Aim4Music	> 100,000	WMA	128 Kbps	Playforsure	N	Y	Merchant click & mortar	Pay-Per-Download	Y	N	Y	Y	N	Y	Y	Y	Y
Surf2Music	Surfspot	n.a.	> 1,000,000	WMA	-	Playforsure	Y	Y	Subscription content services	Subscription	Y	N	Y	Y	Y	N	N	N	N
Talpa Downnloads	Talpa	Aim4Music	> 200	WMA	-	Playforsure	N	Y	Manufacturer license	Pay-Per-Download	Y	N	Y	Y	Y	Y	Y	Y	Y
TOOST	TOOST	n.a.	> 800,000	WMA	-	Playforsure	N	Y	Merchant bit vendor	Pay-Per-Download	Y	Y	Y	Y	Y	Y	N	N	N
TotalMusicNut	TotalMusicNut/SupaKDB Records	n.a.	> 1000	MP3	192 Kbps	None	N	N	Merchant bit vendor	Pay-Per-Download	Y	N	Y	N	N	N	N	N	Y
Tune Tribe	TuneTribe	n.a.	> 100,000	WMA	192 Kbps	Playforsure	Y	N	Merchant bit vendor	Pay-Per-Download	Y	N	Y	Y	N	N	N	N	Y
YouMakeMusic.com	YouMakeMusic.com	n.a.	> 1,000	MP3	256 Kbps	Own	N	N	Merchant bit vendor	Pay-Per-Download	Y	N	N	Y	Y	N	N	Y	Y
Zazell	Aim4Music	Aim4Music	> 100,000	WMA	192 Kbps	Playforsure	N	Y	Merchant bit vendor	Pay-Per-Download	Y	N	Y	Y	Y	Y	Y	Y	Y
ZoekMuziek	ZoekMuziek	n.a.	> 10,000	MP3	-	None	N	N	Merchant bit vendor	Pay-Per-Download	Y	N	N	N	N	Y	N	N	N

Table 15 Dutch legal downloads services compared

Appendix E: Dutch collecting agencies

Buma/Stemra digital music licenses

License	Authorized rights	Revenue required
Distribution of music	Distribute complete musical works in music files or broadcasting complete musical works determined by the consumer	- 10% of the price that the consumers pay for the download (excluding sales tax (BTW)). - The minimum amount is € 0.06 per track downloaded and € 0.0375 per track broadcasted. - The minimum amount is € 0.90 per album downloaded and € 0.57 per album broadcasted.
Simulcasting	Broadcast your own TV and radio broadcasts simultaneously and unabridged	- Already included in the arrangements in the broadcaster licenses for TV and radio.
Webcasting	Broadcast via Internet without involving a standard transmission via satellite, cable or the airwaves, where the Internet surfers are not able to determine the content of the transmission for themselves	- The rate for webcasting is 13% of the turnover achieved with the website, with a monthly minimum amount of € 65 per channel for commercial websites and € 26 per channel for private individuals.
Background music	Broadcast music exclusively to make a website more attractive.	- Business users using complete works and any fragments pay € 65 for less than 10 minutes of music and € 130 for more than 10 minutes up to a maximum of 90 minutes - Business users using fragments pay € 26 for less than 10 minutes of music and € 65 for more than 10 minutes up to a maximum of 90 minutes
		- Private users using complete works and any fragments pay € 13 for less than 10 minutes of music and € 26 for more than 10 minutes up to a maximum of 90 minutes
		- All rates are applicable per site per month (excluding sales tax (BTW)
Commercials	Broadcasting digital music embedded in commercial material for promoting a product, service, or brand	- The site owner has to pay remuneration for broadcasting the commercial on a website, as per the rates for background music.
New media	Distribute a ringtone: fragment of music used as a call signal for a mobile telephone	- The rate is 12% of the price to the consumer (excluding 12% sales tax (BTW)) with a minimum of € 0.113 per ringtone, e card, m card, song card or voicemail message distributed.
	Distribute an E-card: electronic greeting card with a fragment of a music recording	
	Distribute an M-card: electronic greeting card with a spoken message and possibly a fragment of a music recording	
	Distribute a song card: electronic greeting card with a fragment of a music recording and possibly a spoken message	
	Distribute a voicemail message: spoken message, possibly with a fragment of a music recording	

Table 16 Licenses issued by Buma/Stemra for the commercial use of digital music [Buma07]

Moreover, a supplier of digital music has to regularly report (monthly or quarterly) details of the works used including, the copyright holders, the origin of the recording, the performer(s) & producer of the recording, the number of times downloaded, and the price per track.

Sena digital music licenses

License	Authorization required	Revenue required
Radio stations	Broadcast of radio programs over the Internet, where consumers are only able to listen to the music and are not able to download the music	- Based on the listeners log and playlist, required to pay € 0,00087 per listener per track with a minimum of € 547 per year per channel
Background music	Broadcast music exclusively to make a website more attractive, where consumers are only able to listen to the music and are not able to download the music	- Based on the number of tracks supplied as background music 1 track (€ 274), 2 tracks (€ 328), 3 tracks (€ 383), 4 tracks (€ 438), 5 tracks (€ 492), more than 5 tracks see radio stations.

Table 17 Licenses issued by Sena for the commercial use of digital music [Sena07]

Appendix F: Interview questions

The main goal of the interviews was to validate the current eBusiness web for the Dutch download market. We used the value model to illustrate the latest version of our eBusiness web and asked for inaccuracies. After each interview we updated the value model and used the newer version as input for the upcoming interviews. The questions we used to validate the value model were:

1 What actors, value activities, and value exchanges are missing in the value model?

2 What actors, value activities, and value exchanges are not correct in the value model?

3 What actors, value activities, and value exchanges should not be part of the value model?

4 Which estimates of the exchanged value objects and expenses of actor represent the current situation?

5 Which estimates of the exchanged value objects and expenses of actors differ from the current situation?

In addition we used the interviews to derive opinions on the media levy solution and asked for alternative solutions. Questions we used were:

1 What is your opinion on the media levy solution?

2 What are the main advantages and disadvantages of this solution?

3 Do you see other solutions to charge consumers and ensure remuneration for rights owners?

Appendix G: Estimates current Dutch download market

Table 18 outlines the estimates of the value exchanges and costs of the download portal, content aggregator, and producer market segments. These estimates come from five different sources: literature sources [Peit05] (A) and [OECD05] (B) and interviews with a major record label [Producer] (C), the Dutch association of producers and importers (NVPI) [NVPI] (D), and an organization who formerly owned a download portal [Portal] (E). The estimates are divided into a low and a high value for the respective value exchange or cost and should be read as value per download. In the average column these low and high values are used to calculate the average per value exchange or cost. The final column interprets the averages and displays the estimates which are used within the case study.

Actor	Value exchanges (v) or operating costs (o)	Low						High						Average	Adjusted
		A	B	C	D	E	Min	A	B	C	D	E	Max		
Download portal	Download price (v)	$ 0,99	€ 0,99	€ 0,99	€ 1,10	€ 0,99	€ 0,99	$0,99	€ 1,39	€ 0,99	€ 1,10	€ 1,19	€ 1,39	€ 1,19	€ 1,09
	Producer advertising (v)			€ 0,00	€ 0,01	€ 0,00	€ 0,00			€ 0,00	€ 0,01	€ 0,00	€ 0,01	€ 0,01	€ -
	Copyright license (v)	$ 0,10	$ 0,10	€ 0,07	€ 0,06	€ 0,08	€ 0,06	$0,12	$0,12	€ 0,07	€ 0,06	€ 0,08	€ 0,08	€ 0,07	€ 0,07
	Payment support (v)	$ 0,10	$ 0,10		€ 0,11	€ 0,05	€ 0,05	$0,15	$0,30		€ 0,11	€ 0,15	€ 0,15	€ 0,10	€ 0,10
	Music catalog (v)	$ 0,62	$ 0,50			€ 0,70	€ 0,50	$0,81	$0,92			€ 0,75	€ 0,75	€ 0,63	€ 0,75
	Sales tax (o)			€ 0,16	€ 0,16	€ 0,19	€ 0,16			€ 0,16	€ 0,16	€ 0,19	€ 0,19	€ 0,18	€ 0,16
	Platform & Marketing (o)	$ 0,10	$ 0,10		€ 0,39		€ 0,04	$0,18	$0,25		€ 0,39		€ 0,18	€ 0,11	€ 0,10
Content aggregator	Platform & Marketing (o)						€ 0,04						€ 0,18	€ 0,11	€ 0,10
	Digitization (o)					€ 0,02	€ 0,02					€ 0,02	€ 0,02	€ 0,02	€ 0,02
	DRM license (v)				€ 0,03	€ 0,01	€ 0,01				€ 0,03	€ 0,01	€ 0,02	€ 0,02	€ 0,01
	Hosting (v)	$ 0,02				€ 0,01	€ 0,01	$0,05				€ 0,01	€ 0,03	€ 0,02	€ 0,02
	Music license (v)	$ 0,50	$ 0,40	€ 0,60	€ 0,34	€ 0,65	€ 0,34	$0,58	$0,67	€ 0,70	€ 0,34	€ 0,70	€ 0,70	€ 0,52	€ 0,65
Producer	Marketing (o)			€ 0,12	€ 0,08		€ 0,08			€ 0,14	€ 0,09		€ 0,14	€ 0,11	€ 0,12
	Artist & Repertoire (o)			€ 0,19	€ 0,17		€ 0,10			€ 0,23	€ 0,17		€ 0,23	€ 0,17	€ 0,22
	Digitization (o)														
	Recording (o)														
	Royalties (v)			€ 0,12			€ 0,07			€ 0,14			€ 0,14	€ 0,11	€ 0,13
	Other (o)			€ 0,05	€ 0,05		€ 0,05			€ 0,05	€ 0,05		€ 0,05	€ 0,05	€ 0,05
	Profit			€ 0,12	€ 0,04		€ 0,04			€ 0,14	€ 0,04		€ 0,14	€ 0,09	€ 0,13

Table 18 Estimates value exchanges and expensess download portal, content aggregator, and producer

The figures are adjusted because of a correction in the estimate of the music license and the download price. A music license is more likely to be € 0.65 per download, because both insiders C and E validated this figure. This resulted in a correction of the music catalog price paid by the download portal and a correction in costs of producers in terms of artist & repertoire, digitization, and recording.

The download price is also more likely to be around € 0.99. This mainly because the major seller of music downloads is iTunes who asks a price of € 0.99 per download including transaction costs. The other services ask a bit more (ranging from € 0.99 to € 1.39) and also surcharge transaction costs. Because numbers about segmentation within the download portal market segment are unknown we assume the price to be € 0.99 excluding, and € 1.09 including transaction costs.

In addition to the estimates of the music delivery channel from producer to consumer also margins of the central collecting agency, Buma/Stemra, and the royalty sharing percentages of the publishers have to be estimated. In this case study these estimates are [Producer]:

- Central collecting agency: 10%;
- Buma/Stemra: 10%;
- Sub-publisher: 10% royalty sharing;
- Publisher: 33% royalty sharing.

Appendix H: Profits pay-per-download implementation

Actor	Revenues		Costs		Profit
	Variable	Estimate	Variable	Estimate	
Consumer			Download cost	€ 1,09	
			Internet access	€ 300,00	
Internet service provider	Internet access	€ 300,00	Operating cost		**€ 300,00**
Download portal	Download price	€ 1,09	Payment support	€ 0,10	**€ 0,09-**
	Download advertising	€ -	Copyright license	€ 0,07	
			Marketing & platform	€ 0,10	
			Music catalog	€ 0,75	
			Sales tax	€ 0,16	
	Total	€ 1,09	Total	€ 1,18	
Payment service	Payment support	€ 0,10	Operating cost		**€ 0,10**
Content aggregator	Music catalog	€ 0,75	Hosting	€ 0,02	**€ 0,05-**
			DRM license	€ 0,01	
			Marketing & platform	€ 0,10	
			Digitization	€ 0,02	
			Music license	€ 0,65	
	Total	€ 0,75	Total	€ 0,80	
Hosting service	Hosting	€ 0,02	Operating cost		**€ 0,02**
DRM technology provider	DRM license	€ 0,01	Operating cost		**€ 0,01**
Producer	Music license	€ 0,65	A&R	€ 0,22	**€ 0,13**
			Recording		
			Digitization		
			Marketing	€ 0,12	
			Other	€ 0,05	
			Download advertising	€ -	
			Royalties	€ 0,13	
	Total	€ 0,65	Total	€ 0,52	
Performers	Royalties	€ 0,13			**€ 0,13**
Central collecting agency	Copyright license	€ 0,070	Repartitioning	€ 0,06	**€ 0,01**
Buma/Stemra	Collecting	€ 0,063	Repartitioning	€ 0,06	**€ 0,01**
Subpublisher	Collecting	€ 0,057	Repartitioning	€ 0,05	**€ 0,01**
Publisher	Collecting	€ 0,051	Royalties	€ 0,03	**€ 0,02**
Composer & Text writers	Royalties	€ 0,034			**€ 0,03**

Table 19 Estimates used to generate profit sheets actors within pay-per-download implementation

Triggers

Variables	2006	2007	2008	2009	2010
Downloads	210.000.000	210.000.000	210.000.000	210.000.000	210.000.000
Legal downloads	10.000.000	17.000.000	24.000.000	32.000.000	40.000.000
Illegal downloads	200.000.000	193.000.000	186.000.000	178.000.000	170.000.000
Broadband subscribers	5.200.000	6.000.000	6.500.000	6.500.000	6.500.000
Advertisements	€ -	€ -	€ -	€ -	€ -

Profit margins download portal, content aggregator, and producer

	2006			2007			2008			2009			2010		
Actor	Revenues	Costs	Result	Revenues	Costs	Result	Revenues	Costs	Result	Revenues	Costs	Result	Revenues	Costs	Result
Download portal	€ 10.900.000	€ 11.800.000	€ 900.000-	€ 18.530.000	€ 20.060.000	€ 1.530.000-	€ 26.160.000	€ 28.320.000	€ 2.160.000-	€ 34.880.000	€ 37.760.000	€ 2.880.000-	€ 43.600.000	€ 47.200.000	€ 3.600.000-
Content aggregator	€ 7.500.000	€ 8.000.000	€ 500.000-	€ 12.750.000	€ 13.600.000	€ 850.000-	€ 18.000.000	€ 19.200.000	€ 1.200.000-	€ 24.000.000	€ 25.600.000	€ 1.600.000-	€ 30.000.000	€ 32.000.000	€ 2.000.000-
Producer	€ 6.500.000	€ 5.200.000	€ 1.300.000	€ 11.050.000	€ 8.840.000	€ 2.210.000	€ 15.600.000	€ 12.480.000	€ 3.120.000	€ 20.800.000	€ 16.640.000	€ 4.160.000	€ 26.000.000	€ 20.800.000	€ 5.200.000
			€ 100.000-			**€ 170.000-**			**€ 240.000-**			**€ 320.000-**			**€ 400.000-**

Royalties collecting agencies, publishers, composers & text writers, and performers

	2006			2007			2008			2009			2010		
Actor	Incoming	Outgoing	Result	Incoming	Outgoing	Result	Incoming	Outgoing	Result	Incoming	Outgoing	Result	Incoming	Outgoing	Result
Subpublisher	€ 567.000	€ 510.300	€ 56.700	€ 963.900	€ 867.510	€ 96.390	€ 1.360.800	€ 1.224.720	€ 136.080	€ 1.814.400	€ 1.632.960	€ 181.440	€ 2.268.000	€ 2.041.200	€ 226.800
Publisher	€ 510.300	€ 340.200	€ 170.100	€ 867.510	€ 578.340	€ 289.170	€ 1.224.720	€ 816.480	€ 408.240	€ 1.632.960	€ 1.088.640	€ 544.320	€ 2.041.200	€ 1.360.800	€ 680.400
Composer & Text writers	€ 340.200	€ -	€ 340.200	€ 578.340	€ -	€ 578.340	€ 816.480	€ -	€ 816.480	€ 1.088.640	€ -	€ 1.088.640	€ 1.360.800	€ -	€ 1.360.800
Performers	€ 1.300.000	€ -	€ 1.300.000	€ 2.210.000	€ -	€ 2.210.000	€ 3.120.000	€ -	€ 3.120.000	€ 4.160.000	€ -	€ 4.160.000	€ 5.200.000	€ -	€ 5.200.000
			€ 1.867.000			**€ 3.173.900**			**€ 4.480.800**			**€ 5.974.400**			**€ 7.468.000**

Revenues payment service, hosting service, and DRM technology provider

	2006	2007	2008	2009	2010
Actor	Revenues	Revenues	Revenues	Revenues	Revenues
Central collecting agency	€ 70.000	€ 119.000	€ 168.000	€ 224.000	€ 280.000
Buma/Stemra	€ 63.000	€ 107.100	€ 151.200	€ 201.600	€ 252.000
Payment service	€ 1.000.000	€ 1.700.000	€ 2.400.000	€ 3.200.000	€ 4.000.000
Hosting service	€ 200.000	€ 340.000	€ 480.000	€ 640.000	€ 800.000
DRM technology provider	€ 100.000	€ 170.000	€ 240.000	€ 320.000	€ 400.000
	€ 1.433.000	**€ 2.436.100**	**€ 3.439.200**	**€ 4.585.600**	**€ 5.732.000**

Table 20 Profit sheets actors within pay-per-download implementation

Appendix I: Profits media levy solution

Actor	Revenues		Costs		Profit
	Variable	Estimate	Variable	Estimate	
Consumer			Internet access	€ 300,00	
			Levy	€ 23,08	
Internet service provider	Internet access	€ 300,00	Operating cost	€ 285,00	**€ 16,15**
	Levy	€ 23,08	Levy	€ 21,92	
	Total	€ 323,08	Total	€ 306,92	
Download portal	Download advertising	€ -	Music catalog	€ 0,15	**€ 0,25-**
			Marketing & platform	€ 0,10	
	Total	€ -	Total	€ 0,25	
Payment service	Payment support	€ -	Operating cost	€ -	**€ -**
Content aggregator	Music catalog	€ 0,15	Hosting	€ 0,02	**€ 0,01**
			Digitization	€ 0,02	
			Platform	€ 0,10	
	Total	€ 0,15	Total	€ 0,14	
Hosting service	Hosting	€ 0,02	Operating cost	€ 0,02	**€ 0,00**
DRM technology provider	DRM license	€ -	Operating cost	€ -	**€ -**
Producer	Levy	€ 17,76	Royalties	€ 3,55	**€ 14,21**
	Total	€ 17,76	Total	€ 3,55	
			A&R	€ 0,22	**€ 0,39-**
			Recording		
			Digitization		
			Marketing	€ 0,12	
			Other	€ 0,05	
			Download advertising	€ -	
	Total	€ -	Total	€ 0,39	
Performers	Royalties	€ 3,55			**€ 3,55**
Central collecting agency	Levy income	€ 21,92	Repartitioning	€ 19,73	**€ 1,10**
			Media measurement	€ 1,10	
	Total	€ 21,92	Total	€ 20,83	
Buma/Stemra	Collecting	€ -	Repartitioning	€ -	**€ -**
Media measurement	Media measurement	€ 1,10	Operating cost	€ 0,99	**€ 0,11**
Subpublisher	Collecting	€ 1,97	Repartitioning	€ 1,78	**€ 0,20**
Publisher	Collecting	€ 1,78	Royalties	€ 1,18	**€ 0,59**
Composer & Text writers	Royalties	€ 1,18			**€ 1,18**

Table 21 Estimates used to generate profit sheets actors within media levy solution

Actor	Fractions
Internet service provider	5%
Collecting agency	5%
Media measurement	5%
Producers	90%
Publishers	10%
Performers	20%

Table 22 Fractions used to distribute levies among actors

Triggers

Variables	2006	2007	2008	2009	2010
Downloads	210.000.000	210.000.000	210.000.000	210.000.000	210.000.000
Legal downloads	10.000.000	17.000.000	24.000.000	32.000.000	40.000.000
Illegal downloads	200.000.000	193.000.000	186.000.000	178.000.000	170.000.000
Broadband subscribers	5.200.000	6.000.000	6.500.000	6.500.000	6.500.000
Advertisements	€ -	€ -	€ -	€ -	€ -

Profit margins download portal, content aggregator, and producer

	2006			2007			2008			2009			2010		
Actor	Revenues	Costs	Result	Revenues	Costs	Result	Revenues	Costs	Result	Revenues	Costs	Result	Revenues	Costs	Result
Download portal	€ -	€ 2.500.000	€ 2.500.000-	€ -	€ 4.250.000	€ 4.250.000-	€ -	€ 6.000.000	€ 6.000.000-	€ -	€ 8.000.000	€ 8.000.000-	€ -	€ 10.000.000	€ 10.000.000-
Content aggregator	€ 1.500.000	€ 1.400.000	€ 100.000	€ 2.550.000	€ 2.380.000	€ 170.000	€ 3.600.000	€ 3.360.000	€ 240.000	€ 4.800.000	€ 4.480.000	€ 320.000	€ 6.000.000	€ 5.600.000	€ 400.000
Producer	€ 92.340.000	€ 22.368.000	€ 69.972.000	€ 106.546.154	€ 27.939.231	€ 78.606.923	€ 115.425.000	€ 32.445.000	€ 82.980.000	€ 115.425.000	€ 35.565.000	€ 79.860.000	€ 115.425.000	€ 38.685.000	€ 76.740.000
			€ 67.572.000			**€ 74.526.923**			**€ 77.220.000**			**€ 72.180.000**			**€ 67.140.000**

Royalties collecting agencies, publishers, composers & text writers, and performers

	2006			2007			2008			2009			2010		
Actor	Incoming	Outgoing	Result	Incoming	Outgoing	Result	Incoming	Outgoing	Result	Incoming	Outgoing	Result	Incoming	Outgoing	Result
Subpublisher	€ 10.260.000	€ 9.234.000	€ 1.026.000	€ 11.838.462	€ 10.654.615	€ 1.183.846	€ 12.825.000	€ 11.542.500	€ 1.282.500	€ 12.825.000	€ 11.542.500	€ 1.282.500	€ 12.825.000	€ 11.542.500	€ 1.282.500
Publisher	€ 9.234.000	€ 6.156.000	€ 3.078.000	€ 10.654.615	€ 7.103.077	€ 3.551.538	€ 11.542.500	€ 7.695.000	€ 3.847.500	€ 11.542.500	€ 7.695.000	€ 3.847.500	€ 11.542.500	€ 7.695.000	€ 3.847.500
Composer & Text writers	€ 6.156.000	€ -	€ 6.156.000	€ 7.103.077	€ -	€ 7.103.077	€ 7.695.000	€ -	€ 7.695.000	€ 7.695.000	€ -	€ 7.695.000	€ 7.695.000	€ -	€ 7.695.000
Performers	€ 18.468.000	€ -	€ 18.468.000	€ 21.309.231	€ -	€ 21.309.231	€ 23.085.000	€ -	€ 23.085.000	€ 23.085.000	€ -	€ 23.085.000	€ 23.085.000	€ -	€ 23.085.000
			€ 28.728.000			**€ 33.147.692**			**€ 35.910.000**			**€ 35.910.000**			**€ 35.910.000**

Revenues payment service, hosting service, and DRM technology provider

	2006	2007	2008	2009	2010
Actor	Revenues	Revenues	Revenues	Revenues	Revenues
Central collecting agency	€ 5.700.000	€ 6.576.923	€ 7.125.000	€ 7.125.000	€ 7.125.000
Payment service	€ -	€ -	€ -	€ -	€ -
Hosting service	€ 200.000	€ 340.000	€ 480.000	€ 640.000	€ 800.000
DRM technology provider	€ -	€ -	€ -	€ -	€ -
Media measurement	€ 5.700.000	€ 6.576.923	€ 7.125.000	€ 7.125.000	€ 7.125.000
	€ 11.600.000	**€ 13.493.846**	**€ 14.730.000**	**€ 14.890.000**	**€ 15.050.000**

Table 23 Profit sheets business actors within media levy solution

Appendix J: Sensitivity analysis profit sheets

In this appendix the profit sheets are shown which were generated based on the minimum and maximum estimates of the different exchanged value objects and expenses of actors as shown in Appendix D. The structure of this appendix is as follows:

- Pay-per-download implementation (minimum estimates);
- Media levy solution (minimum estimates);
- Pay-per-download implementation (maximum estimates);
- Media levy solution (maximum estimates);
- Variance in number of downloads;
- Variance in advertisement income.

Profit sheets pay-per-download implementation (minimum)

Actor	Revenues		Costs		Profit
	Variable	Estimate	Variable	Estimate	
Consumer			Download cost	€ 0,99	
			Internet access	€ 300,00	
Internet service provider	Internet access	€ 300,00	Operating cost		**€ 300,00**
Download portal	Download price	€ 0,99	Payment support	€ 0,05	**€ 0,18**
	Download advertising	€ -	Copyright license	€ 0,06	
			Marketing & platform	€ 0,04	
			Music catalog	€ 0,50	
			Sales tax	€ 0,16	
	Total	€ 0,99	Total	€ 0,81	
Payment service	Payment support	€ 0,05	Operating cost		**€ 0,05**
Content aggregator	Music catalog	€ 0,50	Hosting	€ 0,01	**€ 0,08**
			DRM license	€ 0,01	
			Marketing & platform	€ 0,04	
			Digitization	€ 0,02	
			Music license	€ 0,34	
	Total	€ 0,50	Total	€ 0,42	
Hosting service	Hosting	€ 0,01	Operating cost		**€ 0,01**
DRM technology provider	DRM license	€ 0,01	Operating cost		**€ 0,01**
Producer	Music license	€ 0,34	A&R	€ 0,10	**€ 0,04**
			Recording		
			Digitization		
			Marketing	€ 0,08	
			Other	€ 0,05	
			Download advertising	€ -	
			Royalties	€ 0,07	
	Total	€ 0,34	Total	€ 0,30	
Performers	Royalties	€ 0,07			**€ 0,07**
Central collecting agency	Copyright license	€ 0,060	Repartitioning	€ 0,05	**€ 0,01**
Buma/Stemra	Collecting	€ 0,054	Repartitioning	€ 0,05	**€ 0,01**
Subpublisher	Collecting	€ 0,049	Repartitioning	€ 0,04	**€ 0,01**
Publisher	Collecting	€ 0,036	Royalties	€ 0,02	**€ 0,02**
Composer & Text writers	Royalties	€ 0,018			**€ 0,02**

Table 24 Minimum estimates sensitivity analysis (pay-per-download implementation)

Triggers

Variables	2006	2007	2008	2009	2010
Downloads	210.000.000	210.000.000	210.000.000	210.000.000	210.000.000
Legal downloads	10.000.000	17.000.000	24.000.000	32.000.000	40.000.000
Illegal downloads	200.000.000	193.000.000	186.000.000	178.000.000	170.000.000
Broadband subscribers	5.200.000	6.000.000	6.500.000	6.500.000	6.500.000
Advertisements	€ -	€ -	€ -	€ -	€ -

Profit margins download portal, content aggregator, and producer

	2006			2007			2008			2009			2010		
Actor	Revenues	Costs	Result	Revenues	Costs	Result	Revenues	Costs	Result	Revenues	Costs	Result	Revenues	Costs	Result
Download portal	€ 9.900.000	€ 8.100.000	€ 1.800.000	€ 16.830.000	€ 13.770.000	€ 3.060.000	€ 23.760.000	€ 19.440.000	€ 4.320.000	€ 31.680.000	€ 25.920.000	€ 5.760.000	€ 39.600.000	€ 32.400.000	€ 7.200.000
Content aggregator	€ 5.000.000	€ 4.200.000	€ 800.000	€ 8.500.000	€ 7.140.000	€ 1.360.000	€ 12.000.000	€ 10.080.000	€ 1.920.000	€ 16.000.000	€ 13.440.000	€ 2.560.000	€ 20.000.000	€ 16.800.000	€ 3.200.000
Producer	€ 3.400.000	€ 3.000.000	€ 400.000	€ 5.780.000	€ 5.100.000	€ 680.000	€ 8.160.000	€ 7.200.000	€ 960.000	€ 10.880.000	€ 9.600.000	€ 1.280.000	€ 13.600.000	€ 12.000.000	€ 1.600.000
			€ 3.000.000			**€ 5.100.000**			**€ 7.200.000**			**€ 9.600.000**			**€ 12.000.000**

Royalties collecting agencies, publishers, composers & text writers, and performers

	2006			2007			2008			2009			2010		
Actor	Incoming	Outgoing	Result	Incoming	Outgoing	Result	Incoming	Outgoing	Result	Incoming	Outgoing	Result	Incoming	Outgoing	Result
Subpublisher	€ 486.000	€ 364.500	€ 121.500	€ 826.200	€ 619.650	€ 206.550	€ 1.166.400	€ 874.800	€ 291.600	€ 1.555.200	€ 1.166.400	€ 388.800	€ 1.944.000	€ 1.458.000	€ 486.000
Publisher	€ 364.500	€ 182.250	€ 182.250	€ 619.650	€ 309.825	€ 309.825	€ 874.800	€ 437.400	€ 437.400	€ 1.166.400	€ 583.200	€ 583.200	€ 1.458.000	€ 729.000	€ 729.000
Composer & Text writers	€ 182.250	€ -	€ 182.250	€ 309.825	€ -	€ 309.825	€ 437.400	€ -	€ 437.400	€ 583.200	€ -	€ 583.200	€ 729.000	€ -	€ 729.000
Performers	€ 700.000	€ -	€ 700.000	€ 1.190.000	€ -	€ 1.190.000	€ 1.680.000	€ -	€ 1.680.000	€ 2.240.000	€ -	€ 2.240.000	€ 2.800.000	€ -	€ 2.800.000
			€ 1.186.000			**€ 2.016.200**			**€ 2.846.400**			**€ 3.795.200**			**€ 4.744.000**

Revenues payment service, hosting service, and DRM technology provider

	2006	2007	2008	2009	2010
Actor	Revenues	Revenues	Revenues	Revenues	Revenues
Central collecting agency	€ 60.000	€ 102.000	€ 144.000	€ 192.000	€ 240.000
Buma/Stemra	€ 54.000	€ 91.800	€ 129.600	€ 172.800	€ 216.000
Payment service	€ 500.000	€ 850.000	€ 1.200.000	€ 1.600.000	€ 2.000.000
Hosting service	€ 100.000	€ 170.000	€ 240.000	€ 320.000	€ 400.000
DRM technology provider	€ 100.000	€ 170.000	€ 240.000	€ 320.000	€ 400.000
	€ 814.000	**€ 1.383.800**	**€ 1.953.600**	**€ 2.604.800**	**€ 3.256.000**

Table 25 Minimum profit sheets sensitivity analysis (pay-per-download implementation)

Profit sheets media levy solution (minimum)

Actor	Revenues		Costs		Profit
	Variable	Estimate	Variable	Estimate	
Consumer			Internet access	€ 300,00	
			Levy	€ 23,08	
Internet service provider	Internet access	€ 300,00	Operating cost	€ 285,00	**€ 16,15**
	Levy	€ 23,08	Levy	€ 21,92	
	Total	€ 323,08	Total	€ 306,92	
Download portal	Download advertising	€ -	Music catalog	€ 0,08	**€ 0,12-**
			Marketing & platform	€ 0,04	
	Total	€ -	Total	€ 0,12	
Payment service	Payment support	€ -	Operating cost	€ -	**€ -**
Content aggregator	Music catalog	€ 0,08	Hosting	€ 0,01	**€ 0,01**
			Digitization	€ 0,02	
			Platform	€ 0,04	
	Total	€ 0,08	Total	€ 0,07	
Hosting service	Hosting	€ 0,01	Operating cost	€ 0,01	**€ 0,00**
DRM technology provider	DRM license	€ -	Operating cost	€ -	**€ -**
Producer	Levy	€ 17,76	Royalties	€ 3,55	**€ 14,21**
	Total	€ 17,76	Total	€ 3,55	
			A&R	€ 0,10	**€ 0,23-**
			Recording		
			Digitization		
			Marketing	€ 0,08	
			Other	€ 0,05	
			Download advertising	€ -	
	Total	€ -	Total	€ 0,23	
Performers	Royalties	€ 3,55			**€ 3,55**
Central collecting agency	Levy income	€ 21,92	Repartitioning	€ 19,73	**€ 1,10**
			Media measurement	€ 1,10	
	Total	€ 21,92	Total	€ 20,83	
Buma/Stemra	Collecting	€ -	Repartitioning	€ -	**€ -**
Media measurement	Media measurement	€ 1,10	Operating cost	€ 0,99	**€ 0,11**
Subpublisher	Collecting	€ 1,97	Repartitioning	€ 1,78	**€ 0,20**
Publisher	Collecting	€ 1,78	Royalties	€ 1,18	**€ 0,59**
Composer & Text writers	Royalties	€ 1,18			**€ 1,18**

Table 26 Minimum estimates sensitivity analysis (media levy solution)

Actor	Fractions
Internet service provider	5%
Collecting agency	5%
Media measurement	5%
Producers	90%
Publishers	10%
Performers	20%

Table 27 Fractions used to distribute levies among actors

Triggers

Variables	2006	2007	2008	2009	2010
Downloads	210.000.000	210.000.000	210.000.000	210.000.000	210.000.000
Legal downloads	10.000.000	17.000.000	24.000.000	32.000.000	40.000.000
Illegal downloads	200.000.000	193.000.000	186.000.000	178.000.000	170.000.000
Broadband subscribers	5.200.000	6.000.000	6.500.000	6.500.000	6.500.000
Advertisements	€ -	€ -	€ -	€ -	€ -

Profit margins download portal, content aggregator, and producer

	2006			2007			2008			2009			2010		
Actor	Revenues	Costs	Result	Revenues	Costs	Result	Revenues	Costs	Result	Revenues	Costs	Result	Revenues	Costs	Result
Download portal	€ -	€ 1.200.000	€ 1.200.000-	€ -	€ 2.040.000	€ 2.040.000-	€ -	€ 2.880.000	€ 2.880.000-	€ -	€ 3.840.000	€ 3.840.000-	€ -	€ 4.800.000	€ 4.800.000-
Content aggregator	€ 800.000	€ 700.000	€ 100.000	€ 1.360.000	€ 1.190.000	€ 170.000	€ 1.920.000	€ 1.680.000	€ 240.000	€ 2.560.000	€ 2.240.000	€ 320.000	€ 3.200.000	€ 2.800.000	€ 400.000
Producer	€ 92.340.000	€ 20.768.000	€ 71.572.000	€ 106.546.154	€ 25.219.231	€ 81.326.923	€ 115.425.000	€ 28.605.000	€ 86.820.000	€ 115.425.000	€ 30.445.000	€ 84.980.000	€ 115.425.000	€ 32.285.000	€ 83.140.000
			€ 70.472.000			**€ 79.456.923**			**€ 84.180.000**			**€ 81.460.000**			**€ 78.740.000**

Royalties collecting agencies, publishers, composers & text writers, and performers

	2006			2007			2008			2009			2010		
Actor	Incoming	Outgoing	Result	Incoming	Outgoing	Result	Incoming	Outgoing	Result	Incoming	Outgoing	Result	Incoming	Outgoing	Result
Subpublisher	€ 10.260.000	€ 9.234.000	€ 1.026.000	€ 11.838.462	€ 10.654.615	€ 1.183.846	€ 12.825.000	€ 11.542.500	€ 1.282.500	€ 12.825.000	€ 11.542.500	€ 1.282.500	€ 12.825.000	€ 11.542.500	€ 1.282.500
Publisher	€ 9.234.000	€ 6.156.000	€ 3.078.000	€ 10.654.615	€ 7.103.077	€ 3.551.538	€ 11.542.500	€ 7.695.000	€ 3.847.500	€ 11.542.500	€ 7.695.000	€ 3.847.500	€ 11.542.500	€ 7.695.000	€ 3.847.500
Composer & Text writers	€ 6.156.000	€ -	€ 6.156.000	€ 7.103.077	€ -	€ 7.103.077	€ 7.695.000	€ -	€ 7.695.000	€ 7.695.000	€ -	€ 7.695.000	€ 7.695.000	€ -	€ 7.695.000
Performers	€ 18.468.000	€ -	€ 18.468.000	€ 21.309.231	€ -	€ 21.309.231	€ 23.085.000	€ -	€ 23.085.000	€ 23.085.000	€ -	€ 23.085.000	€ 23.085.000	€ -	€ 23.085.000
			€ 28.728.000			**€ 33.147.692**			**€ 35.910.000**			**€ 35.910.000**			**€ 35.910.000**

Revenues payment service, hosting service, and DRM technology provider

	2006	2007	2008	2009	2010
Actor	Revenues	Revenues	Revenues	Revenues	Revenues
Central collecting agency	€ 5.700.000	€ 6.576.923	€ 7.125.000	€ 7.125.000	€ 7.125.000
Payment service	€ -	€ -	€ -	€ -	€ -
Hosting service	€ 100.000	€ 170.000	€ 240.000	€ 320.000	€ 400.000
DRM technology provider	€ -	€ -	€ -	€ -	€ -
Media measurement	€ 5.700.000	€ 6.576.923	€ 7.125.000	€ 7.125.000	€ 7.125.000
	€ 11.500.000	**€ 13.323.846**	**€ 14.490.000**	**€ 14.570.000**	**€ 14.650.000**

Table 28 Minimum profit sheets sensitivity analysis (media levy solution)

Profit sheets pay-per-download implementation (maximum)

Actor	Revenues		Costs		Profit
	Variable	Estimate	Variable	Estimate	
Consumer			Download cost	€ 1,39	
			Internet access	€ 300,00	
Internet service provider	Internet access	€ 300,00	Operating cost		**€ 300,00**
Download portal	Download price	€ 1,39	Payment support	€ 0,15	**€ 0,05**
	Download advertising	€ 0,01	Copyright license	€ 0,08	
			Marketing & platform	€ 0,18	
			Music catalog	€ 0,75	
			Sales tax	€ 0,19	
	Total	€ 1,40	Total	€ 1,35	
Payment service	Payment support	€ 0,15	Operating cost		**€ 0,15**
Content aggregator	Music catalog	€ 0,75	Hosting	€ 0,03	**€ 0,20-**
			DRM license	€ 0,02	
			Marketing & platform	€ 0,18	
			Digitization	€ 0,02	
			Music license	€ 0,70	
	Total	€ 0,75	Total	€ 0,95	
Hosting service	Hosting	€ 0,03	Operating cost		**€ 0,03**
DRM technology provider	DRM license	€ 0,02	Operating cost		**€ 0,02**
Producer	Music license	€ 0,70	A&R	€ 0,23	**€ 0,14**
			Recording		
			Digitization		
			Marketing	€ 0,13	
			Other	€ 0,05	
			Download advertising	€ 0,01	
			Royalties	€ 0,14	
	Total	€ 0,70	Total	€ 0,56	
Performers	Royalties	€ 0,14			**€ 0,14**
Central collecting agency	Copyright license	€ 0,080	Repartitioning	€ 0,07	**€ 0,01**
Buma/Stemra	Collecting	€ 0,072	Repartitioning	€ 0,06	**€ 0,01**
Subpublisher	Collecting	€ 0,065	Repartitioning	€ 0,05	**€ 0,02**
Publisher	Collecting	€ 0,049	Royalties	€ 0,02	**€ 0,02**
Composer & Text writers	Royalties	€ 0,024			**€ 0,02**

Table 29 Maximum estimates sensitivity analysis (pay-per-download implementation)

Triggers

Variables	2006	2007	2008	2009	2010
Downloads	210.000.000	210.000.000	210.000.000	210.000.000	210.000.000
Legal downloads	10.000.000	17.000.000	24.000.000	32.000.000	40.000.000
Illegal downloads	200.000.000	193.000.000	186.000.000	178.000.000	170.000.000
Broadband subscribers	5.200.000	6.000.000	6.500.000	6.500.000	6.500.000
Advertisements	€ -	€ -	€ -	€ -	€ -

Profit margins download portal, content aggregator, and producer

	2006			2007			2008			2009			2010		
Actor	Revenues	Costs	Result	Revenues	Costs	Result	Revenues	Costs	Result	Revenues	Costs	Result	Revenues	Costs	Result
Download portal	€ 14.000.000	€ 13.500.000	€ 500.000	€ 23.800.000	€ 22.950.000	€ 850.000	€ 33.600.000	€ 32.400.000	€ 1.200.000	€ 44.800.000	€ 43.200.000	€ 1.600.000	€ 56.000.000	€ 54.000.000	€ 2.000.000
Content aggregator	€ 7.500.000	€ 9.500.000	€ 2.000.000-	€ 12.750.000	€ 16.150.000	€ 3.400.000-	€ 18.000.000	€ 22.800.000	€ 4.800.000-	€ 24.000.000	€ 30.400.000	€ 6.400.000-	€ 30.000.000	€ 38.000.000	€ 8.000.000-
Producer	€ 7.000.000	€ 5.600.000	€ 1.400.000	€ 11.900.000	€ 9.520.000	€ 2.380.000	€ 16.800.000	€ 13.440.000	€ 3.360.000	€ 22.400.000	€ 17.920.000	€ 4.480.000	€ 28.000.000	€ 22.400.000	€ 5.600.000
			€ 100.000-			**€ 170.000-**			**€ 240.000-**			**€ 320.000-**			**€ 400.000-**

Royalties collecting agencies, publishers, composers & text writers, and performers

	2006			2007			2008			2009			2010		
Actor	Incoming	Outgoing	Result	Incoming	Outgoing	Result	Incoming	Outgoing	Result	Incoming	Outgoing	Result	Incoming	Outgoing	Result
Subpublisher	€ 648.000	€ 486.000	€ 162.000	€ 1.101.600	€ 826.200	€ 275.400	€ 1.555.200	€ 1.166.400	€ 388.800	€ 2.073.600	€ 1.555.200	€ 518.400	€ 2.592.000	€ 1.944.000	€ 648.000
Publisher	€ 486.000	€ 243.000	€ 243.000	€ 826.200	€ 413.100	€ 413.100	€ 1.166.400	€ 583.200	€ 583.200	€ 1.555.200	€ 777.600	€ 777.600	€ 1.944.000	€ 972.000	€ 972.000
Composer & Text writers	€ 243.000	€ -	€ 243.000	€ 413.100	€ -	€ 413.100	€ 583.200	€ -	€ 583.200	€ 777.600	€ -	€ 777.600	€ 972.000	€ -	€ 972.000
Performers	€ 1.400.000	€ -	€ 1.400.000	€ 2.380.000	€ -	€ 2.380.000	€ 3.360.000	€ -	€ 3.360.000	€ 4.480.000	€ -	€ 4.480.000	€ 5.600.000	€ -	€ 5.600.000
			€ 2.048.000			**€ 3.481.600**			**€ 4.915.200**			**€ 6.553.600**			**€ 8.192.000**

Revenues payment service, hosting service, and DRM technology provider

	2006	2007	2008	2009	2010
Actor	Revenues	Revenues	Revenues	Revenues	Revenues
Central collecting agency	€ 80.000	€ 136.000	€ 192.000	€ 256.000	€ 320.000
Buma/Stemra	€ 72.000	€ 122.400	€ 172.800	€ 230.400	€ 288.000
Payment service	€ 1.500.000	€ 2.550.000	€ 3.600.000	€ 4.800.000	€ 6.000.000
Hosting service	€ 300.000	€ 510.000	€ 720.000	€ 960.000	€ 1.200.000
DRM technology provider	€ 200.000	€ 340.000	€ 480.000	€ 640.000	€ 800.000
	€ 2.152.000	**€ 3.658.400**	**€ 5.164.800**	**€ 6.886.400**	**€ 8.608.000**

Table 30 Maximum profit sheets sensitivity analysis (pay-per-download implementation)

Profit sheets media levy solution (maximum)

Actor	Revenues		Costs		Profit
	Variable	Estimate	Variable	Estimate	
Consumer			Internet access	€ 300,00	
			Levy	€ 23,08	
Internet service provider	Internet access	€ 300,00	Operating cost	€ 285,00	**€ 16,15**
	Levy	€ 23,08	Levy	€ 21,92	
	Total	€ 323,08	Total	€ 306,92	
Download portal	Download advertising	€ 0,01	Music catalog	€ 0,24	**€ 0,41-**
			Marketing & platform	€ 0,18	
	Total	€ 0,01	Total	€ 0,42	
Payment service	Payment support	€ -	Operating cost	€ -	**€ -**
Content aggregator	Music catalog	€ 0,24	Hosting	€ 0,03	**€ 0,01**
			Digitization	€ 0,02	
			Platform	€ 0,18	
	Total	€ 0,24	Total	€ 0,23	
Hosting service	Hosting	€ 0,03	Operating cost	€ 0,03	**€ 0,00**
DRM technology provider	DRM license	€ -	Operating cost	€ -	**€ -**
Producer	Levy	€ 17,76	Royalties	€ 3,55	**€ 14,21**
	Total	€ 17,76	Total	€ 3,55	
			A&R	€ 0,23	**€ 0,42-**
			Recording		
			Digitization		
			Marketing	€ 0,13	
			Other	€ 0,05	
			Download advertising	€ 0,01	
	Total	€ -	Total	€ 0,42	
Performers	Royalties	€ 3,55			**€ 3,55**
Central collecting agency	Levy income	€ 21,92	Repartitioning	€ 19,73	**€ 1,10**
			Media measurement	€ 1,10	
	Total	€ 21,92	Total	€ 20,83	
Buma/Stemra	Collecting	€ -	Repartitioning	€ -	**€ -**
Media measurement	Media measurement	€ 1,10	Operating cost	€ 0,99	**€ 0,11**
Subpublisher	Collecting	€ 1,97	Repartitioning	€ 1,78	**€ 0,20**
Publisher	Collecting	€ 1,78	Royalties	€ 1,18	**€ 0,59**
Composer & Text writers	Royalties	€ 1,18			**€ 1,18**

Table 31 Maximum estimates sensitivity analysis (media levy solution)

Actor	Fractions
Internet service provider	5%
Collecting agency	5%
Media measurement	5%
Producers	90%
Publishers	10%
Performers	20%

Table 32 Fractions used to distribute levies among actors

Triggers

Variables	2006	2007	2008	2009	2010
Downloads	210.000.000	210.000.000	210.000.000	210.000.000	210.000.000
Legal downloads	10.000.000	17.000.000	24.000.000	32.000.000	40.000.000
Illegal downloads	200.000.000	193.000.000	186.000.000	178.000.000	170.000.000
Broadband subscribers	5.200.000	6.000.000	6.500.000	6.500.000	6.500.000
Advertisements	€ -	€ -	€ -	€ -	€ -

Profit margins download portal, content aggregator, and producer

	2006			2007			2008			2009			2010		
Actor	Revenues	Costs	Result	Revenues	Costs	Result	Revenues	Costs	Result	Revenues	Costs	Result	Revenues	Costs	Result
Download portal	€ 100.000	€ 4.200.000	€ 4.100.000-	€ 170.000	€ 7.140.000	€ 6.970.000-	€ 240.000	€ 10.080.000	€ 9.840.000-	€ 320.000	€ 13.440.000	€ 13.120.000-	€ 400.000	€ 16.800.000	€ 16.400.000-
Content aggregator	€ 2.400.000	€ 2.300.000	€ 100.000	€ 4.080.000	€ 3.910.000	€ 170.000	€ 5.760.000	€ 5.520.000	€ 240.000	€ 7.680.000	€ 7.360.000	€ 320.000	€ 9.600.000	€ 9.200.000	€ 400.000
Producer	€ 92.340.000	€ 22.668.000	€ 69.672.000	€ 106.546.154	€ 28.449.231	€ 78.096.923	€ 115.425.000	€ 33.165.000	€ 82.260.000	€ 115.425.000	€ 36.525.000	€ 78.900.000	€ 115.425.000	€ 39.885.000	€ 75.540.000
			€ 65.672.000			**€ 71.296.923**			**€ 72.660.000**			**€ 66.100.000**			**€ 59.540.000**

Royalties collecting agencies, publishers, composers & text writers, and performers

	2006			2007			2008			2009			2010		
Actor	Incoming	Outgoing	Result	Incoming	Outgoing	Result	Incoming	Outgoing	Result	Incoming	Outgoing	Result	Incoming	Outgoing	Result
Subpublisher	€ 10.260.000	€ 9.234.000	€ 1.026.000	€ 11.838.462	€ 10.654.615	€ 1.183.846	€ 12.825.000	€ 11.542.500	€ 1.282.500	€ 12.825.000	€ 11.542.500	€ 1.282.500	€ 12.825.000	€ 11.542.500	€ 1.282.500
Publisher	€ 9.234.000	€ 6.156.000	€ 3.078.000	€ 10.654.615	€ 7.103.077	€ 3.551.538	€ 11.542.500	€ 7.695.000	€ 3.847.500	€ 11.542.500	€ 7.695.000	€ 3.847.500	€ 11.542.500	€ 7.695.000	€ 3.847.500
Composer & Text writers	€ 6.156.000	€ -	€ 6.156.000	€ 7.103.077	€ -	€ 7.103.077	€ 7.695.000	€ -	€ 7.695.000	€ 7.695.000	€ -	€ 7.695.000	€ 7.695.000	€ -	€ 7.695.000
Performers	€ 18.468.000	€ -	€ 18.468.000	€ 21.309.231	€ -	€ 21.309.231	€ 23.085.000	€ -	€ 23.085.000	€ 23.085.000	€ -	€ 23.085.000	€ 23.085.000	€ -	€ 23.085.000
			€ 28.728.000			**€ 33.147.692**			**€ 35.910.000**			**€ 35.910.000**			**€ 35.910.000**

Revenues payment service, hosting service, and DRM technology provider

	2006	2007	2008	2009	2010
Actor	Revenues	Revenues	Revenues	Revenues	Revenues
Central collecting agency	€ 5.700.000	€ 6.576.923	€ 7.125.000	€ 7.125.000	€ 7.125.000
Payment service	€ -	€ -	€ -	€ -	€ -
Hosting service	€ 300.000	€ 510.000	€ 720.000	€ 960.000	€ 1.200.000
DRM technology provider	€ -	€ -	€ -	€ -	€ -
Media measurement	€ 5.700.000	€ 6.576.923	€ 7.125.000	€ 7.125.000	€ 7.125.000
	€ 11.700.000	**€ 13.663.846**	**€ 14.970.000**	**€ 15.210.000**	**€ 15.450.000**

Table 33 Maximum profit sheets sensitivity analysis (media levy solution)

Variance in number of downloads

(Based on 5.2 million broadband subscribers and € 0 advertisement income)

Downloads (millions)	Total profit						Total royalties			
	Pay-per-download			Media levy			Pay-per-download			Media levy
	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max	
0	0	0	0	73.872.000	73.872.000	73.872.000	0	0	0	28728000
20	6.000.000	-200.000	-200.000	67.072.000	61.272.000	57.472.000	2372000	3393800	4096000	28728000
40	12.000.000	-400.000	-400.000	60.272.000	48.672.000	41.072.000	4744000	6787600	8192000	28728000
60	18.000.000	-600.000	-600.000	53.472.000	36.072.000	24.672.000	7116000	10181400	12288000	28728000
80	24.000.000	-800.000	-800.000	46.672.000	23.472.000	8.272.000	9488000	13575200	16384000	28728000
100	30.000.000	-1.000.000	-1.000.000	39.872.000	10.872.000	-8.128.000	11860000	16969000	20480000	28728000
120	36.000.000	-1.200.000	-1.200.000	33.072.000	-1.728.000	-24.528.000	14232000	20362800	24576000	28728000
140	42.000.000	-1.400.000	-1.400.000	26.272.000	-14.328.000	-40.928.000	16604000	23756600	28672000	28728000
160	48.000.000	-1.600.000	-1.600.000	19.472.000	-26.928.000	-57.328.000	18976000	27150400	32768000	28728000
180	54.000.000	-1.800.000	-1.800.000	12.672.000	-39.528.000	-73.728.000	21348000	30544200	36864000	28728000
200	60.000.000	-2.000.000	-2.000.000	5.872.000	-52.128.000	-90.128.000	23720000	33938000	40960000	28728000
220	66.000.000	-2.200.000	-2.200.000	-928.000	-64.728.000	-106.528.000	26092000	37331800	45056000	28728000
240	72.000.000	-2.400.000	-2.400.000	-7.728.000	-77.328.000	-122.928.000	28464000	40725600	49152000	28728000
260	78.000.000	-2.600.000	-2.600.000	-14.528.000	-89.928.000	-139.328.000	30836000	44119400	53248000	28728000
280	84.000.000	-2.800.000	-2.800.000	-21.328.000	-102.528.000	-155.728.000	33208000	47513200	57344000	28728000
300	90.000.000	-3.000.000	-3.000.000	-28.128.000	-115.128.000	-172.128.000	35580000	50907000	61440000	28728000
320	96.000.000	-3.200.000	-3.200.000	-34.928.000	-127.728.000	-188.528.000	37952000	54300800	65536000	28728000
340	102.000.000	-3.400.000	-3.400.000	-41.728.000	-140.328.000	-204.928.000	40324000	57694600	69632000	28728000
360	108.000.000	-3.600.000	-3.600.000	-48.528.000	-152.928.000	-221.328.000	42696000	61088400	73728000	28728000
380	114.000.000	-3.800.000	-3.800.000	-55.328.000	-165.528.000	-237.728.000	45068000	64482200	77824000	28728000
400	120.000.000	-4.000.000	-4.000.000	-62.128.000	-178.128.000	-254.128.000	47440000	67876000	81920000	28728000

Table 34 Number of downloads variance

Variance in advertisement income

(Based on 5.2 million broadband subscribers, 10 million downloads, and a fraction of 50% of advertisement revenues demanded by producers in pay-per-download implementation)

Advertisement income (millions €)	Download portal profit						Total proft					
	Pay-per-download			Media levy			Pay-per-download			Media levy		
	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max
0,0	1.800.000	-900.000	500.000	-1.200.000	-2.500.000	-4.100.000	3.000.000	-100.000	-100.000	70.472.000	67.572.000	65.672.000
0,5	2.050.000	-650.000	750.000	-700.000	-2.000.000	-3.600.000	3.500.000	400.000	400.000	70.972.000	68.072.000	66.172.000
1,0	2.300.000	-400.000	1.000.000	-200.000	-1.500.000	-3.100.000	4.000.000	900.000	900.000	71.472.000	68.572.000	66.672.000
1,5	2.550.000	-150.000	1.250.000	300.000	-1.000.000	-2.600.000	4.500.000	1.400.000	1.400.000	71.972.000	69.072.000	67.172.000
2,0	2.800.000	100.000	1.500.000	800.000	-500.000	-2.100.000	5.000.000	1.900.000	1.900.000	72.472.000	69.572.000	67.672.000
2,5	3.050.000	350.000	1.750.000	1.300.000	0	-1.600.000	5.500.000	2.400.000	2.400.000	72.972.000	70.072.000	68.172.000
3,0	3.300.000	600.000	2.000.000	1.800.000	500.000	-1.100.000	6.000.000	2.900.000	2.900.000	73.472.000	70.572.000	68.672.000
3,5	3.550.000	850.000	2.250.000	2.300.000	1.000.000	-600.000	6.500.000	3.400.000	3.400.000	73.972.000	71.072.000	69.172.000
4,0	3.800.000	1.100.000	2.500.000	2.800.000	1.500.000	-100.000	7.000.000	3.900.000	3.900.000	74.472.000	71.572.000	69.672.000
4,5	4.050.000	1.350.000	2.750.000	3.300.000	2.000.000	400.000	7.500.000	4.400.000	4.400.000	74.972.000	72.072.000	70.172.000
5,0	4.300.000	1.600.000	3.000.000	3.800.000	2.500.000	900.000	8.000.000	4.900.000	4.900.000	75.472.000	72.572.000	70.672.000
5,5	4.550.000	1.850.000	3.250.000	4.300.000	3.000.000	1.400.000	8.500.000	5.400.000	5.400.000	75.972.000	73.072.000	71.172.000
6,0	4.800.000	2.100.000	3.500.000	4.800.000	3.500.000	1.900.000	9.000.000	5.900.000	5.900.000	76.472.000	73.572.000	71.672.000
6,5	5.050.000	2.350.000	3.750.000	5.300.000	4.000.000	2.400.000	9.500.000	6.400.000	6.400.000	76.972.000	74.072.000	72.172.000
7,0	5.300.000	2.600.000	4.000.000	5.800.000	4.500.000	2.900.000	10.000.000	6.900.000	6.900.000	77.472.000	74.572.000	72.672.000
7,5	5.550.000	2.850.000	4.250.000	6.300.000	5.000.000	3.400.000	10.500.000	7.400.000	7.400.000	77.972.000	75.072.000	73.172.000
8,0	5.800.000	3.100.000	4.500.000	6.800.000	5.500.000	3.900.000	11.000.000	7.900.000	7.900.000	78.472.000	75.572.000	73.672.000
8,5	6.050.000	3.350.000	4.750.000	7.300.000	6.000.000	4.400.000	11.500.000	8.400.000	8.400.000	78.972.000	76.072.000	74.172.000
9,0	6.300.000	3.600.000	5.000.000	7.800.000	6.500.000	4.900.000	12.000.000	8.900.000	8.900.000	79.472.000	76.572.000	74.672.000
9,5	6.550.000	3.850.000	5.250.000	8.300.000	7.000.000	5.400.000	12.500.000	9.400.000	9.400.000	79.972.000	77.072.000	75.172.000
10,0	6.800.000	4.100.000	5.500.000	8.800.000	7.500.000	5.900.000	13.000.000	9.900.000	9.900.000	80.472.000	77.572.000	75.672.000

Table 35 Advertisement income variance