

# Stopping Digital Pirates:

*A study about the perceived efficiency  
of approaches employed by music and movie  
industries to stop file sharing in P2P networks*

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**M.Sc. in Computer and Systems Science**  
**CONTINUATION COURSES**





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## ABSTRACT

Music and movie industries are worried about the negative effects that the popularity of P2P file sharing networks might have and to try and put an end to this, they have employed several different approaches. The purpose of this research was to find out what age groups most actively involved in file sharing think about these approaches, as well as come up with improvement suggestions, and to gain more understanding about their opinions about file sharing in general. A quantitative research approach was used and data was collected with the help of a survey from 651 mainly Finnish respondents under the age of 30. The data was analysed using statistics.

Almost half of the respondents were active file sharers while only 9% are active first sources, copying material and posting it online. Findings support the theory that males are more active as females. Both genders have an acceptable opinion towards downloading music and movies for private use even though the knowledge of copyright issues is relatively good and a large part of them think that sharing this material in P2P networks hurts financially both movie and music companies and performing artists. One reason for this accepting attitude is that majority of all respondents think that CDs and DVDs are too expensive.

Lawsuits, Internet shops and copy protection were seen as the most effective ways to stop file sharing. This is interesting because the majority of the respondents at the same time think that the lawsuits of the industries against private persons are not justified and think that the kind of copy protection scheme cannot be created that nobody can break.

Educational and anti-piracy campaigns and watermarking were seen as the least effective ways. Active P2P users and first sources of material in P2P networks do not have as much faith in technological solutions as those who do not download, but they have a more positive opinion about new and more flexible business models like for example Internet shops and adding value to the traditional product by using opendisc technology than those who do not use P2P networks.

## ACKNOWLEDGEMENTS

First of all, I would like to thank my whole family for their support. Special thanks go to my mother and father who have always supported and encouraged me in my studies. They have offered me so much help that I cannot even begin to describe it. Without them the completion of this thesis would never have been possible.

I would also like to thank three special teachers that I have had in the course of my studies. Liisa Puupponen, my favourite teacher of all times was able to share her love for the English language and culture with me when I studied in Tervola comprehensive school and she created a spark that has carried me through all my studies that have been conducted in the English language. Juha Meriläinen from Kemi-Tornio polytechnic believed in my potential and encouraged me to carry my studies even further in the Luleå technical University. And finally Lars Furberg, the directing teacher for this thesis that posed such problematic questions to me about every choice that I made in the course of this research that it was (almost) impossible to go wrong.

A big warm thank you also goes out to all the people who participated in the survey for this research, and especially to those schools that participated all over Finland and helped me find a geographically diverse sample.

## 1 INTRODUCTION

*This introductory chapter shortly introduces the problem area, the research problem for this thesis and its delimitations as well as the qualifications of the researcher conducting the study.*

### 1.1 Background

Sharing copyrighted files is not a new problem, making copies of music, movies, software and so on has been long possible. But before the Internet, sharing files meant handing a physical copy to another person, now sharing can be done with a press of a button. Anything that can be transformed into digital form can be shared on the Internet; that can include pictures, movies, music, books, databases or even knitting patterns. The possibilities are vast. (Wang, 2004)

At first writings on the area of file sharing concentrated on the problem of sharing illegal copies of software, but lately the writings in the area have been centred on the problem of private persons sharing copyrighted music and movies in the form of digital files without the consent of the rights holder.

At first these digital music and movie files were swapped for example through web pages, email and internet newsgroups but a faster and easier way developed: peer-to-peer (P2P) networks made it possible for their users to take a look at each others hard disks and directly connect to each other to download the files they want. (Wang)

The first P2P network was called Napster that aimed for easy sharing of music files. As Weiss (2000) explains, many people have not come to see music as “pay or nothing” dichotomy associated with tangible goods like soap, books, bikes etc and so it was no surprise that large numbers of youngsters started to use the service. At its confirmed peak on February 2001 Napster had 26.4 million users (BBC news [3]). Today, there are a wide variety of different P2P network alternatives.

Downloading a song as a digital file via a P2P network is easy and fast. You hear a song on the radio that you like, write it down and when you get home, you just turn on your computer and the file sharing program and start searching for it. It is just a matter of minutes when you have loaded it onto your computer and can start jamming.

With movies, it is the same thing, but as Cook (2002) explains, movie studios do have an advantage over the music industry because the nature of their product: the delayed release strategy that studios have for videos make them less attractive for pirates. Also, because the size of a movie file is pretty massive it requires at least 30 minutes downloading with high speed internet connection.

### 1.2 Problem discussion

When P2P networks first happened, many forecasts were made about the future of file sharing programs, estimating that as the CD prices drop or good enough copy protection is developed to prevent people from copying a CD into their computers, the incentive to illegally share files will stop. (For example, Pizzo [1]; Kushner)

Not everyone is as happy about the popularity of these peer-to-peer networks. They make it easy for people to download copyrighted material that they would have previously had to pay for, for example in the form of CD's and DVD's. All it takes is one person to buy a copy of the latest hit

album or movie, to rip it into digital files and place them in the network for hundreds and thousands of people to download.

This is a frightening scenario to people who make their living selling the same content: Recording Industry Association of America (RIAA) estimates that the music industry loses about 4.2 billion dollars each year because of piracy. Motion Picture Association of America (MPAA) tells that in 2005, studios lost 2.3 billion dollars worldwide to Internet piracy alone, not counting counterfeit recordings. (Cook, 2002; MPAA [2]; RIAA [3])

Even though the awareness about copyright issues is better than ever the file sharing trend continues strong, for example according to a study from international music industry trade body called IFPI the number of illegal music files on file-sharing networks worldwide reached 900 million in the first half of 2006 and in Finland alone there were about 150 000 active users of P2P networks in the end of the year 2005 (BPI [1]; Best, 2006; Copyright protection and anti-piracy centre. 2006)

It is not surprising that the concerned industries have employed different approaches to try and stop people from sharing copyrighted music and movies in peer-to-peer networks to protect their products. The aim of this research is to investigate the different approaches and to evaluate their effectiveness in different age groups.

### 1.3 Research questions

RQ1: What are the opinions of teenagers and young adults concerning sharing copyrighted music and movies via P2P networks?

RQ2: What is the perceived effectiveness of the approaches taken to stop the sharing of copyrighted files in P2P networks by teenagers and young adults?

RQ3: How could these approaches be made more efficient according to teenagers and young adults?

### 1.4 Delimitations

This research is concerned only about the attempts of the movie and music industries to stop sharing copyrighted material, not including all of the industries that have products that can be transformed into digital files (software, books, pictures etc). This is because for example software piracy has been widely documented, and the hot topic today is music and movie sharing.

This research only considers the approaches to stop the sharing of copyrighted files in P2P networks that could be identified when searching for literature relating to the field of interest, I do not suggest that I am aware of all of the different strategies.

This research investigates only the sharing of copyrighted files conducted in P2P networks because even though there are also other ways to swap digital files on the Internet, P2P networks are the most popular.

This research is interested in are teenagers and young adults under the age of 30 because studies (for example, Bhattacharjee et al. 2003; Kulttuuriuutiset[2]) have shown them be most active in file sharing.

As 92% of participants of this study were Finnish citizens, the results of this research can not be generalized anywhere else.

### 1.5 Qualifications of the researcher

I have finished my bachelor's studies in the field of Business Information Technology in Kemi-Tornio Polytechnic, Finland in 2005. Currently I am studying Computer and Systems Sciences in Luleå University of Technology and hope to receive my master's degree in spring 2007.

#### *Approved research and methodological studies:*

The following research studies were completed successfully during my studies at Kemi-Tornio Polytechnic:

- Research studies (code: 292015), 2 study weeks.
- Strategic planning (292011), 2 study weeks.
- Scientific writing (292014), 3 study weeks.
- Bachelor's thesis, 10 study weeks

The following research studies have been completed successfully during my studies at Luleå University:

- Scientific methods in Systems Sciences (IED360), 5 credits

## 2 LITERATURE REVIEW

*This chapter gives a brief explanation about sharing files in the Internet in general and a more detailed one about P2P networks. Also an overview about the most common for/against opinions about file sharing and P2P networks is provided as well as an introduction to the different approaches employed by the music and movie industries to stop file sharing in P2P networks.*

### 2.1 Different ways to share files on the Internet

There are many ways to share digital files on the Internet: examples include websites, email, instant messaging, Internet newsgroups and of course P2P networks that will be discussed in more detail in the next chapter.

#### *2.1.1 Websites*

When someone creates a website, they can post there all the files they want, allowing anyone to browse and copy the files that they are interested in. (Wang, 2004) The server that holds the website sends the file to each computer that requests it, creating a one-on-one connection (Dessent, 2003; Wisegeek website)

The main advantage of this kind of method is that it's simple to set up, and the files are normally always available since the servers have the only task of serving and are always on and connected to the Internet. (Dessent, 2003) It is however easy to figure out whom is running the site and because of this, they do not usually stay open for long. (Wang, 2004) Websites also have problems with files that are large or very popular since it takes a lot of bandwidth and server resources to distribute such a file. (Dessent, 2003)

#### *2.1.2 Email*

Email allows sending a message to a particular address on the Internet. Digital files can be included into the message, and sent forward. Many Internet Service Providers (ISP's) limit the size of the attachments because they can overload the storage space available. (Wang, 2004)

Using email to share files is easy, but it limits the choices of material since files can only be shared with the people whose addresses are known, and nobody else. Waiting for a response can also be frustrating. (Wang, 2004)

#### *2.1.3 Instant file transfer*

Instant file transfer takes away the frustration of waiting from file sharing: examples include for example IRC (Internet Relay Chat) or instant messaging (Wang, 2004) using for example programs like Skype, or MSN Messenger.

IRC organises people into channels based on topics. These topics can be anything you can think of; for example people from the same city or from the same school can have their own channel. When on a specific channel, the user can ask in text mode, privately from a certain person, or publicly from the whole group if they have the file they are interested in and start downloading instantly if they do. (Wang, 2004)

IRC use demands typing in different commands while chatting or exchanging files, and because of this, most not so technical minded people prefer instant messaging that offers a graphical user interface. Instant messaging services can also divide people into chat rooms like IRC, but most file sharing using instant messaging happens between people who know each other. (Wang, 2004)

#### *2.1.4 Newsgroups*

People post messages in Internet newsgroups for everyone to read, like in an electronic bulletin board. They are divided by subject, so people can easily find what they are looking for. Users can leave a message in a newsgroup asking for a particular file, and if someone has it, and wants to share, they might send it by email or simply post it in the newsgroup. (Wang, 2004)

Just asking for files does not however mean that someone will give them. If they do, it might take hours, even days until it appears in the newsgroup. Newsgroups are used more for browsing and auditioning for new material than for searching something particular (Wang, 2004) Newsgroups are one of the more anonymous forms of file sharing, and often used for illicit files. Users also have to remember a complex set of rules and procedures. However, the model is relatively efficient and downloads from newsgroups tend to be quite fast regardless of content. (Dessent, 2003)

### 2.2 Introduction to P2P networks.

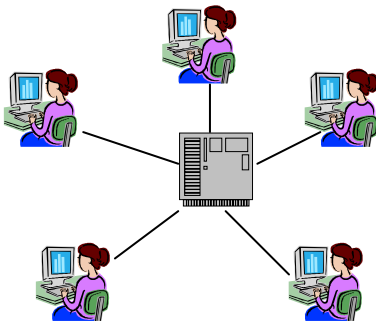
Peer-to-peer networks such as Kazaa, eDonkey, Gnutella, Direct Connect, etc connect all of their users together to share files from their personal PC's. Because individual PC's host the songs, users get access to massive amounts of storage space and bandwidth with no cost. (Shirky, 2000). P2P networks have become popular since they make it easy for the users to find the files they want and download multiple files at the same time. (Dessent, 2003; Wang, 2004)

An estimated 90% of P2P network traffic is copyright material like music, films, images and software (BPI [1]). Despite this fact, P2P networks are not illegal by nature and can be used to exchange legal files, for example unsigned music artists might use the Internet to distribute their material. (Hacker 2000)

Also for businesses P2P networks are a great opportunity. An example by McGarvey (2002) demonstrates this: "Picture the problem: a sprawling multinational has hundreds of offices, thousands of workers, and countless amounts of intellectual property scattered here, there, everywhere. In Kuala Lumpur an executive needs to see an internally generated report on oil futures in central Asia - but where is it? London? New York? Moscow?" With the help of P2P the executive will find the report much faster than the old fashioned traditional ways.

#### *2.2.1 Centralized P2P networks*

The first popular P2P application was called Napster. It was a centralized network meaning that it had a central server that was used for example to handle searching, after that the network connected the users to trade directly with each other.

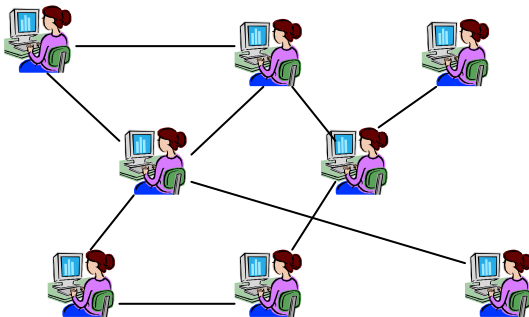


Picture 1: Centralized network (Adapted from Wang, 2004. pp.23)

When lawsuits were filed against Napster for participating in the copyright violations engaged in by its users it was easy to bring down because it relied on its central server: By shutting down the central server, the entire network shut down. (Nilsson, 2000; Wang, 2004)

### 2.2.2 Decentralized P2P networks

After Napster was shut down, decentralized networks appeared; there is no central server, the users communicate directly with each. The networks do have servers, but no entity controls all of the information. This way the network can never be destroyed by taking down an individual machine. (Nilsson, 2000; Wang, 2004)



Picture 2: Decentralized network (Adapted from Wang, 2004. pp.23)

Because the users communicate directly with each other in decentralized networks, the blame of possible copyright infringements was also shifted from the network to the users. (Wang, 2004, pp 246)

### 2.2.3 Anonymous P2P networks and darknets

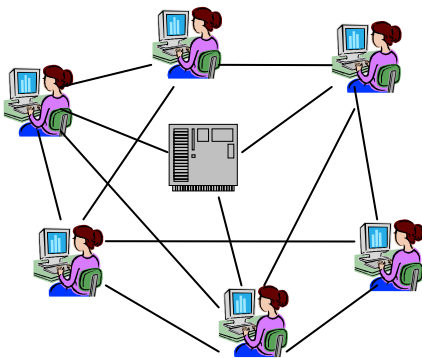
Anonymous networks are designed to protect the identities of the users. One example of an anonymous service is Freenet: their homepage states: "Communications by Freenet nodes are encrypted and are "routed-through" other nodes to make it extremely difficult to determine who is requesting the information and what its content is" (Flink, 2005; Freenet project 2006).

Anonymous networks have raised the issue that they can be used in more serious illegal actions, for example terrorism and distributing child pornography.

Also darknets (that despite their name are not separate physical networks but application and protocol layers riding on existing networks), where a closed group of people interact with each other and exchange files raise this issue, as nobody can join these kinds of networks without an invitation. (Kendall)

#### 2.2.4 BitTorrents

BitTorrent is a protocol for downloading files on the Internet; there are several free programs using it available. Its considered P2P, as users connect to each other directly to send and receive portions of the file. However, there is a central server (a tracker), which manages connections but does not have knowledge of the contents of the files distributed. (Wisegeek website; Dessent, 2003)



Picture 3: BitTorrent architecture (Adapted from BitTorrent.org, 2006)

BitTorrent differs from P2P networks in that the users do not share anything else but the file they are currently receiving; users who are downloading the file act as servers to one another, simultaneously uploading the parts of the file received to others requesting the file. In this manner, network bandwidth is utilized as efficiently as possible. BitTorrent makes it possible for anyone to distribute a file quickly; if the demand is there, the file will spread. BitTorrent is designed to work better as the number of people interested in a certain file increases (Wisegeek website; Dessent, 2003)

#### 2.2.5 How to use P2P networks

An Interview study done in Finland in 2004 revealed that the country has 42 000 active file sharers that each download approximately 135 albums of music, 52 movies, 44 games and 24 software programs in one year. (Kulttuuriuutiset [2])

To join a P2P network the user has to download an application called a “client” on their computer. Wang (2004) compares a file-sharing network into a television network, and a client program to a television that tunes to a particular network. When a registers his computer in the network, he makes a certain part of their computer files available to other users.\* (Nilsson, 2000)

\*The user does not always have to do this

The client has a search engine to locate the files the users want: The user types in the name of the file and the client searches the computers of other people connected to the same network to find it. Users can communicate with each other on text mode. (Nilsson; Weiss; Shirky; Wang)

The size of the file sharing networks fluctuates as people come and go, and if you are downloading a file from someone who disconnects from the network you might have to wait till they come back online to get the file if there are no alternative sources. (Wang 2004)

### 2.3 Opinions about sharing music and movies

This chapter introduces the opinions for and against file sharing by concerned parties such as users, artists and the industries.

Most people start downloading because they can steal without getting caught. It is fast and easy. They are aware, and accept the fact that what they are doing is a copyright violation. But they choose to do it anyway. (Hacker, 2000; Weiss, 2000)

#### *2.3.1 Is P2P a revolution?*

Some people believe that P2P networks are the revolution that will be used to smash the power of greedy record companies. They think that now it is the time to take control over means of production and distribution (Hacker 2000). People who actively provide content to be shared in P2P networks are called *first sources*. They copy for example original CD's and DVD's and make them available in P2P networks or use a camcorder to record films in theatres. (MPAA [2])

While the cost of manufacturing a CD is considerably smaller than manufacturing a vinyl or a cassette, the price of CDs has increased over 12 percent between the years 1991-2001. (Wang, 2004) This inspired a lawsuit in the USA where major music companies were accused of fixing CD prices. The industry settled for 143 million but did not admit that they had done anything wrong. (ibid)

#### *Response from industry and artists*

"There are many factors that go into the overall cost of a CD - and the plastic it's pressed on, is among the least significant. CD manufacturing costs may be lower, but it takes more money than ever before to put out a new recording." (RIAA [4]) Among the things that have to be compensated for in the price for a CD are:

- Time used in composing music
- Recording studio, musicians, sound engineers, producers etc.
- Video clips, public relations, tour support, marketing campaigns and promotion to get the songs played on the radio
- Multi-media material added to the CD
- Finding and signing new artists and also. (RIAA[4])

Not all CDs are equally profitable; Most albums never sell enough to recover costs, or make a profit and the less than 10% of recordings that are profitable finance the rest. (RIAA[4])

Not just the "greedy" companies, but also artists are worried about their works being distributed illegally in P2P networks. One example from fall 2006 in Finland was when comedy called "Kummeli Jackpot" ended up in P2P networks before it was scheduled for release on DVD. The police have started a criminal investigation about the matter and one of the stars of the film, Heikki Silvennoinen comments: "It is so wrong when you do the work but then do not get paid the salary you deserve" (Mesta.net, 2006; Iltasanomat, 2006)

Rick Carnes, president of the Songwriters Guild of America, refers to file-sharing as "online shoplifting" and says that his fellow songwriters are pushed out of work because of it. As the problem he does not see Internet or P2P networks, "Computers don't steal songs, people do," Carnes said. (Roberts, 2004)

Maybe the most famous case of music artists trying to battle file sharing is the Metallica case: In 2000, the band learned of Napster and tracked down over 300 000 user names of people who traded their songs and asked Napster to ban these users. The victory however diminished because rejoining the network was so very easy, and the bands actions might have alienated a number of fans. (Weiss, 2000) Since the investigation the band realized that eventually songs would end up in P2P networks and made an effort to adapt to the use of internet for digitally distributing their music: They opened MetallicaVault.com, a website for distributing bootlegs of their concerts in a digital format for fans that have purchased a CD. This helps appeal to fans while controlling the quality of material available (Levack, 2003)

One artist who is not that serious about file sharing is US funny man Weir Al Yankovic. Here are some of the lyrics for his song "Don't download this song"

"Oh, you don't wanna mess with the RIAA  
They'll sue you if you burn that CD-R  
It doesn't matter if you're a grandma or a seven year old girl  
They'll treat you like the evil hard-bitten criminal scum you are

Don't take away money from artists just like me  
How else can I afford another solid gold Hum-Vee  
And diamond-studded swimming pools  
These things don't grow on trees  
So all I ask is, "Everybody, please..."  
(By the way, this can be downloaded legally from [dontdownloadthissong.com](http://dontdownloadthissong.com))

In September 2006, Weir Al said that he does not want to take any sides but he believes that the record industry has been a bit clumsy in their approach to file sharing, as trying to make young people that use P2P look like criminals is not a good solution, nor good PR. He also thinks that people who get all of their music via P2P networks are not taking the "moral high road" and that he can not support that (Computerworld 2006)

Weir Al however is one of the artists who think that file sharing is here to stay and the industry is starting to realize it and figure out that it can use it to positive effect. He is not that worried about his own music being traded on P2P networks, but is concerned about the fact that most of the songs on P2P networks with his name on them have nothing to do with him, and he takes pride in the quality of his work. (Computerworld 2006)

### 2.3.2 *Is P2P an advertising channel?*

Many people do not think about downloading files as stealing, they consider it to be a "try before you buy"-thing. These people are called *samplers*: They don't want to buy a whole album to see if they like it, they want to buy albums they know include the songs they want to hear. P2P networks provide an advertising channel and help new artists to become known. They can also be a way for the users to discover artists that they would not have discovered otherwise and they go out and buy their CD's. (Bhattacharjee et al. 2003; Wang, 2004)

Some people use P2P networks to download everything there is from a specific band, actor, director etc or search for rare material like old big band tunes, rare classical material, concert bootlegs and unreleased recordings. (Wang, 2004) they are called *collectors*. There is also the other extreme to the collectors Keegan (2006) tells us about a man who has told to have downloaded about 900 000 songs, more than he is able to listen. He claims to be just preserving the music and even his own children cannot burn them to CD's.

Wang (2004) admits that it might sound strange but file sharing can generate more interest to an artist while it exposes people to the kind of music they would not normally listen to or buy. As examples he gives the singers Daniel Bedingfield and Eminem: Daniel Bedingfield had a top three song called "Gotta get through this" but most of his material was not available in file sharing networks. His album did not last a month on the billboard 200. Eminem's album called "Eminem show" however is one of the most shared albums ever and in the year 2002 it became the best selling album of the year.

Some recent studies back up Wang's opinions:

- A study by the CRIA (Canadian Recording Industry Association) showed that only about 10 percent of people who have decreased their music buying did it because they download music. They also noted that many people use P2P networks to listen to the music before they buy anything and that the young people who are most active users of P2P networks are also most active in buying music. (Geist 2006)
- A study by the University of Göteborg called SOM (Samhälle Opinion Massmedia) showed that people who download movies also go to see twice as many movies in theatres as people who do not use P2P networks. They also buy twice as many DVDs when compared to the "non-downloaders". (Brandell, 2006)

#### *Response from the industries*

Some people believe that while listeners discovering music may generate some sales, it is dwarfed by those who buy less music because they can get it for free. This of course poses a dilemma: You are hurting the composers, producers and artists too, why would somebody want to steal from an artist whose work they admire? (Hacker, 2000; BPI [1])

Piracy leads to the culture supply becoming more one sided because it weakens the chances of the related industries to function financially. This causes largely suffering for the new or most original artists because the first ones that have to be given up are those that have a small audience or contain the most risks. (Copyright protection and anti-piracy centre; BPI [1])

The MPAA [2] website states: "piracy is theft, and pirates are thieves, plain and simple. Downloading a movie off of the Internet is the same as taking a DVD off a store shelf without paying for it. Posting movies on a Peer-to-Peer service or an unauthorized website is akin to giving illegal copies to millions of people."

Even though online movie sharing in P2P networks has never been as wide spread as music sharing, it has become more of a concern to studios as broadband Internet connections and DVD burners have moved into the mainstream. Between 400,000 and 600,000 films are illegally downloaded each day, the MPAA said, quoting industry estimates. (Borland & Sharma, 2004)

So who is losing in this? RIAA [3] explains that

1. *Music pirates*: the industries and law enforcement search them.
2. *Consumers*: pirates drive up the costs of legitimate product for everyone.

3. *Retailers*: they can't compete with the prices offered by illegal vendors. → Less business means fewer jobs, according to the Copyright protection and anti-piracy centre. 2006, in the EU are 17000 working places are lost annually because of counterfeit recordings
4. *Record companies*: most recordings don't make enough money to cover their costs, companies depend on the profitable music to fund the less profitable, to cover the costs of developing new artists, and to keep businesses operational.
5. *Creative artists*: Musicians, singers, songwriters and producers don't get their royalties and fees that they depend on to make a living. The reputations of artists might also be damaged by the lower quality of pirated copies.

## 2.4 Attempts to stop the sharing of copyrighted music and movies

Approaches to fighting file sharing include educating people about the consequences of piracy, developing technologies that allow legal distribution of their products on the internet and make sure they can not be illegally copied, taking action against file sharers and working with law enforcement around the world to find people who illegally produce and distribute pirate recordings. (MPAA [2]; RIAA [2])

### *2.4.1 Copyright law*

“Copyright is a protection that covers published and unpublished literary, scientific and artistic works, whatever the form of expression, provided such works are fixed in a tangible or material form. This means that if you can see it, hear it and/or touch it - it may be protected. If it is an essay, if it is a play, if it is a song, if it is a funky original dance move, if it is a photograph, HTML coding or a computer graphic that can be set on paper, recorded on tape or saved to a hard drive, it may be protected” (whatiscopyright.org, 1998-2003)

This chapter has been written based on the information acquired from the World Intellectual Property Organisation (WIPO) and discusses copyright protection on a general level because laws can vary from country to country.

#### *World Intellectual Property Organisation (WIPO)*

WIPO is an agency of the United Nations “dedicated to developing a balanced and accessible international intellectual property (IP) system, which rewards creativity, stimulates innovation and contributes to economic development while safeguarding the public interest” (WIPO [1], 2006)

WIPO has come up with several treaties, binding agreements of the parties involved, concerning intellectual property rights. The older treaties that were created more than a quarter of a century ago have been accompanied by two new treaties meant to update the older ones because of the changes in technology and marketplaces. Their purpose is to make sure that the rights of the copyright holders continue to apply in the digital environment, especially if they are distributed in networks like the Internet. (WIPO [2], 2006)

In some countries the regulations of the treaties can be applied as the law but most countries provide copyright in their national legislation. International treaties link various national laws by ensuring that at least a minimum level of rights will be granted to creators under each national law. (WIPO [2], 2006)

*How does it work?*

Copyright does not depend on official procedures. The creator does not have to “register” the work to get it copyrighted: It is protected by copyright as soon as it has been created and the copyright lasts for 50 years after the creator's death. If somebody violates the rights of the copyright owner, they can enforce their rights and get court orders to stop this, as well as ask for compensation of possible financial losses. (WIPO [2], 2006)

The persons who created the copyrighted material have basic rights, for example they can prohibit or give permission to reproduction of the work, its public performance or broadcasting, its recordings (CD's, DVD's etc.), and also translation to other languages and adaptation. Under most national copyright laws, it is however acceptable to use limited portions of a work, like quotes, for personal use or the news. (WIPO [2], 2006)

The distribution of music and movies can not in most cases be organised their creators because of the financial investment required, and these *economic rights* can be sold to companies that are able to do this. In turn the creators then receive payments called royalties that are most likely dependent of the use of the work. (WIPO [2], 2006)

Copyright also includes *moral rights*: The right to claim authorship of a work and the right to oppose to any changes to the work that might cause harm to the creator. (WIPO [2], 2006)

In 2006 a survey revealed that the attitudes of Finnish people have grown to be more and more favourable towards copyright and have started to be less favourable towards piracy. (Kulttuuriuutiset.net [1])

The study however has been criticized for example by a Finnish information society party (Tietoyhteiskuntapuolue) to be nothing more than a so-called “quasi-study” used for lobbying and propaganda purpose because it has not released the questions asked or the basic statistical data about the answers. This has made it possible to draw the conclusions wanted from the study without the interference of outside experts that might question the impartiality of the questions or the accurateness of the results. (Tietoyhteiskuntapuolue 2006)

#### *Copyright organisations*

Most countries have different organizations that look after the copyrights of their clients. They can for example collect fees from radio stations for playing copyrighted songs. A majority of these fees (80-90%) is forwarded on to the members of these organisations (Singers, songwriters, performing artists, painters and so on) and the rest is used for different administrative costs. In Finland, organisations like these include for example Gramex for artists that appear in recordings and also record producers, Teosto for composers, lyric writers, arrangers and music publishers and Kuvasto for creators for visual art like paintings, sculptures and photographs. (Gramex 2006, Teosto 2006)

#### *2.4.2 Copy protection and Watermarking*

Technological solutions to stopping file sharing like the ones introduced in this chapter aim at developing the kind of a traditional product (CD, DVD) that either can not be copied into digital files, restrict the use of digital files, or help to embed copyright information in these copies.

#### *Copy protection*

The senior vice president of corporate development for Macrovision, a provider of copy-protection technologies predicts that that music labels could start making the promotion budgets for new artists smaller, while starting to include copy protection on all of their CDs. (Tweney, 2003) The basic

idea of copy protection is to manufacture CD's and DVD's that can be played in the stereo and DVD player but cannot be copied into digital files: result could be useless. (Kushner 2002)

As Wang (2004) points out, copy protection sounds like the answer to the industry's problems until the realization that it is never foolproof. There will always be hackers that will view the protection as a challenge and study it for so long as it takes to find a flaw. (Wang 2004, pp. 250) For example on the website CDFreaks.com; hackers post detailed instructions on how to crack different copy protection attempts. (Kushner 2002)

Copy protection schemes have gotten a lot of negative attention: Consumers want to know what disks are altered and for example in the US recording companies need to adopt labelling system to notify consumers of this. The chief technical officer for Sonic Blue, manufacturer of portable players says: "Consumers want to buy music and be able to listen to it on a variety of devices; it is not productive for the recording industry to put out technology that creates more problems for people. If this does not get fixed, consumers might stop buying CD's" (Kushner 2002)

Kushner (2002) believes that with proper labelling and government approval, copy protection will however be here to stay. In his opinion, by using copy protection approaches in combination with Digital Rights Management (DRM) technologies used to disable illegal distribution of the file, the recording industry just might stop music sharing: If fans can buy a single DVD that contains digital quality music they can play in their stereo, their computer and their MP3 player, they get all the flexibility they need. (Kushner 2002)

#### *Digital watermarking*

Digital watermarking allows content providers to control media without affecting the content; it is used to insert copyright information into the file if a user decides to make a backup. (Watermarkingworld 2005)

Technically watermarking allows for inserting copyright information into for example a CD in a way that is invisible and can not be manipulated, at least without the quality of the sound weakening. If someone makes a backup of a watermarked CD, it is marked as a copy and includes copyright data. This way at least in theory, a copyright holder is able to find illegal copies of their work on the internet and sue the person who is responsible. (Isenberg, 1998; Digimarc, 2005)

The problem with watermarking has been that many CD players have not been able to read watermarks. A watermarked CD inserted to that kind of machine means that there is no control or protection. Another letdown was when a coalition called Secure Digital Music Initiative (SDMI) issued a challenge in 2000 to anyone who could defeat its new watermark, and hackers succeeded almost immediately. (Kushner 2002)

Digital watermarking can also be used to embed the buyer's information into the copy (Digital fingerprinting). The goal is to discourage people from illegally redistributing digital data by enabling the concerned parties to identify the person who has originally bought it. (Kyushu University)

#### *2.4.3 Anti-piracy- and educational campaigns*

In 2003, major motion picture companies planned television ads and movie trailers on the theme of respecting copyright law that ran on all the broadcast networks and many cable channels in the US, and more than 5,000 theatres across the country were planned to show daily trailers featuring

individuals who work in the motion picture industry, describing how online piracy threatens their livelihood. (Harmon, 2003) These kinds of advertisements are also very common for example in the beginning of movie DVD's.

Industries are also developing educational strategies to be used in schools. For example in US, they are trying to make an end to the file sharing going on at campuses: They are the centre for illegal downloading, as most students have access to high-speed Internet or LAN (local area network) connections through the school's network. (Borland & Sharma, 2004)

RIAA is sending out notices about copyright infringements to the schools and serving subpoenas that demand schools to help identify possible sources of lawsuits. This has forced the schools to react for example by issuing warnings to students and developing different technological blocks like programs to make sure the students can not access P2P networks (Veiga, 2003; Dean, 2003)

MPAA has also targeted universities to help curb file swapping by working closely with colleges to create student "codes of conduct" and taking out newspaper and magazine advertisements. "We hope this ramped-up information (and) educational campaign will cause those who are taking films without permission to stop their illegal activity," MPAA CEO said in a statement. "But we will keep all of our options open, including legal action." (Borland & Sharma, 2004) Since November of 2004, individuals who have infringed copyrights in motion pictures and television programs over the Internet have been sued for those infringements. (MPAA [2])

When it comes to lower education, the attempt of the industries is to nip file sharing in the bud before it has even really begun by encouraging schools to tell children about piracy issues with the help of the material that they provide. The MPAA for example developed an Internet site, [respectcopyrights.org](http://respectcopyrights.org). (Harmon, 2003) A similar development in Finland is for example [piraattitehdas.fi](http://piraattitehdas.fi) that is a part of learning material produced together with the Finnish ministry of education, copyright associations and other concerned parties ([Piraattitehdas.fi](http://Piraattitehdas.fi))

#### *2.4.4 Cuckoo eggs*

The industries have also tried to affect the consciences of file sharers by planting cuckoo eggs to P2P networks. They are files named after for example some popular song to trick people to downloading them, when the person tries to play it they notice that it is just a few seconds of the actual song and then a message warning them to stop copying. (Wang, 2004)

For recording artist Madonna, planting Cuckoo eggs was not a good idea. She planted one of her song with the message: "What the f\*\*k do you think you are doing?" This infuriated her fans and after a couple of days her website was hacked into and a message planted that read "This is the f\*\*k I think I am doing" with links to pirated copies of every song of her latest album. (Wang, 2004)

One example of companies that provide cuckoo is Overpeer. It has developed a technology that searches for certain digital files in networks, collects and edits them in a way that the sound quality is damaged and distributes it again on the network with thousands of copies. (Maguire, 2003)

Also private persons in P2P networks hatch these cuckoos' eggs, knowingly or unknowingly, might they contain messages or just plain sabotaged songs. Private persons making these kinds of files must remember however, that if you are using a part of the copyrighted material in this file, you are also making a copyright infringement, just like the people who download the original. (Cuckoo's egg project, 2006)

Even when these cuckoo eggs can be handled by P2P networks, they are a way to make file-sharing networks appear less inviting and maybe pave way to legal alternatives available. (Maguire 2003)

#### *2.4.5 Internet shops & opendisc technology*

MP3 players have become more and more popular and the industries have realized that if people want digital entertainment, it would be a good thing if they received it from sources that are authorized to distribute copies. One of the developments in the battle against file sharing has been to open up alternatives for peer-to-peer networks: internet shops where people can download music into their computers for a fee.

One example of such shops is apples iTunes, marketed for the users of Apples iPod media player. The shop has been a success; it opened in spring 2003 and sold over a million songs (for 0.76e/song) in the first week (Apple press info, 2003).

Despite the success of the shop, a recent study reveals that only about 5% of the music that iPod users have on their players actually comes from web shops like this, the rest comes from copying CD's and downloading them from P2P networks. (BBC News [1]), According to a recent study however; P2P users are almost 5 times more likely to purchase online music than their "computer depraved counterparts". (Mennecke, 2005)

Downloading an album from an internet store costs almost the same as buying a CD. The BPI [1] says that the reason for this is that even when there are no for packaging and distribution costs, because CD's still represent the biggest part of sales, companies still have all the fixed costs associated with physical manufacture and distribution. There are also new costs in online delivery.

Many Internet shops use DRM (digital rights management) to restrict the things that the purchaser can do with digital files. They are techniques that are used to copy-protect products that are distributed on the Internet. It might for example prevent the users from distributing the file forward. DRM is used because shops would soon go out of business if one person started to use their services and then distributed all the material acquired to P2P networks. The consumers still have the freedom to back up their product but the shops protect their assets from being stolen. (Wang, 2004)

DRM has been criticized of the fact that it often prevents the purchaser to play the file with anything else than the stores own player program. For example the songs purchased from the iTunes store cannot be played on any other devices than Apple's own iPod. And just like happened to copy protection, hackers have developed several tools for breaking DRM (Wang, 2004).

Another new attempt to keep the customers happy has been to offer more content for the same money. Opendisc is a technology that allows people who have purchased a legal copy of a recording to access exclusive bonus content like videos and photos on the Internet by inserting their CD into a computer and then registering for updates. (Opendisc, 2006)

Opendisc CD's can be normally played on regular home or car stereo CD player (Opendisc 2006) It is not a copy-protection scheme, you can copy the CD into audio files for example to play on your MP3 player.

#### *3.4.5 Enforcing legal protection*

This chapter introduces legal battles between the record and movie industry and P2P software providers and private persons.

#### *Lawsuits against P2P networks and administrators*

A file sharing application is normally a name space and a search engine. If they are separately legal, should the collection of them illegal? (Nilsson, 2000) In the movie industry MGM filed a lawsuit against a file-sharing network called Grokster and the most famous example of lawsuits against P2P networks was when RIAA went to court and accused a file sharing network Napster of participating in the copyright violations engaged in by its users. (Nilsson 2000; Weiss, 2000; Lam et al 2001)

The RIAA argued that even though the files being swapped are never on Napster server and its terms of use require users to agree not to make available copyrighted material, it brokers the meetings that make the exchanges possible; facilitates the copyright infringements. (Nilsson, 2000) Posner (2005) explains that this approach is not limited just to copyright law: “For example someone who sells burglar tools to a burglar is guilty of aiding and abetting if the burglar uses the tools to commit a burglary.”

Napster tried to argue that they are just a normal ISP, and that downloading commercial recordings for free is OK, as long as the users don't profit. The judge sided with RIAA and Napster was shut down. (Nilsson; Weiss; Pizzo [2]). Nowadays, Napster 2.0 is up and running, it was sold to a company called Roxio (BBC news [4]) Today it has developed into a legal service that that collects fees. Weiss (2000) states that the fight between the industry and the network was about much more than Napster since its elimination had little real impact when a number of applications filled the gap. “RIAA wants to establish rules that define the boundaries of digital music distribution, boundaries that keep the association itself relevant”. (Weiss, 2000)

Not only companies, but also operators have been sued for their actions. A recent example from Finland is the FinReactor; with help from Finland's law enforcement agencies, the Finnish equivalent of the RIAA called Teosto shut down Finreactor in 2004. It was, at the time, possibly the largest Finnish BitTorrent tracker with more than 37,000 registered members. (TorrentFreak, 2006) During three months in 2004, data equivalent to about 450,000 CD's, were shared through Finreactor, consisting of about 16,000 games, 136,000 movies and 274,000 music albums. (Aughton, 2006)

32 operators of FinReactor were sued because they were running these network trackers and 15 of them convicted for copyright offences and 7 for aiding in copyright offences (The remaining were found not guilty).(TorrentFreak, 2006) The damages were in the form of compensatory payments of 430,000e, as well as investigation and court costs of 140,000e. (Helsingin sanomat, 2006)

The defendants were convicted because they were aware that nearly all the material made available by the service was infringing copyright and that they had acted wilfully. The court and rejected the defendants' claim that they are not responsible since the content was transferred directly between the users and never stored or transferred by the tracker.

#### *Lawsuits against P2P network users*

The law in most countries states that it is illegal to distribute copies of copyrighted material anywhere, including the Internet. In P2P networks the person who is downloading the file may not know that it is copyrighted. The person who is sharing it would know if they copied it there themselves but if they too downloaded it then they might have no idea. But because the users can

communicate with each other on text mode, they could just ask if any file is copyrighted if they wanted. (Nilsson, 2000)

In 2003, Lawrence Hertz, a lawyer who specializes in online law said: "[The music industry is] starting to move down the food chain." He predicted that music publishers start not only prosecute much companies but also individuals who download copyrighted content, starting with the biggest users. (Tweney, 2003) It is not a surprise that the people who share the most are the ones that are mainly targeted by the lawsuits. (BBC news [2]) Taking action against them makes sense, as an estimated 15% of file sharers are responsible for uploading 75% of illegal content to the Internet. (BPI [1])

The strategy of going after the biggest users became evident in 2002 when RIAA served an ISP called Verizon with a subpoena demanding that has to give in the identity of a user who uploaded more than 600 songs while connected to the company's Internet service. (Tweney, 2003) The court ruled on behalf of the ISP and it did not have to give out the information. However, the RIAA said it will not abandon similar cases in other circuits (Roberts, 2004)

In their news release Verizon comments: "This decision removes the threat of a radical, new subpoena process that empowers copyright holders or anyone merely claiming to be a copyright holder to obtain personal information about Internet users by simply filing a one-page form with a court clerk. This harmful procedure exposes anyone who uses the Internet to potential predators, scam artists and crooks -- including identity thieves and stalkers." (Verizon newscenter, 2003)

After suffering a legal defeat, the RIAA modified its approach to pursuing online file swappers. In January 2004 it filed copyright infringement lawsuits against computer users who were allegedly illegally sharing copyrighted material using P2P networks. The lawsuits were so called "John Doe" lawsuits that identify alleged file swappers only by the IP (Internet Protocol) address of the computer. The RIAA filed a motion to require ISPs that own the addresses to provide the identity of the customers behind the addresses (Roberts, 2004) By the end of March 2004, the RIAA had filed over 1,500 "John Doe" lawsuits (Pruitt, 2004) Only very big file uploaders are named in the suits, which describe individuals whose computers host more than 800 files for download by other P2P users. (Roberts, 2004)

Not all of these lawsuits were successful; one specific that made the news was when the RIAA happened to sue 83 year old Gertrude Wilson that they suspected to be "smittedekitten", a P2P user that had shared over 700 songs. They sued Gertrude a month after she had been buried. The daughter of the defendant said that her mother couldn't even turn on the computer, and the RIAA spokesperson admitted that it is unlikely that Gertrude indeed was the "smittedekitten" searched for. (Karvonen, 2005)

Despite these little drawbacks, according to the RIAA chairman the lawsuits have been effective in educating people about legal issues involved with file sharing and reducing illegal file sharing in the US. RIAA polling data shows the percentage of people who are aware of the legal issues surrounding file swapping changed from 32 percent to 64 percent in the last year. (Roberts, 2004)

The British music industry is also taking a hard line against individuals illegally sharing music online. The BPI said on march 2004 that file sharers could face court action if they continue with their activities. (Pruitt, 2004) They have filed lawsuits against individuals responsible for uploading or sharing large amounts of files on P2P networks, and so have other authorities too; according to

the BPI, around 14,200 major uploaders worldwide have been subject to legal proceedings by august 2005. (Mennecke, 2005, BPI 2005)

Also other countries besides the US and the UK seem to be starting to take legal action against major P2P users, In 2004, a Japanese man was sentenced to 3 years in jail for his actions (Mannila [3]), in 2005, a French school teacher was fined 10 000 euros for downloading and sharing massive amounts, and in may 2006(Mannila[2]), Germany accused a total of 3500 P2P users (Mannila [1]). Also Finland is starting to take action against not only administrators, but also regular P2P users (MTV3, 2005)

### 3 METHODOLOGY

*The aim of this chapter is to give an introduction about the general research methodology used in this study, as well as the specific tools used in data collection and analysis.*

#### 3.1 Research purpose

The purpose of a research can be exploratory, descriptive, explanatory, or predictive in nature.

- *Exploratory research:* learning something new about a phenomenon when there are few earlier studies to which references can be made for information. (Thames Valley University)
- *Descriptive research:* describing a phenomenon to obtain information on the characteristics of a particular issue. Data often quantitative, statistical techniques used to summarise information. (ibid)
- *Explanatory research:* finding an explanation to a phenomenon, goes beyond describing to analyse and explain why or how something is happening. (ibid)
- *Predictive research:* forecasting the likelihood of similar situation occurring elsewhere. (ibid)

The purpose of this research is descriptive in nature: it is meant to describe what the opinions of different age groups are concerning sharing music and movies on P2P networks, and concerning the different approaches that the industries have employed to stop this sharing of copyrighted material. Descriptive research goes further than exploratory research in examining a problem since it is undertaken to discover and describe the characteristics of the issue. (Thames Valley University)

#### 3.2 Research process

There are two main research processes used in scientific work, quantitative and qualitative.

The *quantitative approach* takes an objective position and treats the phenomena studied as hard and real. Methods such as surveys and experiments are favoured. This approach typically concentrates on measuring or counting and involves collecting and analysing numerical data. (Thames Valley University)

The *qualitative approach* views the phenomena studied as more personal and softer. Methods such as personal accounts, interviews and participant observation are used to gain understanding of the reasons and motivations for peoples' attitudes, preferences or behaviours. (Thames Valley University)

In this study, the quantitative research process will be used. The research groups is so large that a survey is more likely to produce better results in finding an explanation to a real life problem than for example interviews and observations.

#### 3.3 Research methods

Research methods are a plan on how the researcher is going about answering the research questions set in the beginning of the research. The aim of quantitative research is to choose methods that allow to objectively measure the variables of interest and to remain detached from the research participants.

As this research is descriptive in nature and the research approach is quantitative, examples of different methods that can be used include for example:

- *Observation study*: focused on a particular aspect of behaviour that needs to be quantified. Involves considerable advance planning, attention to detail, a great deal of time and maybe the help of research assistants. (Leedy et al, 2005)
- *Correlational research*: studies the extent to which differences in one characteristic of variable are related to differences in one or more other characteristics or variables. (ibid)
- *Developmental designs* are used when researchers want to know how a particular characteristic of a person changes, as they grow older. (ibid)
- *Survey research* is used to acquire information about one or more groups of people by asking questions and tabulating the answers. The goal is to learn about a large population by surveying a sample. (ibid)

A survey study is ideal for the purpose of this research: to acquire information about opinions of people, which can be done easiest by surveying a sample.

Surveys conducted for research purposes have three characteristics:

1. Purpose: producing descriptions of aspects of study population. Requires standardized information about the subjects. (Pinsonneault et al (pp. 5-6)
2. Data collecting: asking structured, predefined questions. Answers to those questions are the data to be analysed. (ibid)
3. Information is collected about a sample of the study population in a way that it is possible to generalize findings to the population. Usually, the sample is large enough to allow statistical analyses. (ibid)

### 3.4 Data collection method

The term "survey" in data collection actually refers to the use of one either interviews or questionnaires or a combination of the two (O'Connor [1]):

An interview typically occurs whenever a researcher and respondent are face-to-face or communicating via some technology like telephone or computer. A questionnaire is self-administered and allows respondents to fill them out themselves. All the researcher has to do is arrange delivery and collection.

Questionnaires will be used as a data collection method for this research since the research group is very large and it would not be possible to interview them one at a time.

Terminology used in a questionnaire is very important; if the respondents are expected to be specialised respondents the researcher uses jargon, if not, plain, everyday language. (O'Connor [1])

#### *3.4.1 Questionnaire*

The questionnaire will be conducted as a web based database application and a database will be used to store the answers.

The time frame for the research can be either cross-sectional or longitudinal.

- *Cross-sectional*: people from different age groups are sampled and compared at the same time (O'Connor [2])

- *Longitudinal*: just one group of people are followed over a particular course of time. (ibid)

The questionnaire will be conducted in just one month, with people from different age groups, so the time frame is clearly cross sectional.

To increase the response rate, I will offer the respondents an incentive as recommended by O'Connor [1]: "The best incentive is cash money, attached to the questionnaire, so that respondents feel guilty about keeping the money and not answering the survey". Instead of giving away cash, 3 CD's or DVD's will be given to randomly selected participants who leave their details after they have finished the survey. Their details will of course be saved into a separate table in the database and cannot be traced back to their answers

### *Question types*

Questionnaires use two different kinds of questions, open ended and closed ended. In open-ended questions the respondent can specify the answer, but in closed-ended question they have to select the one that is most accurate to their opinion (Sheuren, 2004). The difference of closed and open-ended questions is illustrated in picture 4.

<p>Question: How effective do you think that watermarking is on reducing file sharing via P2P networks?</p> <p>Open- ended Response _____(Multiple lines to enter answer)</p> <p>Closed-ended Response (Circle one)</p> <ol style="list-style-type: none"><li>1) Very effective</li><li>2) Effective</li><li>3) Moderate</li><li>4) Not so effective</li><li>5) Not effective at all</li><li>6) No opinion</li></ol>
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Picture 4: Open and closed ended questions (Adapted from Sheuren 2004)

In closed-ended questions a single answer should not fall into more than one category, and the differences between choices should be clear, so that it is easy to select the option that best represents the answer. (Sheuren, 2004).

Open-ended questions should be used as an addition to the main theme of the questionnaire so that the respondent can elaborate upon an earlier more specific question. They should be placed at the end of major sections, or at the end of the questionnaire, and offer additional information. (Thames Valley University)

Mainly using closed ended questions will be used in the survey, open-ended questions are only added for the suggestions and comments of the respondents after the closed ended questions have been asked in each section. The reason for this is that the data from closed ended questions is easier to gather and analyse and faster for the respondent to answer. As recommended by O'Connor [1], transitional paragraphs are provided whenever topics are switched so that respondents know what is going on.

### *Other content*

In addition to the actual questionnaire, the survey consists of 7 other sections:

*Front page:* Acts as the “covering letter” that states the general theme of the questionnaire as well as who is doing the research and for what, and gives an assurance of anonymity as well as an estimate of the completion time as recommended by Thames Valley University.

*Research:* Introduces the research questions, delimitations to it as well as the reasons why this topic was chosen. This was included because it is important to make participants aware what they are getting into, and for what.

*P2P networks:* Introduces P2P networks briefly, does not offer anything new to those who are familiar to this technology, but for younger participants, and educators who decide if their students will participate, it gives the basic idea.

*About me:* Introduction about the researcher; where I grew up, where I have studied, what I like etc. This section was added because according to O’Connor [1] anything personal is something that respondents like to read and personalization increases response rate.

*My school:* Information on Luleå University of Technology and the study programme of the researcher with links to the official pages of the school. This was added for “endorsement”; the greater the visibility of any organization endorsing the research, the more likely it is to get a high response rate. (O’Connor [1])

*Contact data:* Includes the email address where visitors can reach the researcher if they have some comments or questions.

*Links:* Includes links to copyright associations, different articles about P2P networks and file sharing, as well as for example some fun related animations. The aim is to show interested parties where to get more information.

### *3.4.2 Testing the questionnaire*

The questionnaire was first tested using called *white box testing* strategy: It deals with the internal logic and structure of the code. The person who is testing has to have knowledge of coding and the internal working behind it, as specific knowledge of programming code is used to examine outputs. When using white box testing, in case of a malfunction, the tester also needs to look into the code and find out what is wrong (Parekh [1])

After the white box testing was over and all flaws found had been corrected, it was decided according to Goldstein (2002) that it is good to test the usability with people who have not been involved with the creation process.

A group of 5 testers were willing to participate, their ages varied from 16-48. They tested the system using the so-called *black box testing*: a testing strategy where the tester does not know the internal workings of the design. It is focused on the testing for requirements and functionality and the tester is needs to know how the system should behave in response to the particular action in order to check for normal and abnormal behaviour of the system. (Parekh [2])

The testing helped to check that the technical structure needed to carry out the survey is in order and that no questions had been worded leadingly, or questions posed that are not needed. This also made sure that at least most possible users find the overall appearance of the site pleasant, and the questions easy to understand and not too long.

The testing was carried out with four different browsers, Internet explorer, Opera, Mozilla Firefox and Netscape navigator. The operating systems used were Windows XP, XP professional and Linux (red hat)

### 3.5 Sample selection

According to O'Connor [1], surveys vary widely in sample size and distinction can be made between large-scale, small-scale, and cross-cultural studies:

- *Large-scale surveys*: Target population is a whole country. Typical sample size 1500-3000 respondents.
- *Small-scale surveys*: Typical sample size 200-300 respondents.
- *Cross-cultural surveys*: 3-6 nations, typical sample size involve 1000 people per nation.

This research will be small-scale; a number of 500 participants are targeted.

As Leedy et al (2005, pp.198) point out, the sample in Internet surveys will not be representative of the overall population since participants are mostly people who are familiar with computers and internet and also like taking part in surveys and are interested in the research topic. One addition in this survey is also that the participants have to be able to understand English since it is the language this research is carried out with.

In this research, however, the whole population is not targeted because the nature of the research problem: It deals with people's opinions about different approaches stop file sharing. As discovered in earlier researches (Bhattacharjee et al. 2003; Kulttuuriuutiset [2]) young people have a stronger tendency to freeload than older age groups. Because of this, the study is conducted with a sample of teenagers and young adults under the age of 30. This is called *purposive sampling*.

#### *3.5.1 Purposive sampling*

Purposive sampling literally means sample with a purpose; answers from predefined groups are sought. It can be useful when the targeted sample must be reached quickly and sampling for proportionality is not a primary concern. The researcher is likely to get the opinions of their target population, but also overweight subgroups in population that are more readily accessible. (Trochim [2])

Because the target population are teenagers and young adults, the search for respondents was started from schools that have students that fit the age group. When finding schools to participate, the Internet pages of the Finnish National Board of Education were used, where they keep a list of Finnish schools (EDU.FI).

To ensure a representative sample 3-5 schools (high schools, vocational colleges and sixth forms) from each of Finland's 20 provinces were chosen to participate with a minimum of 15 students per school. These schools were contacted via email and as O'Connor [1] suggests, a follow-up reminder to complete the survey was also sent.

### 3.5.2 *Self selective sampling*

The survey was also advertised in numerous IRC chatting channels that concerned with music and movies and in the Finnish Internet portal IRC-galleria.net that is a community with over 380 000 users.

The research also gained responses from the news items posted about this questionnaire by interested parties on the internet on sites like p2pnet.net, a portal for P2P users and people who are interested about the networks, and in typ.fi, the site for the Finnish information society party. News on sites like P2Pnet will attract more answers from persons who are familiar with the technology and the sample gained from them might be considered biased. I did not however object to these news items because I think that a representative sample means that all kinds of people should have an opportunity to participate.

Because these participants were not selected using some kind of a method to ensure a random sample as when selecting schools, the sampling method is also partly self-selective. (Taanila 2006) It means that the participants can choose by themselves if they want to answer or not after reading the message.

### 3.5.3 *Snowball sampling*

Also the word of mouth was used as an advertising channel: An email was sent to all acquaintances that belong to the target group of this research asking them to respond. These persons were also asked to forward this email to their own acquaintances that fit the profile. This kind of method is called *snowball sampling*. (Trochim [2])

## 3.6 Analyzing the data

A survey can tell how the data is spread, but it cannot help to interpret that data, only a human mind can do that. There are two main methods in this kind of reasoning: Deductive and inductive. (Leedy et al, 2005)

### 3.6.1 *Deductive & Inductive reasoning*

Inductive reasoning moves from observations meant for detecting patterns to develop conclusions or theories. It is open-ended and exploratory. (Trochim [1])

Deductive reasoning begins with theory about the field of interest and narrowing that theory down into hypothesis that can be tested. Next observations are collected to address the hypothesis, which then leads to the testing of the hypothesis to confirm the original theories. (Trochim [1])

In the interpretation of the data acquired from the survey study, deductive reasoning was used. The purpose was to be able to reflect the conclusions of the study back to existing theories, not to build new theory.

### 3.6.2 *Statistical Analysis*

“Statistics help condense an overwhelming body of data into an amount of information that the mind can more readily comprehend. In the process, they help the researcher “see” patterns and relationships in the data that might otherwise go unnoticed” (Leedy et al 2005, pp. 31)

With the help of the finished survey data, statistical analysis of the closed-ended questions was made: The results of the survey were first presented in anonymous tables. (Sheuren, 2004), these tables were then used to form charts from which the distribution of data can be seen more clearly. Based on these tables and charts, conclusions about people's opinions on sharing copyrighted material on P2P networks and also about the different attempts of the industries to stop file sharing were drawn.

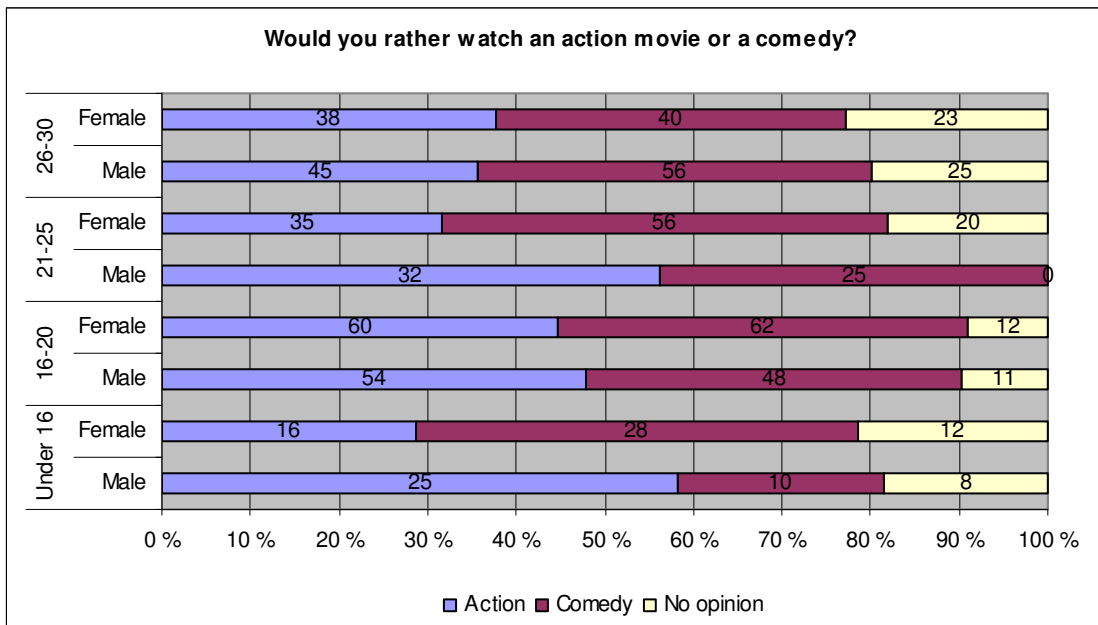
The first thing to do was to look at the respondents' answers as a whole, too see how different age groups, genders and nationalities were represented, and also to get a rough idea of what the final results were.

The next step was to arrange the answers to different questions into tables based on the age groups and gender of the respondents. The reason for this is because according to research (Bhattacharjee et al; Kulttuuriuutiset [2]), older age groups show a lower tendency to share files than younger, and the most active file sharers are young males. Because of this, the opinions of different age groups and genders about different aspects might differ.

After the primary analysis was over, a *cross-analysis* about the answers was done; checking if a change in one variable causes a change in some other. For example, do active P2P users buy less CD's and DVD's than those who do not use them, do the respondents who act as first sources have a more negative look on copy protection and so on.

Bar charts were chosen to be used in the graphical presentation of the survey results, to make the data easier to view. They are a way of summarising a set of categorical data and often used in exploratory data analysis to illustrate the major features of the distribution of the data in a convenient form. (Easton & McColl) To be more specific, stacked horizontal bar charts were being used that compare the given values of different groups in percentage.

Bar graphs consist of an axis and a series or labelled horizontal or vertical bars. The bars depict frequencies of different values of a variable or simply the different values themselves. The numbers on the x-axis of a bar graph or the y-axis of a column graph are called the scale. (Statistics Canada 2006)



Picture 5: An example of survey data in graphical form

With stacked bar charts it is easier to see relative portions, not the actual values; each horizontal bar represents 100% of the answers of a single group and it does not take into account that some groups may be a lot larger than others in reality. Because it is important to also see the actual values, they were also inserted into the graphs as seen in picture 5 above.

As no more than 34 closed ended questions were asked in the survey, organizing the results and preparing the graphical presentations was fairly easy although time consuming. The most relevant answers to the 8 open ended questions were organized according to topic and included in the data presentation.

After the organizing of the answers and making statistics was done conclusions of the effectiveness of different ways to stop file sharing in different age groups were be made.

### 3.7 Reliability and Validity

In quantitative research a few variables that will be studies are chosen and data related to those variables are collected. Methods of measuring those variables are identified with attention to the validity and reliability of the research; they are the factors that define the quality of the conducted research. (Leedy et al 2005, pp. 95)

#### *3.7.1 Validity*

Validity relates to generalizing and refers to the approximate truth of the conclusions made. There are two types of validity, internal and external.

*Internal validity* means the extent in which the data collection methods measure what they are supposed to. As the data collection method in this research is a questionnaire, the question of internal validity lies with the survey itself and the questions asked.

The questionnaire is a web based database application and a database will be used to store the answers, the advantages of this method to internal validity are:

1. No personal data about the respondents will be gathered. The research includes questions about activities that are illegal, and if this kind of information was to be collected, some might not want to participate.
2. No interviewer bias. The respondents are less likely to give responses that make them look good, as does the fact that the interviewer is not there to see the respondents filling the questionnaire and they can consider their answers.
3. No incomplete questionnaires will be received. All respondents are prompted to fill in all of the required fields before they can proceed; all of the answers are saved in the end.
4. No time delay. The researcher does not have to wait for the respondents to return the questionnaire; it will be received instantaneously within completion.

In addition to those advantages offered by the technology used, to ensure internal validity these steps were taken:

- Including interesting questions so that the respondent will not be bored and start rushing to them without thinking
- Keeping the questionnaire as short as possible for the same reason
- Revising each question with the focus on its necessity to the study
- Choosing the order of the questions carefully.
- Neutralizing the language, posing no leading questions.
- Making terms understandable: Using every day language where possible and explaining technical terms.
- Using mostly closed ended questions: faster and easier
- Making sure that the differences between the answer choices is clear
- Providing all possible answer alternatives
- Providing explanations when changing topics
- Testing the survey before it is released

*External validity* is about the ability to generalize the findings of the study into other time, place and people. The researcher identifies the population they would like to generalize to and draw a sample from that population and conduct their research with it. If the sample is representative of the population, they can automatically generalize your results back to the population. A threat to external validity is something that has been done wrong in the course of the generalization. A study is made done in a specific place, with certain types of people, and at a specific time, it can not be generalized to another context (Trochim [3])

The purpose of this study is to find out what is happening here and now. Because the research is done with Finnish people under the age of 30, the results can not be generalized anywhere else. The only thing that can be done to ensure external validity is to try and find as many respondents as possible to come up with a representative sample.

Because the questionnaire is Internet based, it is possible to acquire a more representative sample geographically than with a traditional paper based survey; most of the target population have internet access in school, at home or in the working place. For example according to Statistics Finland (2006), the number of high speed Internet connections in Finland has grown from 10 000 to 779 000 between the years 2000-2004.

### 3.7.2 Reliability

Reliability of a research refers to the repeatability of it. This means that that if another researcher did the same study as the original researcher with the same measurement units if the thing measured has not changed, and came up with the same results, the research would be reliable. (O'Connor [2], Leedy et al. 2005 pp. 29)

As Leedy et al. (2005) point out; even instruments to measure physical phenomena are not always completely reliable, and instruments to measure psychological characteristics (like people's thoughts and opinions in this study) are less reliable than them. Anything a researcher does to standardize or clarify their measurement instruments to reduce user error will add to their reliability. (O'Connor [2]) Therefore, the steps I introduced to improve internal validity of the research are also applicable here.

## 4 DATA PRESENTATION

*This chapter includes the survey data in the form of anonymous tables. The data is presented in tables in a raw form rather than percentages so that the reader has access to the actual data in case they question the analysis and conclusions of this research. Another reason to keep the data in a raw form instead of using for example percentages was that the results for age groups that have a low response rate could distort the results.*

*The comments left by the respondents are presented with bulleted lists. Note that not all comments have been included as it was the aim not to include comments that repeat points already made. All of the comments are included as they are; no alterations have been made except for spell checking.*

*The survey collected a total of 745 responses from which 23 were filled inadequately (empty or missing age group or gender). These inadequately filled responses were discarded from the analysis leaving a total of 722 valid responses. The tables presented in this chapter present the answers of all 722 respondents that left valid responses, but what needs to be noted is that the data used in the analysis part of this thesis are only of those people under the age of 30 who have specified age and gender (651 persons)*

### 4.1 Background

This section collected information about the background of the respondents, their age, gender, nationality etc. It also included questions on how many CD's or DVD's they buy per year and what they think about their cost.

Table 1: Age groups and genders presented

	<i>Under 16</i>	<i>16-20</i>	<i>21-25</i>	<i>26-30</i>	<i>31-40</i>	<i>41-50</i>	<i>Over 50</i>	<i>Don't specify</i>
<i>Male</i>	44	213	84	37	44	11	2	1
<i>Female</i>	58	141	62	12	6	5	3	0
<i>Don't specify</i>	6	6	0	0	0	1	0	4
<b>TOTALS</b>	<b>108</b>	<b>360</b>	<b>146</b>	<b>49</b>	<b>50</b>	<b>17</b>	<b>5</b>	<b>5</b>

The answers of those people who have left their gender or age group unspecified (18) will not be included in the following tables.

Table 2: *Biggest nationalities represented*

Finland	654
Canada	9
UK	6
US	6
Australia	4
France	3
Russian Federation	3

This table does not present any answers of those nationalities that had 2 or fewer respondents, a total of 37 respondents.

Table 3: How many music CD's and movie DVD's do you approximately buy per year?

		<i>0</i>	<i>1 to 10</i>	<i>11 to 20</i>	<i>21-30</i>	<i>over 30</i>	<i>Don't specify</i>
<i>Under 16</i>	<i>Male</i>	11	28	3	0	2	0

	Female	4	47	3	3	0	1
16-20	Male	51	118	20	10	10	4
	Female	14	97	20	7	3	0
21-25	Male	11	44	14	6	8	1
	Female	2	40	14	1	5	0
26-30	Male	6	18	8	2	3	0
	Female	1	6	4	1	0	0
31-40	Male	4	15	12	4	9	0
	Female	0	4	1	0	0	1
41-50	Male	1	7	0	0	2	1
	Female	0	5	0	0	0	0
over 50	Male	1	1	0	0	0	0
	Female	0	0	1	1	1	0
<b>TOTALS</b>		<b>106</b>	<b>430</b>	<b>100</b>	<b>35</b>	<b>43</b>	<b>8</b>

Table 4: What do you think about the cost of music CD's and movie DVD's today?

		<i>Price is OK</i>	<i>CD's too expensive</i>	<i>DVD's too expensive</i>	<i>Both too expensive</i>	<i>No opinion</i>
Under 16	Male	15	4	7	17	1
	Female	15	5	7	27	4
16-20	Male	32	29	13	113	26
	Female	36	22	10	64	9
21-25	Male	9	10	4	60	1
	Female	5	10	2	42	3
26-30	Male	6	6	3	21	1
	Female	4	0	1	6	1
31-40	Male	7	8	2	26	1
	Female	1	0	1	3	1
41-50	Male	1	2	0	8	0
	Female	0	1	1	3	0
over 50	Male	0	0	0	2	0
	Female	2	0	1	0	0
<b>TOTALS</b>		<b>133</b>	<b>97</b>	<b>52</b>	<b>392</b>	<b>48</b>

The reason that it was chosen to ask specifically about CD's and DVD's in is that although there are also other formats in which this kinds of material can be distributed: cassettes, vinyls, minidisks etc. The CD and DVD formats are the most popular today. Also the questions concentrated on CD's and DVD's because most of the attempts of the industries to stop copying (like opendisc, copy protection and watermarking) are used in those formats, not for example cassettes and videos.

#### 4.2 Copyright

This section tested the respondents' knowledge of copyright issues; how long copyright lasts, what can be protected by it and so on.

Table 5: Which ones of the following can be protected by copyright?

		<i>Books &amp; movies</i>	<i>Buildings &amp; databases</i>	<i>Photos &amp; paintings</i>	<i>Songs &amp; stories</i>	<i>All of the above</i>	<i>None of the above</i>	<i>Does not know</i>
Under 16	Male	5	3	0	2	27	1	6
	Female	4	0	5	6	33	1	9

16-20	Male	26	4	12	13	130	5	23
	Female	14	2	4	9	89	3	20
21-25	Male	6	2	3	5	64	1	3
	Female	3	0	0	2	50	1	6
26-30	Male	2	0	2	1	31	0	1
	Female	0	0	0	0	10	0	2
31-40	Male	6	0	0	0	37	1	0
	Female	0	0	0	1	5	0	0
41-50	Male	1	0	0	0	8	2	0
	Female	0	0	0	0	4	0	1
Over 50	Male	0	0	0	0	2	0	0
	Female	1	1	0	0	0	0	1
<b>TOTALS</b>		<b>68</b>	<b>12</b>	<b>26</b>	<b>39</b>	<b>490</b>	<b>15</b>	<b>72</b>

Table 6: Do you have to apply to get your work a copyright?

		Yes	No	Don't know
Under 16	Male	16	10	18
	Female	11	10	37
16-20	Male	78	62	73
	Female	39	35	67
21-25	Male	29	42	13
	Female	20	27	15
26-30	Male	9	24	4
	Female	6	3	3
31-40	Male	9	25	10
	Female	3	1	2
41-50	Male	4	6	1
	Female	1	1	3
Over 50	Male	1	1	0
	Female	0	2	1
<b>TOTALS</b>		<b>226</b>	<b>249</b>	<b>247</b>

Table 7: How long does the copyright approximately last?

		20 y	50 y	lifetime of creator	20 y after death	50 y after death	Forever	Don't know
Under 16	Male	4	2	3	1	2	15	17
	Female	0	2	6	1	4	19	26
16-20	Male	6	13	21	20	26	57	70
	Female	6	5	9	2	9	43	67
21-25	Male	6	4	2	8	29	11	24
	Female	0	4	9	2	8	18	21
26-30	Male	0	8	2	4	9	6	8
	Female	0	0	0	1	4	2	5
31-40	Male	2	2	2	4	15	8	11
	Female	0	0	0	0	4	1	1
41-50	Male	0	2	2		5	1	1
	Female	0	0	2	0	0	1	2
Over 50	Male	1	0	0	0	0	0	1
	Female	0	1	0	0	1	0	1
<b>TOTALS</b>		<b>25</b>	<b>43</b>	<b>58</b>	<b>43</b>	<b>116</b>	<b>182</b>	<b>255</b>

### 4.3 P2P networks

This section collected information about the respondents' activeness in P2P networks and their views on sharing copyrighted material online. They were asked if they actively copy material and make it available and also to reflect on the fact if they think that sharing in P2P networks harms performing artists or music and movie companies financially.

Table 8: Have you used P2P networks to download or share copyrighted music or movies?

		<i>Never</i>	<i>Tried, not active</i>	<i>once a month</i>	<i>once a week</i>	<i>Almost daily</i>	<i>Don't specify</i>
<i>Under 16</i>	<i>Male</i>	15	5	5	5	14	0
	<i>Female</i>	30	7	3	8	9	1
<i>16-20</i>	<i>Male</i>	34	42	17	39	76	5
	<i>Female</i>	46	40	15	19	19	2
<i>21-25</i>	<i>Male</i>	4	21	7	16	36	0
	<i>Female</i>	18	18	10	8	7	1
<i>26-30</i>	<i>Male</i>	1	11	3	12	10	0
	<i>Female</i>	5	4	2	0	1	0
<i>31-40</i>	<i>Male</i>	10	15	5	7	7	0
	<i>Female</i>	4	2	0	0	0	0
<i>41-50</i>	<i>Male</i>	3	1	1	2	3	1
	<i>Female</i>	3	0	0	0	2	0
<i>Over 50</i>	<i>Male</i>	1	1	0	0	0	0
	<i>Female</i>	2	0	0	1	0	0
<b>TOTALS</b>		<b>176</b>	<b>167</b>	<b>68</b>	<b>117</b>	<b>184</b>	<b>10</b>

Table 9: Have you copied copyrighted music or movies (for example from a CD or a DVD), and shared them in a P2P network?

		<i>Never copied</i>	<i>Copied some, not shared</i>	<i>Copied and shared some</i>	<i>Copy and share actively</i>	<i>Don't want to specify</i>
<i>Under 16</i>	<i>Male</i>	13	18	7	6	0
	<i>Female</i>	19	30	7	1	1
<i>16-20</i>	<i>Male</i>	57	64	50	35	7
	<i>Female</i>	50	67	19	4	1
<i>21-25</i>	<i>Male</i>	13	34	23	14	0
	<i>Female</i>	21	29	11	0	1
<i>26-30</i>	<i>Male</i>	6	21	9	1	0
	<i>Female</i>	6	4	2	0	0
<i>31-40</i>	<i>Male</i>	16	14	13	1	0
	<i>Female</i>	3	3	0	0	0
<i>41-50</i>	<i>Male</i>	1	4	3	2	1
	<i>Female</i>	2	1	1	1	0
<i>Over 50</i>	<i>Male</i>	1	1	0	0	0
	<i>Female</i>	1	1	1	0	0
<b>TOTALS</b>		<b>209</b>	<b>291</b>	<b>146</b>	<b>65</b>	<b>11</b>

Table 10: Do you think that it is acceptable to download copyrighted music and movies from P2P networks for personal use?

		<i>Yes</i>	<i>No</i>	<i>No opinion</i>
<i>Under 16</i>	<i>Male</i>	24	13	7

	<i>Female</i>	23	14	21
16-20	<i>Male</i>	126	48	39
	<i>Female</i>	67	37	37
21-25	<i>Male</i>	64	9	11
	<i>Female</i>	35	12	15
26-30	<i>Male</i>	29	5	3
	<i>Female</i>	6	4	2
31-40	<i>Male</i>	24	16	4
	<i>Female</i>	3	3	0
41-50	<i>Male</i>	10	1	0
	<i>Female</i>	2	2	1
Over 50	<i>Male</i>	1	1	0
	<i>Female</i>	0	2	1
<b>TOTALS</b>		<b>414</b>	<b>167</b>	<b>141</b>

Table 11: Do you think that sharing copyrighted music or movies in P2P networks harms the performing artists financially?

		<i>Yes, I do not share</i>	<i>Yes, does not concern me</i>	<i>Yes, they can afford it</i>	<i>No, sharing does not affect the sales that much</i>	<i>No, money goes to the companies</i>	<i>No opinion</i>
<i>Under 16</i>	<i>Male</i>	7	8	4	11	5	9
	<i>Female</i>	8	12	8	9	4	17
16-20	<i>Male</i>	21	46	42	49	30	25
	<i>Female</i>	26	22	37	16	8	32
21-25	<i>Male</i>	5	13	8	21	30	7
	<i>Female</i>	12	18	8	5	6	13
26-30	<i>Male</i>	2	4	4	18	7	2
	<i>Female</i>	2	1	0	3	2	4
31-40	<i>Male</i>	12	7	6	10	8	1
	<i>Female</i>	3	1	0	1	1	0
41-50	<i>Male</i>	1	1	0	5	3	1
	<i>Female</i>	3	0	0	2	0	0
Over 50	<i>Male</i>	1	0	0	1	0	0
	<i>Female</i>	0	2	0	0	0	1
<b>TOTALS</b>		<b>103</b>	<b>135</b>	<b>117</b>	<b>151</b>	<b>104</b>	<b>112</b>

Table 12: Do you think that sharing copyrighted music and movies in P2P networks harms the record and movie companies financially?

		<i>Yes, I do not share</i>	<i>Yes, does not concern me</i>	<i>Yes, they can afford it</i>	<i>No, sharing does not affect the sales that much</i>	<i>No, the money goes to the artists</i>	<i>No opinion</i>
<i>Under 16</i>	<i>Male</i>	6	7	11	6	4	10
	<i>Female</i>	5	9	14	7	2	21
16-20	<i>Male</i>	19	57	51	57	6	23
	<i>Female</i>	19	29	32	26	1	34
21-25	<i>Male</i>	5	17	29	23	1	9
	<i>Female</i>	4	20	21	5	0	12
26-30	<i>Male</i>	1	6	8	21	0	1
	<i>Female</i>	2	2	0	4	0	4

31-40	Male	8	12	10	12	0	2
	Female	2	2	1	1	0	0
41-50	Male	0	1	3	6	0	1
	Female	2	0	1	2	0	0
Over 50	Male	1	0	0	1	0	0
	Female	0	1	0	1	0	1
<b>TOTALS</b>		<b>74</b>	<b>163</b>	<b>181</b>	<b>172</b>	<b>14</b>	<b>118</b>

#### 4.4 General questions about approaches

##### 4.4.1 Copy protection & watermarking

This section was concerned with copy protection, techniques that are used to manufacture for example CD's and DVD's that can be played in regular stereo but can not be copied into a computer file, and with digital watermarking, a technique used to insert copyright information into a digital file.

Table 13: Do you think that if a CD containing music or a DVD containing a movie is copy protected, the consumers should be informed of this?

		Yes	No	No opinion
Under 16	Male	27	9	8
	Female	34	5	19
16-20	Male	132	50	31
	Female	84	24	33
21-25	Male	69	6	9
	Female	48	8	6
26-30	Male	29	6	2
	Female	10	1	1
31-40	Male	41	3	0
	Female	5	0	1
41-50	Male	7	3	1
	Female	4	1	0
Over 50	Male	2	0	0
	Female	0	2	1
<b>TOTALS</b>		<b>492</b>	<b>118</b>	<b>112</b>

Table 14: Do you think that it is acceptable to try and break copy protection from for example movie DVD's?

		Yes	No	No opinion
Under 16	Male	24	14	6
	Female	15	24	19
16-20	Male	117	59	37
	Female	36	75	30
21-25	Male	56	17	11
	Female	14	38	10
26-30	Male	29	7	1
	Female	3	7	2
31-40	Male	25	14	5
	Female	1	4	1
41-50	Male	8	2	1
	Female	3	2	0
Over 50	Male	0	2	0

	<i>Female</i>	1	1	1
<b>TOTALS</b>		<b>332</b>	<b>266</b>	<b>124</b>

Table 15: Do you believe that the kind of copy-protection scheme can be developed that nobody can break?

		Yes	No	No opinion
<i>Under 16</i>	<i>Male</i>	9	32	3
	<i>Female</i>	8	30	20
<i>16-20</i>	<i>Male</i>	30	159	24
	<i>Female</i>	26	79	36
<i>21-25</i>	<i>Male</i>	5	76	3
	<i>Female</i>	16	39	7
<i>26-30</i>	<i>Male</i>	2	34	1
	<i>Female</i>	2	8	2
<i>31-40</i>	<i>Male</i>	1	43	0
	<i>Female</i>	2	3	1
<i>41-50</i>	<i>Male</i>	1	10	0
	<i>Female</i>	1	4	0
<i>Over 50</i>	<i>Male</i>	0	2	0
	<i>Female</i>	0	1	2
<b>TOTALS</b>		<b>103</b>	<b>520</b>	<b>99</b>

Table 16: Do you think that if a CD containing music or a DVD containing a movie is watermarked, the consumers should be informed of this?

		Yes	No	No opinion
<i>Under 16</i>	<i>Male</i>	23	12	9
	<i>Female</i>	29	7	22
<i>16-20</i>	<i>Male</i>	119	48	46
	<i>Female</i>	78	22	41
<i>21-25</i>	<i>Male</i>	61	11	12
	<i>Female</i>	38	12	12
<i>26-30</i>	<i>Male</i>	28	5	4
	<i>Female</i>	10	1	1
<i>31-40</i>	<i>Male</i>	37	3	4
	<i>Female</i>	5	0	1
<i>41-50</i>	<i>Male</i>	6	4	1
	<i>Female</i>	4	1	0
<i>Over 50</i>	<i>Male</i>	2	0	0
	<i>Female</i>	1	1	1
<b>TOTALS</b>		<b>441</b>	<b>127</b>	<b>154</b>

Table 17: Do you think that it is acceptable to try and break watermarking from for example movie DVD's?

		Yes	No	No opinion
<i>Under 16</i>	<i>Male</i>	17	17	10
	<i>Female</i>	6	32	20
<i>16-20</i>	<i>Male</i>	87	67	59
	<i>Female</i>	20	76	45
<i>21-25</i>	<i>Male</i>	50	23	11
	<i>Female</i>	10	40	12
<i>26-30</i>	<i>Male</i>	22	10	5
	<i>Female</i>	3	7	2
<i>31-40</i>	<i>Male</i>	21	18	5
	<i>Female</i>	1	4	1

41-50	Male	7	4	0
	Female	2	2	1
Over 50	Male	0	2	0
	Female	1	1	1
<b>TOTALS</b>		<b>247</b>	<b>303</b>	<b>172</b>

*General comments on copy protection and watermarking:*

- “They can’t protect anything, because somebody designs it and another will break it someday. Very soon or little later. That’s happened everywhere not only music, movies and games.”
- “These things do not stop copying. More advertising is needed to change people’s minds and behaviour.”
- “There is not that many schemes that can be improved cause as the technology gets better and more hacks hack then I don’t see a way that copy protection can be solved. You could have a registration form where people get the music from the internet.”
- “If it can be listened, it can be broken. Many CDs cannot be played in many devices, so copy protection of these CDs must be broken.”
- “By now it should be clear that copy protection does not reduce file sharing - It only makes a movie and music lovers (like me) think twice before paying for a possibly incompatible product, and therefore hurts the sales.”
- “These technologies are waste of money and only hurt honest paying customers.”
- “Copy protection (DRM) cannot be 100% effective, because it would be so restrictive that it would not even play-once it can be seen it can be copied. And there are already examples of that.”
- “When copy protection and/or watermarking inhibit fair-use (backups, conversions, secondary devices, etc.), then copyrights have extended too far.”

*Improvement suggestions:*

- “[could be improved with] with some people with really good computer skills to track down the copy makers.”
- “Maybe the copy protection should insert in windows registry so if someone downloads that music, it wont be played if he doesn’t have that registry information. And the registry information should be individual for every computer, so it couldn’t be copied.”
- “New standards. The CDs and the DVDs are impossible to copy protect effectively just because of their standards. If the standard is defected to effectively protect data, the disk will not play in standard players anymore. It is simple as that.”
- “not really, actually I hope they would stop putting them in CDs and DVDs since the Price of the CD is higher if it is protected, and it brings extra costs to the companies”
- “They cannot be improved. Any code, be it copy protection or digital watermarking, when made by a person, can be cracked by other. For example, as long as computer games have had copy protection of any sort, they’ve been cracked or made ineffective.”
- “They can’t, as long computers are in this world and users who can’t afford to buy those CD or DVD, or are not jus concern about buying them. This isn’t very new thing it to happen there where time when cassettes were copied too, but they didn’t make noise”
- “Watermarking is a very good deterrent as it embeds purchasers information on the content while still letting the content be used on any device”

*4.4.2 Anti-piracy & educational campaigns*

This section deals with anti-piracy and educational campaigns deployed by the industries for example on DVDs, on the Internet and in the media as well as in schools.

*General comments on campaigns:*

- “Like I said earlier the campaigns are not Free, they cost and they don’t have any effect these campaigns only bring the price tag on CD to a higher level and that’s why we download music and DVDs”
- “They are a waste of money that should be rightly paid to artists”
- “I think that everyone watches the campaigns films or posters but I think that there are just few people who stop loading/copying stuff after they had seeing those messages...”
- “campaigns are good because most of the people I think don’t think that its really a crime or don’t know and that if you buy that kind of stuff you might at the same time be helping dangerous criminal organisations”
- “They are annoying. And if embedded in DVDs they take space from the actual contents”
- “Just the campaigns won’t do. To prevent piracy one should find the reason WHY people have adapted to piracy. My personal opinion is, that the prices are too high considering the quality i.e. 20€ for a CD containing 10 crappy songs is way too much.”
- “The best anti-piracy campaign is RIAA and other authorities suing people.”
- “They are there in the beginning of a movie DVD that has already been purchased!! See, they target the wrong people, those that are actually willing to pay for stuff”
- “Our schools should not be wasting educational time on this, so many more important things to learn about”
- “They should be banned from schools - educational system is funded from taxes and it should not be working for Big Four”
- “The campaigns are quite inadequate to impress a normal person”
- “Kids usually know much more computers than their parents. So parents should take more active role in this.”
- “Most of those campaigns fail to make any pretence of being educational - they look, sound and smell like commercials. That is the fault.”
- “CDs and DVDs should be affordable. They cost way too much. That would be the best campaign.”

*Improvement suggestions:*

- “Apposed to merely stating the obvious that you should not steal they should focus on the affect it has on the copyright owner/artist.”
- “Movie stars or rock stars could me more effective. Maybe also true stories about people who have been punished by the police for sharing copyrighted material.”
- “Campaigns should be more realistic or something. There should be thing that makes people to think. Such as Artists daily income can be based on music production so there should be something radical or something about it.”
- “Bring the issue up more constantly in the media to get that bell of conscience ringing.”
- “If rich movie stars feature in these campaigns they might actually piss more people off”
- “Most fans would prefer to compensate their favourite artists, they simply refuse to pay distribution and carrying costs. Make it easy to compensate artists and copyright holders. Insinuating a customer may be a thief is foolish.”
- “Anti-piracy campaigns are mostly idiotic, it isn’t same if you steal car; that is real material. If they want to campaign, they should focus on creator’s side and be realistic - but then their campaigns wouldn’t be good for them.”

- “Making people believe that the cost of the record is not so much and that they can order it from internet stores. The general mindset people have is to save as much money they can.”
- “Clearly target to children, not their parents.”
- “More education for teenagers. Education can begin in schools, because this thing is stealing profit for artists and actors.”
- “Should be more widely used in schools in Finland, now just industry websites that have good design but probably no visitors because they are not advertised”

*On where these campaigns could be used*

- “In work places. Then parents can tell to children’s what is illegal and what is not.”
- “They should be used more often in good market places, for example in places where people are shopping a lot.”
- “At work places, in concerts, movie theatres.”
- “In street marketing campaigns and stands.”
- “TV (as part of educational or youth programmes)”
- “Yes. Markets and some web pages. Example IRC-galleria. Where people talk about it.”

*4.4.3 Cuckoo eggs*

This section deals with Cuckoo eggs, fake files planted on file sharing networks to fool file sharers that do not contain what they say they do.

*General comments about Cuckoo’s eggs:*

- “They’re mostly just annoying, but do not really have an effect on piracy. Anyone can download the song again, until they get the real thing.”
- “Decoy files will inevitably see their ratings drop - a P2P net is a powerful self-regulating organism to resist foreign bodies.”
- “Could scare some people to get a cuckoo egg. You could feel like your being watched or something.”
- “Most sharing networks have a rating system so they become useless very quickly by having lower rating than the real deal.”
- “I think they just irritate people to download more.”
- “They must get a lot of people angry but also alienate fans”
- “People will spot them a mile off and not download them”
- “You get 20000 hits from one song, those 10 bad songs wont bother”
- “Cuckoo eggs are effective because they consume the scarce resource of consumer attention. The wisdom of crowds quickly attenuates the waste of consumer attention.”
- “They should be made illegal as they are misleading and deceptive and wrongly incur bandwidth fees to users”

*Improvement suggestions:*

- “Maybe no messages, just noise?”
- “There could also be some information about copying and risks that some people could face when they share data..”
- “Planting spy ware that calls home when activated would be better but I think it is illegal”
- “Internet and P2P-servers should be flooded with these files. Then it starts to be spam.”
- “You can hear the song once and then it came useless”

- “It should have a message from FBI etc. That would scare the living daylight out of people.”
- “It could contain angry opinion from sustained musician.”
- “With the advent of tagging everyone just flags the file as a fake and it clogs up the p2p networks when they could be just distributing advertising supported and embedded content”
- “A virus which would lock down your computer and send a signal to a control server would be effective.”

#### 4.4.4 Internet shops

This section deals with Internet shops that sell movies and music on the Internet, either subscription, or pay by download based.

Table 18: Have you ever purchased digital music or movies from internet shops?

		Yes, few times	Yes, actively	Yes, probably not again	No, never	No, would like to	No, probably never will	Don't want to specify
Under 16	Male	6	0	0	21	9	8	0
	Female	7	2	5	19	11	14	0
16-20	Male	19	6	12	67	24	80	5
	Female	15	5	5	46	25	42	3
21-25	Male	10	3	5	23	21	22	0
	Female	12	1	1	29	11	8	0
26-30	Male	8	2	1	13	8	5	0
	Female	3	0	1	4	2	2	0
31-40	Male	17	2	2	15	5	3	0
	Female	1	0	0	3	1	1	0
41-50	Male	1	2	0	5	0	3	0
	Female	1	1	0	3	0	0	0
Over 50	Male	0	0	0	1	0	1	0
	Female	0	2	0	0	0	1	0
<b>TOTALS</b>		<b>100</b>	<b>26</b>	<b>32</b>	<b>249</b>	<b>117</b>	<b>190</b>	<b>8</b>

Table 19: How much do you think is a fair price per purchased digital music track?

		0.00- 0.30 e	0.31- 0.60 e	0.61- 0.90 e	0.91- 1.20 e	1.21- 1.50 e	over 1.50 e	No opinion
Under 16	Male	26	9	7	1	1	0	0
	Female	11	12	9	7	2	2	15
16-20	Male	84	38	23	25	4	5	34
	Female	31	33	29	7	6	5	30
21-25	Male	22	26	12	8	0	1	15
	Female	11	23	7	9	3	1	8
26-30	Male	10	15	7	4	0	0	1
	Female	2	3	1	1	0	0	5
31-40	Male	7	21	7	4	0	0	5
	Female	4	0	1	1	0	0	0
41-50	Male	4	4	2	0	0	0	1
	Female	2	0	0	1	0	1	1
Over 50	Male	0	1	1	0	0	0	0
	Female	1	0	1	0	0	0	1

<b>TOTALS</b>		<b>215</b>	<b>185</b>	<b>107</b>	<b>68</b>	<b>16</b>	<b>15</b>	<b>116</b>
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Table 20: How much do you think is a fair price per purchased digital movie?

		0.00- 3.00 e	3.01- 6.00 e	6.01- 9.00 e	9.01- 12.00 e	12.01- 15.00 e	over 15.00 e	No opinion
<i>Under 16</i>	<i>Male</i>	17	12	9	3	2	1	0
	<i>Female</i>	14	13	9	5	2	2	13
<i>16-20</i>	<i>Male</i>	52	58	31	24	9	4	35
	<i>Female</i>	20	36	34	13	6	6	26
<i>21-25</i>	<i>Male</i>	12	33	14	7	1	2	15
	<i>Female</i>	3	25	14	12	2	0	6
<i>26-30</i>	<i>Male</i>	8	15	8	3	1	0	2
	<i>Female</i>	1	6	1	0	0	0	4
<i>31-40</i>	<i>Male</i>	8	15	7	8	1	0	5
	<i>Female</i>	3	1	0	1	1	0	0
<i>41-50</i>	<i>Male</i>	3	6	1	0	0	0	1
	<i>Female</i>	1	1	1	0	0	1	1
<i>Over 50</i>	<i>Male</i>	0	1	1	0	0	0	0
	<i>Female</i>	2	0	0	0	0	0	1
<b>TOTALS</b>		<b>144</b>	<b>222</b>	<b>130</b>	<b>76</b>	<b>25</b>	<b>16</b>	<b>109</b>

Table 21: How much do you think is a fair price for a monthly fee for a subscription based service?

		0.00- 5.00 e	5.01- 10.00 e	10.01- 15.00 e	15.01- 20.00 e	20.01- 25.00 e	over 25.00 e	No opinion
<i>Under 16</i>	<i>Male</i>	18	8	7	4	1	1	5
	<i>Female</i>	13	15	6	2	1	3	18
<i>16-20</i>	<i>Male</i>	54	35	24	22	23	15	40
	<i>Female</i>	16	25	24	27	6	6	37
<i>21-25</i>	<i>Male</i>	6	16	15	12	9	4	22
	<i>Female</i>	5	8	14	15	5	4	11
<i>26-30</i>	<i>Male</i>	4	13	7	5	1	1	6
	<i>Female</i>	0	5	2	0	0	1	4
<i>31-40</i>	<i>Male</i>	3	11	10	10	4	0	6
	<i>Female</i>	2	1	0	1	1	0	1
<i>41-50</i>	<i>Male</i>	3	3	1	1	0	0	3
	<i>Female</i>	0	1	0	1	1	1	1
<i>Over 50</i>	<i>Male</i>	0	1	0	0	0	0	1
	<i>Female</i>	0	2	0	0	0	0	1
<b>TOTALS</b>		<b>124</b>	<b>144</b>	<b>110</b>	<b>100</b>	<b>52</b>	<b>36</b>	<b>156</b>

Table 22: Would you rather use a subscription based internet shop or a shop where you pay per each purchase?

		Subscription	Pay per purchase	No opinion	
<i>Under 16</i>	<i>Male</i>	12	22	10	
	<i>Female</i>	9	20	29	
<i>16-20</i>	<i>Male</i>	61	78	73	*1 was blank
	<i>Female</i>	38	52	51	
<i>21-25</i>	<i>Male</i>	27	39	18	
	<i>Female</i>	12	32	18	
<i>26-30</i>	<i>Male</i>	13	17	7	
	<i>Female</i>	2	7	3	
<i>31-40</i>	<i>Male</i>	11	23	10	

	<i>Female</i>	2	3	1	
<i>41-50</i>	<i>Male</i>	2	6	3	
	<i>Female</i>	2	1	2	
<i>Over 50</i>	<i>Male</i>	1	0	1	
	<i>Female</i>	2	0	1	
<b>TOTALS</b>		<b>194</b>	<b>300</b>	<b>227</b>	

*General comments about Internet shops:*

- “They are too expensive. It’s ridiculous to pay for a movie that you are not able to burn and watch on your DVD player at home, why bother?!”
- “The more legal outlets available the less need for piracy. The less encumbrances on consumer attention the less need for piracy.”
- “In my case, I want to download lossless audio. I see no reason to download lossy audio for such high prizes.”
- “Many internet shops seem to have fairly restrictive methods for preventing copying of the files. I do not see much reason to pay for files if it means that I still need to download them from some other source to get them to work the way I want.”
- “One should be able to copy his music track to his mp3 player without concern about DRM. Otherwise internet music stores are in serious trouble.”

*Improvement suggestions:*

- “The selection should be bigger. Now just bands I and movies I have never heard of”
- “Remove DRM, sell higher quality versions of the products for no extra cost”
- “I personally don’t buy anything that has DRM on it. And everything does at the moment. So, if someone comes up with net store where I actually download and OWN the products and not just rent them, I become user.”
- “By quality of material. Personally I will not buy any music before quality is as good as in original CD. (using lossless coding)”
- “They should all use the same file format so the customer can buy his or her music from wherever he/she likes.”
- “More selection, and of course cheaper prices”
- “Internet shop downloads are usually bad quality and have DRM. I will buy from internet shops if the song/movie is available in lossless format so that I can convert it to whichever format I like.”
- “I rather buy a CD, so I get my music without lossless packing and get a physical product.”
- “Make content available globally. E.g. iTunes refuses to sell me content based on where I live! So I download it via p2p. If my money is not good enough, stop complaining I hurt your sales.”
- “Still, many people consider paying via internet to be risky, and also the volume of music in those shops could be expanded so that one would find the music he/she wants.”
- “The possibility of downloading whole albums in lossless format in one file (with cuesheet, i.e. .flac.cue) would be good... I would consider buying these if they had a lower price. (They could be converted to the preferred format after downloading)”
- “I would use these sources if there was no copy protection - emusic is the only viable store at the moment but they only have indie music and don’t operate in my country. It will be a cold day in hell before I purchase DRM infected crap.”
- “Shopping from internet has to be easier than downloading music and movies from p2p networks.”

#### 4.4.5 Opendisc technology

This section includes questions about Opendisc technology that is used to provide extra content on the Internet to people who have purchased a legal recording of the product

##### *General comments concerning Opendisc*

- “Value adding content to CDs is a good idea”
- “Mostly the bonus content and the original content of the CD aren’t just worth the price of the CD. The CD prices should be lower, and the bonus content should be more interesting and should seem more worth the money.”
- “Prices are so high that if I would buy opendisc there must be a lot I mean very lot that kind of stuff what you cant see in media”
- “This may seem effective, but someone will eventually post the exclusive material online. The Sci-Fi Channel had exclusive webisodes of Battlestar Galactica only U.S. residents could see. It was no problem at all to find them shared on p2p.”
- “Discs that have this feature should be advertised more, nobody knows about these”

##### *Comments about what could be included with Opendisc:*

- “Extra songs or some other bonus material, videos, photos”
- “Bloopers scenes, music videos etc.”
- “interviews”
- “Publicity material and something informative like documents.”
- “screensavers, e-cards, games”
- “Music videos, documents, pictures, tour videos, karaoke versions of songs”
- “Photos music videos. and in Linux compatible format”
- “If the artist releases for example some single or instrumental versions of the album tracks, or extra songs”
- “Free demos from games, or older movies or older games etc.”
- “music videos in good quality with xvid codec, twopass second pass, , 640-480 or better, vbr mp3”

#### 4.4.6 Enforcing legal protection

This section deals with the lawsuits of the industries against private persons who share material online or help to maintain these services.

Table 23: Do you think that lawsuits of the music and movie industries against private persons are justified?

		Yes	No	No opinion
Under 16	Male	12	17	15
	Female	17	17	24
16-20	Male	51	118	44
	Female	46	45	50
21-25	Male	17	52	15
	Female	30	16	16
26-30	Male	8	27	2
	Female	3	5	4
31-40	Male	15	23	6
	Female	4	2	0
41-50	Male	2	9	0

	<i>Female</i>	0	5	0
<i>Over 50</i>	<i>Male</i>	2	0	0
	<i>Female</i>	1	0	2
<b>TOTALS</b>		<b>208</b>	<b>336</b>	<b>178</b>

Table 24: Do you think that downloading music or movies from the internet can be compared to stealing them from the shop?

		Yes	No	No opinion
<i>Under 16</i>	<i>Male</i>	14	23	7
	<i>Female</i>	11	33	14
<i>16-20</i>	<i>Male</i>	33	144	36
	<i>Female</i>	30	78	33
<i>21-25</i>	<i>Male</i>	9	72	3
	<i>Female</i>	21	30	11
<i>26-30</i>	<i>Male</i>	1	36	0
	<i>Female</i>	1	9	2
<i>31-40</i>	<i>Male</i>	7	33	4
	<i>Female</i>	3	3	0
<i>41-50</i>	<i>Male</i>	1	10	0
	<i>Female</i>	1	3	1
<i>Over 50</i>	<i>Male</i>	2	0	0
	<i>Female</i>	0	1	2
<b>TOTALS</b>		<b>134</b>	<b>475</b>	<b>113</b>

#### 4.5 The effectiveness of different approaches

The next sections are concerned with the industries attempts to stop the sharing of copyrighted material in P2P networks: copy protection, digital watermarking, anti-piracy and educational campaigns, cuckoo eggs, opendisc, Internet shops and enforcing legal protection.

The respondents are given the opportunity to share their thoughts about each approach and offer improvement suggestions. They are also asked to measure the effectiveness of each attempt on the following scale:

- Very effective
- Effective
- Moderate
- Not so effective
- Not effective at all
- I have no opinion

Table 25: effectiveness on a scale

	<i>Very effective</i>	<i>Effective</i>	<i>Moderate</i>	<i>Not so effective</i>	<i>Not effective at all</i>	<i>No opinion</i>
<i>Copy-protection</i>	18	52	107	216	181	77
<i>Watermarking</i>	14	48	113	173	153	150
<i>Anti-piracy campaigns</i>	13	46	136	250	153	53
<i>Educational campaigns</i>	17	48	159	224	134	69
<i>Cuckoo eggs</i>	13	75	135	170	148	110

<i>Internet shops</i>	17	80	183	175	95	101
<i>Opendisc</i>	15	73	170	183	80	130
<i>Lawsuits</i>	32	107	178	164	93	77

Table 26: Effectiveness on a scale (by gender)

		<i>Very effective</i>	<i>Effective</i>	<i>Moderate</i>	<i>Not so effective</i>	<i>Not effective at all</i>	<i>No opinion</i>
<i>Copy-protection</i>	<i>Male</i>	11	15	49	123	153	27
	<i>Female</i>	7	37	58	93	28	50
<i>Watermarking</i>	<i>Male</i>	8	24	60	97	124	65
	<i>Female</i>	6	24	53	76	29	85
<i>Anti-piracy campaigns</i>	<i>Male</i>	8	21	73	136	123	17
	<i>Female</i>	5	25	63	114	30	36
<i>Educational campaigns</i>	<i>Male</i>	9	21	74	130	116	28
	<i>Female</i>	8	27	85	94	18	41
<i>Cuckoo eggs</i>	<i>Male</i>	5	32	74	107	122	38
	<i>Female</i>	8	43	61	63	26	72
<i>Internet shops</i>	<i>Male</i>	9	49	109	92	77	42
	<i>Female</i>	8	31	74	83	18	59
<i>Opendisc</i>	<i>Male</i>	11	37	111	104	67	48
	<i>Female</i>	4	36	59	79	13	82
<i>Lawsuits</i>	<i>Male</i>	12	55	102	103	78	28
	<i>Female</i>	20	52	76	61	15	49

The respondents are asked to pick just one attempt that they see as being the most effective in stopping people from sharing copyrighted music and movies in P2P networks. This is meant to act as a reversal question for the questions asked about the effectiveness of different approaches in previous sections. The respondents are also asked to offer their last suggestions and comments.

Table 27: What is the most effective approach to stop people from sharing copyrighted music and movies in P2P networks?

		<i>Copy protection</i>	<i>Watermarking</i>	<i>Antipiracy campaigns</i>	<i>Educational campaigns</i>	<i>Cuckoo eggs</i>	<i>Internet shops</i>	<i>Opendisc</i>	<i>Lawsuits</i>	
<i>under 16</i>	<i>M</i>	12	1	2	1	6	6	2	14	
	<i>F</i>	18	2	1	3	5	13	3	13	
<i>16-20</i>	<i>M</i>	36	7	15	7	11	42	11	84	
	<i>F</i>	39	6	5	7	8	34	4	38	
<i>21-25</i>	<i>M</i>	9	1	5	5	4	28	11	21	
	<i>F</i>	12	4	2	3	2	11	8	19	1*blank
<i>26-30</i>	<i>M</i>	3	1	1	1	2	19	5	5	
	<i>F</i>	2	2	1	1	0	2	1	3	
<i>31-40</i>	<i>M</i>	5	2	1	6	2	12	11	5	
	<i>F</i>	0	0	1	0	1	2	0	2	
<i>41-50</i>	<i>M</i>	1	0	1	0	0	5	2	2	
	<i>F</i>	0	0	0	2	0	1	1	1	
<i>over 50</i>	<i>M</i>	1	0	0	0	0	1	0	0	
	<i>F</i>	0	0	0	0	1	0	0	2	
<b>TOTALS</b>		<b>138</b>	<b>26</b>	<b>35</b>	<b>36</b>	<b>42</b>	<b>176</b>	<b>59</b>	<b>209</b>	

#### 4.6 Other comments

- “They should lower the product price; maybe then people realize that real products are real with original covers etc.”
- “Make laws stricter, Nobody thinks about getting caught now”
- “It is an attitude, if you can get it free, why should you pay... Parents should follow better what their kids are doing”
- “Sell cheaper. Award users buying original instead of trying to fight against pirates.”
- “Illegal copies need a way to destroy or damage the playing equipment.”
- “The prices should be lowered. But there also rises the question "Do we need recording companies anymore?" Since nowadays any band can use the Internet to spread their material...then do we need the traditional, outdated spreading channels?”
- “I rated Internet Shops as most effective way, despite having given Opendisc highest rating earlier. This is because I believe that they will be biggest source of music and movies as soon as they stop punishing people who pay them instead of using P2P.”
- “For years and years they tried to stop net music, and failed. Now they too sell it on the internet, but with heavy restrictions and policies. Gradually, hopefully, they put a fair price tag on music/movies, instead of ripping people off with DRM-monster”
- “Lower prizes, better contents, products that can be played in every player. Record companies should consider customers as a friend, not as enemy.”
- “Simply put, the industries are not adapting their sales model to the new technology fast enough. P2P attracts users because of its ease of use and amount of content. Stop treating customers like criminals and start listening what we want and how.”
- “Lower the prices, find out the reason of piracy (is it the price levels, poor content etc.) and make internet shops more known to larger audiences.”
- “Record companies should sell direct (online) removing the price hick of middle men.”
- “Let fans help create brands and share the equity with them. Education will occur naturally as passionate fans take pride in ownership of the brands they create.”
- “Kids nowadays know more then parents do. For some people using P2P is something terrible. For kids P2P is fun and they don’t take it so seriously, because they are just kids. How many kids have money to buy a movie or music CD?”
- “Let the market change to accommodate changing value-added services. Tools that manage abundance rather than scarcity will win and the laws will change with them.”
- “Well, the only way to stop piracy is to make a deal with P2P network operators, that they would close any account which is sharing copyrighted material.”

#### 4.7 Cross analysis

The Cross analysis of the answers was done with valid answers of those respondents who are under 30 years of age (651)

##### *Cross analysis 1*

Do the respondents that use P2P networks actively buy less CD’s and DVD’s than the other respondents?

In the first column o the table, you can see how many people of all respondents say that they buy for example 0, 1-10, or 11-20 CDs/DVDs per year, and in the next columns you can see how many persons of each group use P2P for example daily or weekly.

Table 28: CD/DVD purchasing and P2P use

	<i>Daily</i>	<i>Weekly</i>	<i>Monthly</i>	<i>Tried</i>	<i>Never</i>	<i>Don't specify</i>
<i>100 buy 0</i>	52	12	7	10	16	3
<i>398 buy 1-10</i>	87	70	38	94	103	6
<i>86 buy 11-20</i>	13	11	12	29	21	0
<i>30 buy 21-30</i>	9	6	1	7	7	0
<i>31 buy over 30</i>	9	8	4	6	4	0
<i>6 don't specify</i>						

### *Cross analysis 2*

Do people accepting sharing think that it doesn't hurt artists or companies? The answers of those respondents who think that downloading for private use is acceptable were compared with the answers of those who think that it is not to see how their opinions differ in the matter if the sharing that goes on in P2P networks hurts financially either artists or companies.

Table 29: Does sharing hurt artists financially

	<i>Yes, I don't share</i>	<i>Yes, doesn't concern me</i>	<i>Yes, they can afford it</i>	<i>No, doesn't affect sales much</i>	<i>No, money goes to companies</i>	<i>No opinion</i>
<i>Sharing acceptable (374)</i>	20	72	68	100	70	44
<i>In %</i>	5%	19%	18%	27%	19%	12%
<i>Sharing not acceptable (142)</i>	45	33	18	15	12	19
<i>In %</i>	32%	23%	13%	11%	8%	13%
<i>No opinion (135)</i>						

Table 30: Does sharing hurt companies financially?

	<i>Yes, I don't share</i>	<i>Yes, doesn't concern me</i>	<i>Yes, they can afford it</i>	<i>No, doesn't affect sales much</i>	<i>No, money goes to artists</i>	<i>No opinion</i>
<i>Sharing acceptable (374)</i>	15	90	104	108	8	49
<i>In %</i>	4%	24%	28%	29%	2%	13%
<i>Sharing not acceptable (142)</i>	35	40	28	19	3	17
<i>In %</i>	25%	28%	20%	13%	2%	12%
<i>No opinion (135)</i>						

### *Cross analysis 3*

Do active file sharers and first sources respond differently to approaches than others? The groups that will be compared here there are the respondents that use the networks daily or weekly, those that say they actively copy material and post it online and those who have never used them or have tried but are not active users.

Table 30: Effectiveness of different approaches with active downloaders (use daily or weekly), total group size 279

	<i>Very</i>	<i>Effective</i>	<i>Moderate</i>	<i>Not so</i>	<i>not effective</i>	<i>No</i>

	<i>effective</i>			<i>effective</i>	<i>at all</i>	<i>opinion</i>
<i>Copy protection</i>	5	16	33	83	125	17
<i>Watermarking</i>	3	12	43	75	102	44
<i>Anti-piracy campaigns</i>	5	8	51	102	104	9
<i>Educational campaigns</i>	2	16	54	98	91	18
<i>Cuckoo eggs</i>	2	24	48	76	106	23
<i>Internet shop</i>	6	29	74	82	61	27
<i>Opendisc</i>	2	33	72	81	60	31
<i>Lawsuits</i>	5	34	73	86	64	17

Table 31: Effectiveness of different approaches with active first sources, total group size 61

	<i>Very effective</i>	<i>Effective</i>	<i>Moderate</i>	<i>Not so effective</i>	<i>Not effective at all</i>	<i>No opinion</i>
<i>Copy protection</i>	4	1	3	12	37	4
<i>Watermarking</i>	2	2	4	12	32	9
<i>Anti-piracy campaigns</i>	4	0	5	19	32	1
<i>Educational campaigns</i>	2	1	8	19	29	2
<i>Cuckoo eggs</i>	3	3	4	14	34	3
<i>Internet shop</i>	2	4	14	14	18	9
<i>Opendisc</i>	2	5	14	12	22	6
<i>Lawsuits</i>	3	2	15	14	23	4

Table 32: Effectiveness of approaches with non-active downloaders (never used/tried, not active), group size 301

	<i>Very effective</i>	<i>Effective</i>	<i>Moderate</i>	<i>Not so effective</i>	<i>Not effective at all</i>	<i>No opinion</i>
<i>Copy protection</i>	10	27	58	114	39	53
<i>Watermarking</i>	9	31	57	78	39	87
<i>Anti-piracy campaigns</i>	7	33	71	120	35	35
<i>Educational campaigns</i>	14	27	85	104	31	40
<i>Cuckoo eggs</i>	10	45	66	73	33	74
<i>Internet shop</i>	8	40	94	72	24	63
<i>Opendisc</i>	13	34	76	75	16	87
<i>Lawsuits</i>	20	63	87	61	21	49

Table 33: What is the most effective approach with active downloaders (use daily or weekly), total group size 279

	<i>Nr.</i>	<i>%</i>
<i>Anti piracy campaigns</i>	11	4
<i>Copy protection</i>	42	15
<i>Cuckoo eggs</i>	16	6
<i>Educational campaigns</i>	15	5
<i>Internet shops</i>	73	26
<i>Lawsuits</i>	86	31
<i>Opendisc</i>	30	11
<i>Watermarking</i>	6	2

Table 34: What is the most effective approach with active first sources, total group size 61

	Nr.	%
Anti piracy campaigns	2	3
Copy protection	7	11
Cuckoo eggs	4	6
Educational campaigns	6	10
Internet shops	17	28
Lawsuits	23	38
Opendisc	1	2
Watermarking	1	2

Table 35: What is most effective approach with non-active downloaders (never used/tried, not active), group size 301

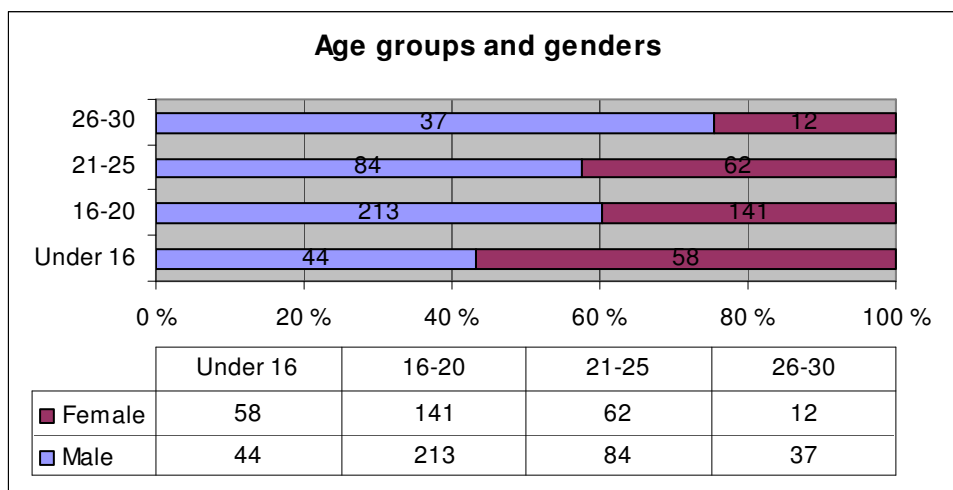
	Nr.	%
Anti piracy campaigns	18	6
Copy protection	78	26
Cuckoo eggs	18	6
Educational campaigns	12	4
Internet shops	60	20
Lawsuits	89	30
Opendisc	10	3
Watermarking	15	5

## 5 ANALYSIS

*This chapter includes the analysis about the survey results; it is based on the data presented in the previous chapter, from which the tables used to illustrate the distribution of data were drawn for this chapter.*

### 5.1 Background of the respondents

From all valid responses, 90% came from the groups of interest for this study, teenagers and young adults up to 30 years of age. When the term “all respondents” is used later in this chapter, this is the group it refers to.



Graph 1: Age groups and genders

58% of the respondents under the age of 30 were males, and 42% females. 92% were Finnish, the second biggest nationalities presented were Canada with 0,8% of the responses, and United States and United Kingdom both with 0,6% of the responses.

*Note: When looking at the analysis in the rest of this chapter, notice that the female group aged 26-30 is very small, 12 people. Because of this the results on their part are not as valid as the bigger groups, and they might be distorted.*

## 5.2 Music purchasing and price

The majority of 61% of the respondents' buy 1-10 CDs/DVDs per year, 13% say that they buy 11-20, and 15% do not buy any. Only 10% of all respondents buy more than 20 albums and movies per year.

Females are more active buyers than men, and less of them do not buy any CDs or DVDs at all. The percentage of persons that buy more than 10 CD's per year is bigger in older age groups, which can be partly explained by the fact that older age groups usually have more money to spare since they might already have entered the working life.

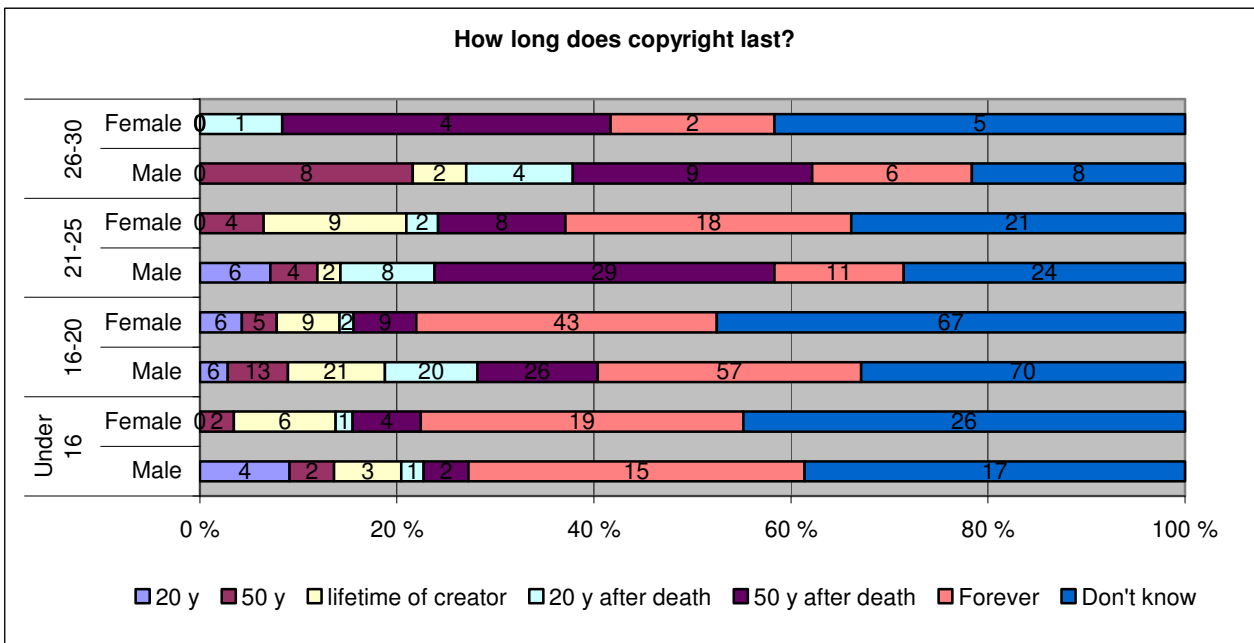
The majority of 64% of all respondents think that both CDs and DVDs are too expensive when only 19% think that the price is OK. CDs are perceived to have more "air" in the price as DVDs; 13% think that they are too expensive when the corresponding number for DVDs is 7%. Younger age groups give more value to CDs and DVDs than the older age groups as a relatively bigger group of them think that the cost is OK.

## 5.3 Knowledge of copyright issues

The majority of 67% of all respondents know what copyright protects, 33% answered wrong or admitted that they do not know. The relative portion of correct answers grew in the older age groups and there were no big differences between the knowledge of different genders.

33% of all respondents knew that according to EU legislation copyright is automatic; when you create something unique enough, it is immediately protected by copyright. 35% admitted that they do not know, and 32% got the wrong answer. Again, the knowledge about the matter was better in the two older age groups where the respondents most usually chose the correct answer.

The knowledge about the duration of copyright protection was relatively low. Only 14% of all respondents knew that according to EU legislation it lasts 50 years after the copyright holders' death (can vary in member countries), 26%, thought that the rights last forever and even larger portion, 37%, admitted that they do not know.

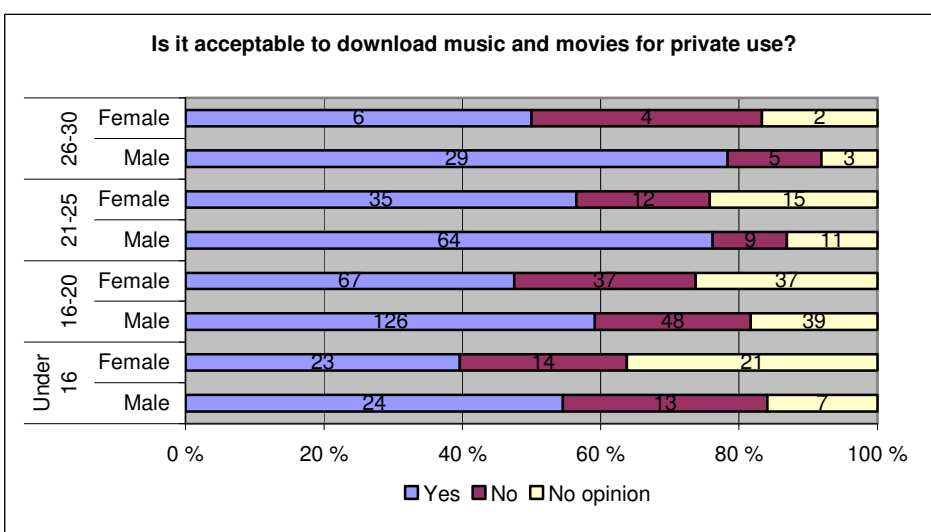


Graph 2: How long does copyright last?

The knowledge about the duration of copyright was best with males between the ages 21-30, as a relatively biggest portion of them answered correctly. The biggest part of all males and females under 20, as well as females between the ages 21-30 admitted that they do not know how long it lasts.

#### 5.4 Opinions about file sharing P2P Networks

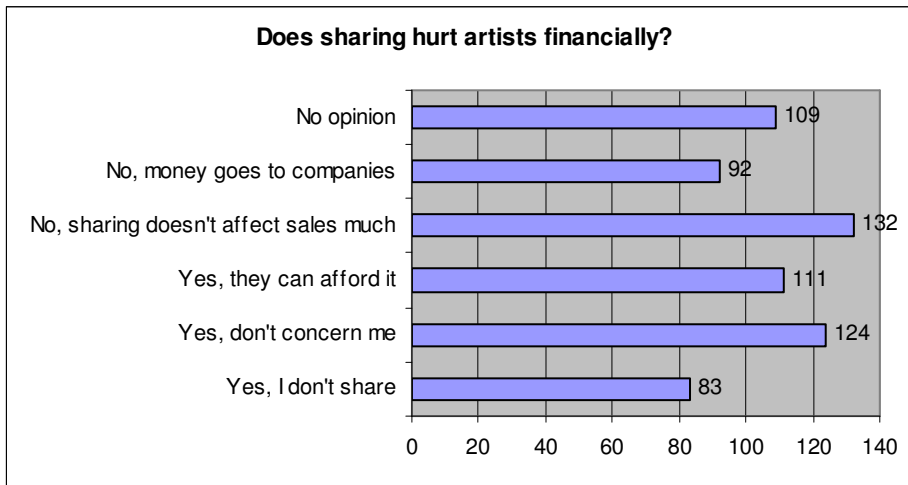
As can be seen from graph 3 below, both males and females have an acceptable opinion towards downloading music and movies for private use although the portion of those who accept it is smaller with females.



Graph 3: Is it acceptable to download for private use?

#### Financial losses for companies or artists

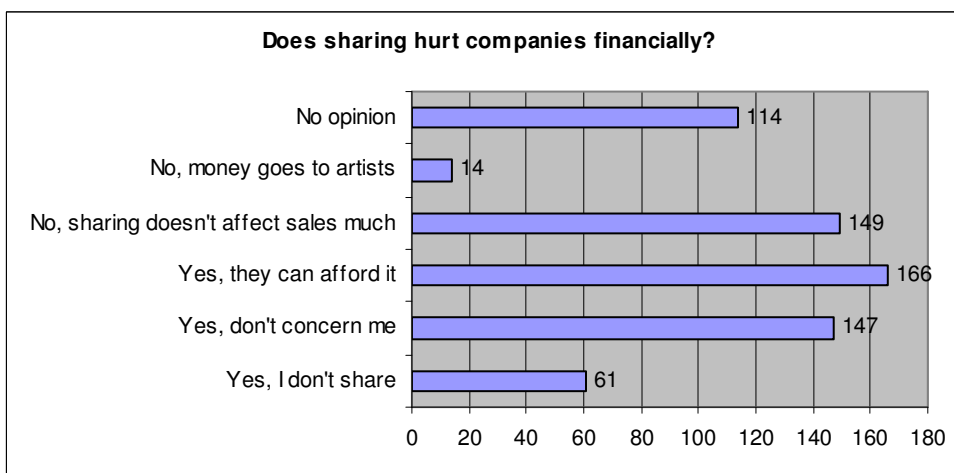
Almost half of all respondents think that sharing movies and music in P2P networks hurts performing artists financially (3 bottom bars in graph 4), 34% think that it does not and 17% have no opinion.



Graph 4: Does sharing hurt artists financially?

The most usual opinions were that the sharing does not affect the sales enough to cause financial losses to the artists and that it does, but that does not concern the respondents. There were variances in the answers of the different age groups: Respondents under the age of 20 think that sharing in P2P networks hurts the artists, no matter if they are concerned with the matter or not, while older respondents tend to think that sharing does not affect sales very much, or that the money from record sales goes to big companies instead of the artists.

Over half of all respondents think that sharing in P2P networks hurts record and movie companies financially (bottom 3 bars in graph 5), 25% think that it doesn't and 18% have no opinion.



Graph 5: Does sharing hurt companies financially?

The most usual opinions between all of the respondents are that the companies can afford it, that they are not concerned about the losses, and that the sharing does not hurt the sales enough.

Respondents under 16 and 21-25, think that sharing hurts the companies but they can afford it, also females between the ages 16-20 felt this way. Males between the same ages acknowledged that it

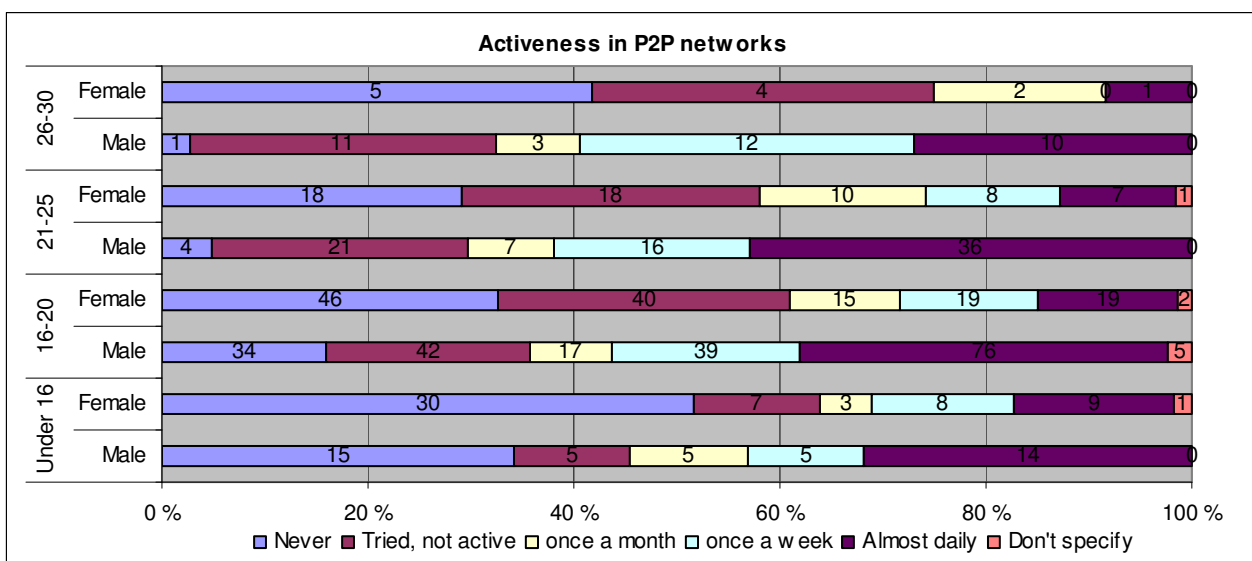
does, but they are not concerned with the fact. Between the ages 26-30 the most usual opinion was that sharing does not hurt the companies because it does not affect the sales that much.

Findings support the theory that a large part of people believe P2P networks to be a good way to “get back” at the big companies, by taking over the means of distribution. The data also shows that a large number of people simply share material because they can; they know that companies and artists lose the money because of it, but are not concerned with the fact of think that they can afford it.

### 5.5 Activity in P2P networks

43% of all respondents use P2P networks daily or weekly, 10% use them monthly, 46% have never tried or are not active and 1% doesn't wish to specify

As can be seen from graph 6, in all of the age groups, a relatively bigger portion of males than females say that they use P2P networks daily or weekly. The results confirm the theory that males do show a stronger tendency to use P2P networks as females. The most active users of P2P networks are males between the ages of 21-25 from whom 62% say that they use P2P networks daily or weekly. Next come males between the ages of 26-30 (60%) and 16-20 (54%).



Graph 6: Activeness in P2P networks

The least active users of P2P networks are females between the ages 26-30 from whom 75% have never used P2P networks, or have tried, but are not active users. Next come females under 16 years of age (64%), and females between the ages 16-20 (61%).

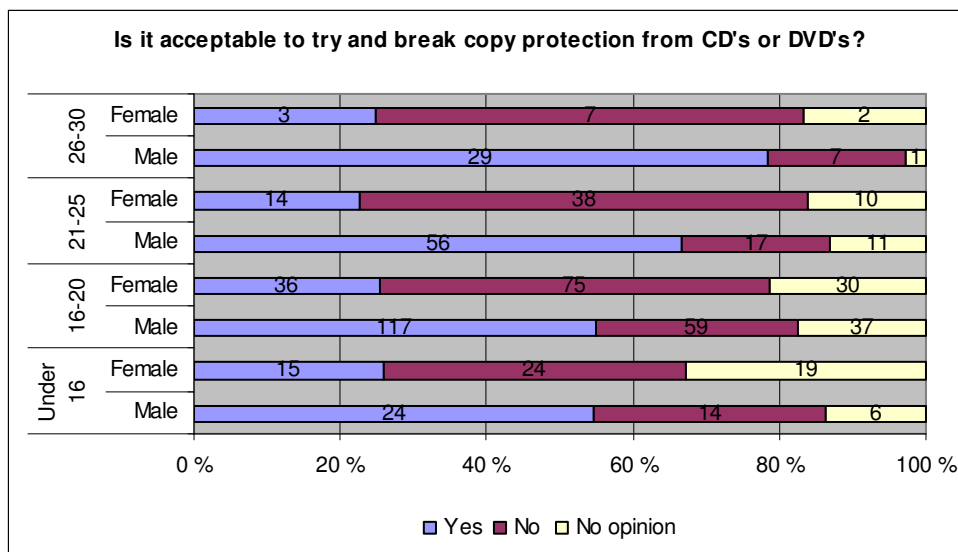
Only 9% of all respondents are active first sources; they copy material for example from CD's and DVD's and share them with other users of P2P networks. 20% have copied and shared some, but the majority of 69% have never copied CD's and DVD's or have copied some but not shared them in P2P networks. 2% do not wish to specify.

The most active first sources were young males between the ages 21-25, 17% of them copy and share material actively, Next come males 16-20 (16%) and males under 16 (14%). With female

respondents the same age, the number of active first sources was considerably smaller (between 0-3%)

### 5.6 Copy protection and watermarking

The majority of all respondents thought that if a CD is copy protected or watermarked, the consumers should be notified of the fact for example by a sticker on the cover. When asked if it is acceptable to break copy protection or watermarking, there was a difference in the answers of females and males. As you can see from graph 7, the majority of females in each age group oppose on this kind of activity when most men find it acceptable.



Graph 7: Is it acceptable to try and break copy protection from CD's and DVD's?

The majority of all respondents (70%) think that the kind of copy protection scheme cannot be created that nobody can break. Females were slightly more optimistic than men, an average of 19% of them thought that it could be developed when the same number with men was 12%.

The respondents commented that copy protection and watermarking are not really effective protection because there is always someone who take them as a challenge, and anything man made can be cracked by another. Copy protection was also seen as negative because some consumers say that they spoil the product, as CDs and DVDs with copy protection are not able to play on all devices.

Watermarking was seen as a more positive development, since it does not restrict the use of the products. The respondents felt that as the buyers name can be included in the watermark it is discouraging people from copying and distributing illegal copies.

### 5.7 Anti-piracy and educational campaigns

The respondents commented that campaigns should be scarier and include live examples of what happens when you get caught, just telling people that they should not download is not going to work. They should be more visible in everyday life and more use should be taken of the media; for example in Finland there are copyright websites by the concerned industries that might have a very good design and content, but not that many interested visitors.

They campaigns could include people whose lives piracy effects and people look up to, movie and music stars so that the “bell of conscience” would start ringing. Some respondents did however feel that seeing rich stars feature in these advertisements might make people annoyed. This is a justified point, as we saw earlier (see graph 4) many respondents said that they are not concerned with the fact that artists might be losing money, and that if they are, they can afford it. A negative point was also that when the advertisements are located in the beginning of a movie that has already been purchased, they target the wrong people.

The respondents commented that the education about copyright issues should be started earlier in schools, but not with campaigns that feel more like commercials or propaganda than education.

### 5.8 Cuckoo eggs

The respondents felt that Cuckoo eggs are annoying when you stumble on them, but have no real effect since the users can download the song again so many times that they get the file they were searching for, and because the rating system in these networks makes sure they do not survive long in P2P networks. Although some might be scared when downloading a fake file and listening to the message, others can take it as an attack, get angry and download more material. This of course in turn alienates fans.

To be effective, the respondents felt that Cuckoo eggs should be leaked to the networks in very massive quantities, or designed in a way that they play once and then become useless so that they would be harder to notice and would not get deleted straight away.

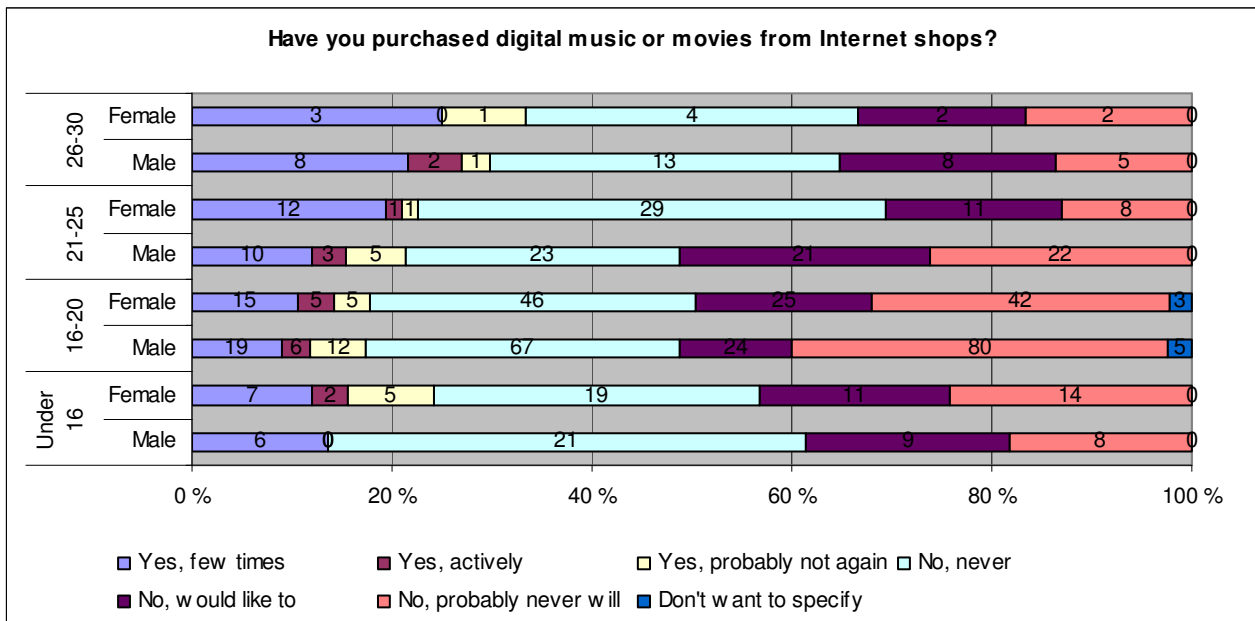
### 5.9 Opendisc

The respondents felt that value-adding content to a traditional product like a CDs is a good idea, if the bonus content is worth the interest. Some respondents however pointed out that eventually someone would post the exclusive material offered to P2P networks.

Discs that have this feature should be advertised more, as very few people know about them. They could include for example extra sons, videos, photos, interviews, documents, screensavers, e-cards, games, karaoke and instrumental versions of songs.

### 5.10 Internet shops

Only 3% of all respondents are active users of Internet shops that sell digital music and movies, 12% have used them a few times. 5% have used them in the past but are somehow disappointed and will probably not use them again. 34% of all respondents have never used Internet shops, 17% have never used them but show an interest and 28% say that they never will. 1% did not specify.



Graph 8: Have you purchased digital music or movies from internet shops?

There are no big differences in the answers of males and females in the age groups, but the part of respondents that have used internet shops, actively or just a few times, grows relatively bigger as the age increases; in age groups under 20 the average is 15% when in the age groups 21-30 it is 22%.

The adoption of Internet shops seems to be slow amongst Finnish teenagers and young adults, and the improvement suggestions provided by the respondents are as follows:

- Also big and well known stores like iTunes should offer country specific material
- Smaller stores should have better marketing, as they are hard to find.
- The selection in should be larger.
- Internet shops should be easier to use
- Lossless coding should be used so that the quality of sound is as good as in CDs
- DRM should be removed, purchasing an MP3 file or a movie is not worth the while if you cannot use it the way you want.
- Prices should come down to a more consumer attractive level, as there is no physical product, this could be accomplished for example if the companies started to sell their products directly online, thus removing the “middle man”.
- The file used in shops should be unified so that there are no worries about compatibility with for example MP3 player.

#### *Subscription vs. pay per download*

Out of all respondents 41% would like to use a pay per download type of service when 27% chose subscription. 32% had no opinion. Although both genders favour the pay per download model, a relatively larger portion of males was in favour of subscription based stores.

#### *Price in internet shops*

Generally, older age groups are willing to pay more for internet shops than younger, and females are willing to pay more than males. This can be seen for example from graph 9 below.

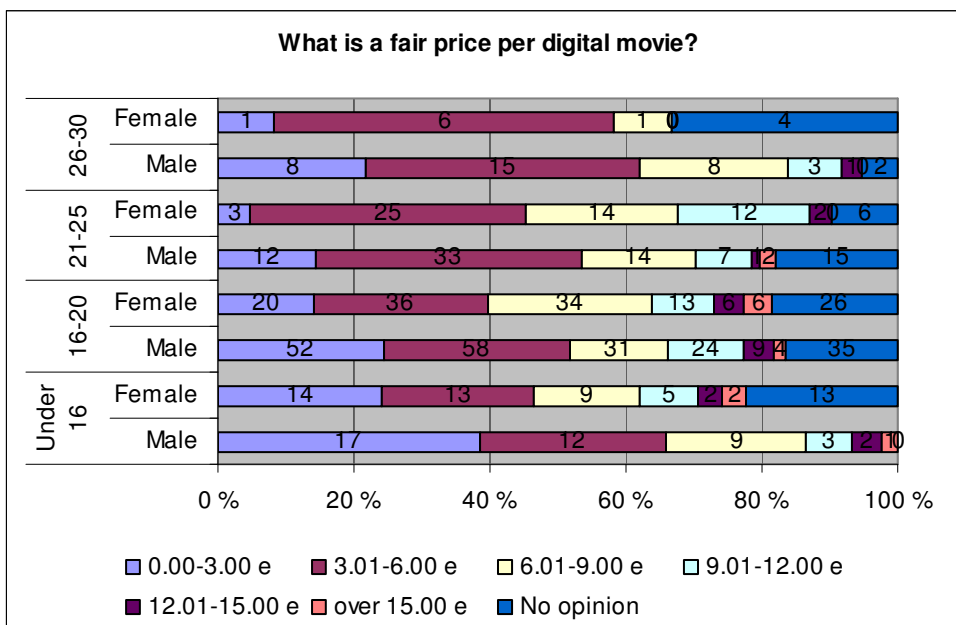
#### *Digital movies:*

Two shops compared for prices, Movielink.com (does not work outside US) sells movies for 1,5e - 3.84e and cdon.com for 4.95e.

- 20% of all respondents think that a fair price for a digital movie is 0-3.00 euros,
- 30% think that it is 3.01-6.00e
- 18% would pay 6.01-9.00 e
- 16% would be willing to pay more than 9 euros.
- 16% had no opinion

Young males and females under 16 give the least value to a digital movie, majority of them thinking that it is worth 0-3 euros, while the majority all of the other age groups think that it is between 3-6 euros.

The prices for movies are close to the price that the customers are willing to pay as 50% of all respondents think that the current prices are fair. What has to be noted is that the movies only remain on the computer a certain period of time, and once you have started to watch, only 24 hours. Basically consumers rent them from the store



Graph 9: what is a fair price for a digital movie?

### Digital music:

Three shops were compared for their prices for currently released songs; in NetAnttila.com it was 1.19e/song, in cdon.com and Musiikkilataamo.hs.fi 0,99e/song.

- 30% of the respondents think that a fair price for a music track is 0-0.30e
- 24% felt that it is 0.31-0.60e.
- 15% would pay 1.61-0.90e
- 14% of the respondents would be willing over 0.90e for a single music track.
- 17% had no opinion

There is a big difference in what the stores are asking and what the customers are willing to pay, as only 15% of all respondents would be willing to pay the current price. Consumers expect a lower price when there is non physical copy that costs less to manufacture

*Subscription:*

Two subscription based internet shops were compared for prices. Emusic.com offers 40 music downloads for 12.99e/month, and movieflix.com offers unlimited movies for 6e/month.

- 18% of all respondents think that a fair price for an internet shop with a monthly fee is 0-5 euros.
- 19% would be willing to pay 5-10 euros,
- 15% 10-15e,
- 13% 15-20e, and
- 12% over 20e
- 23% had no opinion

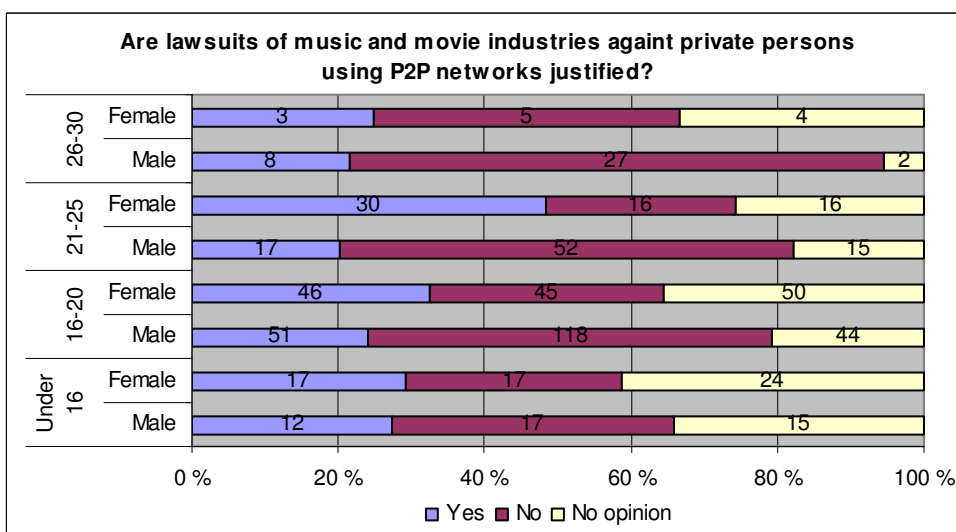
Most usually respondents would prefer to pay 5-10 euros but there are exceptions, females between 16-20 and 21-25 would pay up to 15-20 euros and males under 16 and 16- 20 year old of age not like to pay more than 0-5 euros.

The price in these two shops varied much, as music is over half more expensive than movies. One thing that could explain this is that movieflix has quite narrow selection, I could not find any new movies, but right at the front page they advertised a comedy by Shirley Temple.

5.8 Enforcing legal protection

Of all respondents, 65% think that downloading music and movies from P2P networks can't be compared to stealing a physical copy from the shop. 18% think that they can be compared and 17% had no opinion. There were no big differences in the answers of different genders or age groups, all felt strongly the same.

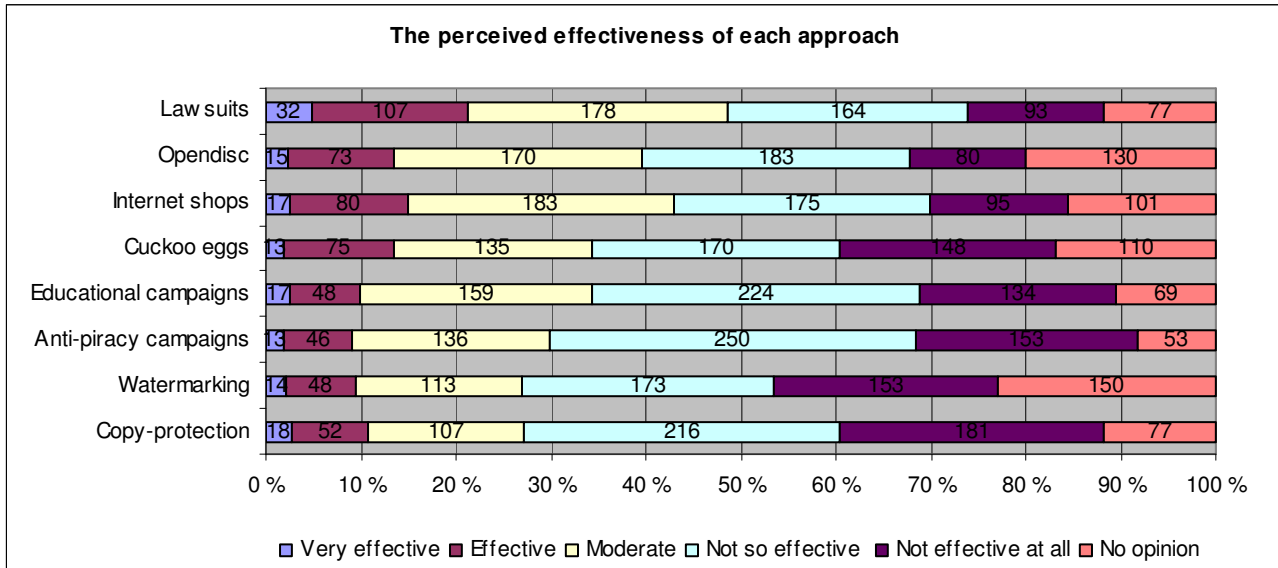
28% of all respondents think that lawsuits of the music and movie industries against private persons are justified, when 46% think that they are not. A relatively bigger part of females (34%) than males (23%) think that the lawsuits are justified.



Graph 10: Are lawsuits of the industries against private persons using P2P networks justified?

5.9 Effectiveness of different approaches

In each section of the questionnaire the respondents were introduced an approach that the music and movie industries have used to try and stop the sharing of copyrighted files in P2P networks. They were then asked to measure the effectiveness of the on a scale that can be seen in graph 11 below:



Graph 11: The perceived effectiveness of each approach

As can be seen from Graph 11 above, the percentage of the respondents that find the approach very effective or effective is small compared to the percentage of those that find the approach not so effective or not effective at all, the situation was the same with all approaches.

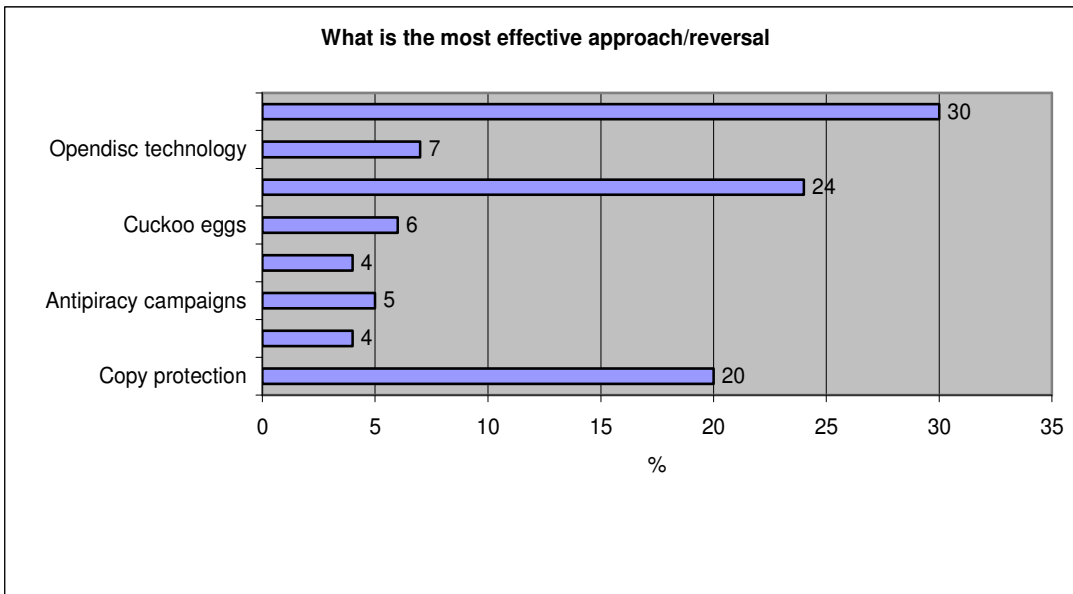
The approach that the respondents felt was the most effective is clearly lawsuits, next come Internet shops, cuckoo eggs, Opendisc technology and copy protection.

The least effective ways to stop file sharing in P2P networks were seen to be Anti-piracy and educational campaigns and watermarking.

Female respondents were generally more positive about the effectiveness of each approach, with the exception that males were more optimistic about Internet shops.

#### *Effectiveness by age groups*

In the end of the questionnaire, when the respondents had been able to view all of the approaches, they were asked to state which one of the approaches employed by the music and movie industries they would choose to be the most effective. This acted as a reversal question to the ones asked in each section.



Graph 12: What is the most effective approach? (Reversal)

When looked as a whole, clearly the respondents feel that lawsuits are the most effective way to stop the sharing of copyrighted movies and music in P2P networks. The second most successful were Internet shops and the third most successful was surprisingly copy protection to which it seems young women have the most faith.

The most effective approaches by age and gender are as follows:

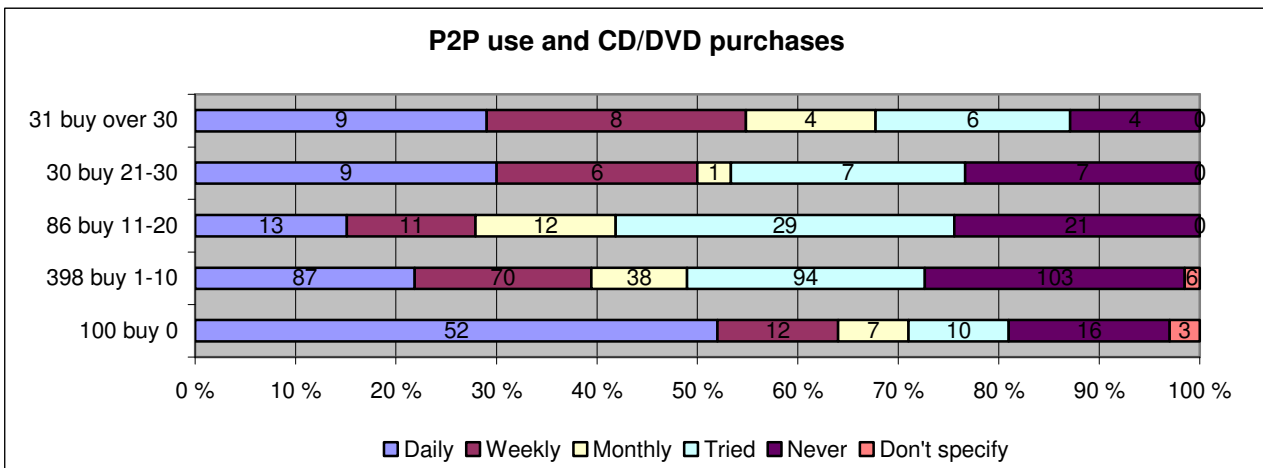
	Male	Female
<b>Under 16</b>	Lawsuits	Copy protection
<b>16-20</b>	lawsuits	Copy protection
<b>21-25</b>	Internet shops	Lawsuits
<b>26-30</b>	Internet shops	Lawsuits

### 5.10 Cross analysis

This section features some basic cross analysis of all responses; they were not divided by age or gender. The chapter will look into three different aspects: 1) is there a connection between how much you use P2P networks and how many CDs/DVDs you buy per year. I.e. do active downloaders really buy less than others? 2) Do those people that think that downloading for private use think that there will be no financial harm from their actions to businesses or artists? 3) Do active file sharers and first sources respond differently to any approaches than those who are not active P2P users?

#### 5.10.1 Is there a connection between P2P use and CD/DVD purchases?

The aim is to see if the respondents that use P2P networks actively buy less CDs and DVDs than the other respondents.



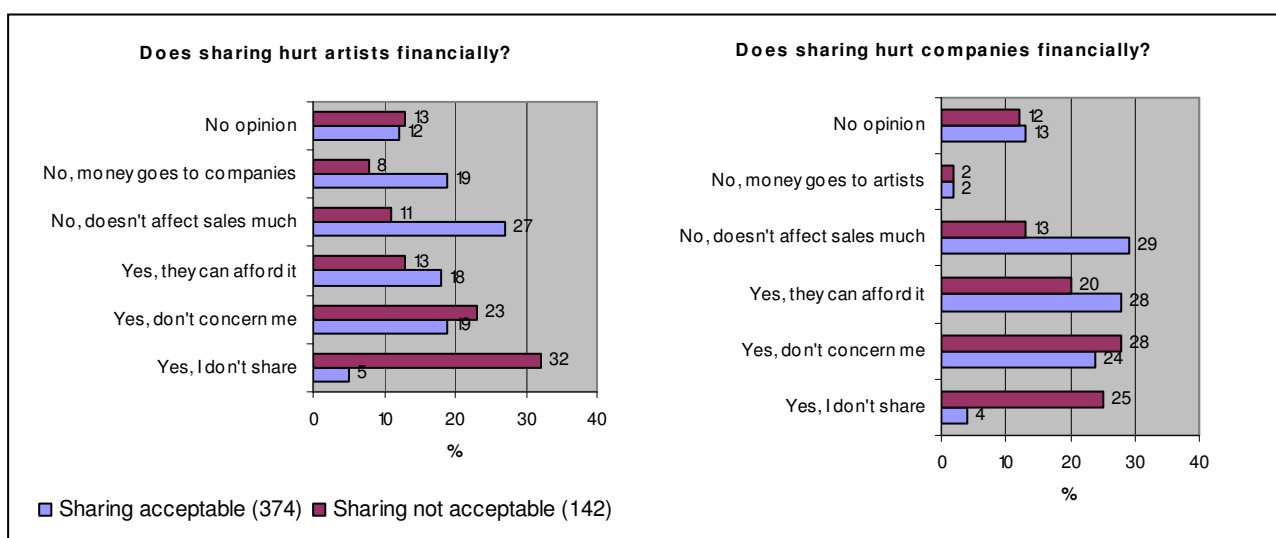
Graph 13: P2P Activity & CD/DVD purchasing

It seems that there is a connection, as over half of those respondents who do not buy any CD's or DVD's at all per year use P2P networks daily. What is surprising is that P2P use is high also in those groups who buy very many CD's and DVD's. This fact supports the former theory that many people use P2P networks to sample before they buy anything and that the young people who are most active users of P2P networks are also most active in buying CD's and DVD's. (Geist 2006; Bhattacharjee et al. 2003; Wang, 2004; Brandell, 2006)

It is evident that P2P use is a factor why some people do not buy any CDs and DVDs, but also for example the facts that that 70% of the respondents in the survey are under 20 years of age (do not have as much money to spend on these as those who are in the working life), and that as found out earlier, people think that CD's and DVD's cost too much, must be taken into account.

### 5.10.2 Do those that accept sharing think it doesn't hurt artists or companies?

The answers of those who think that downloading for private use is acceptable were compared with the answers of those who think that it is not, to see how their opinions differ in the matter if the sharing that goes on in P2P networks hurts financially either artists or companies.



Graph 14: Does sharing hurt artists or companies financially

The difference was easily noticed, the most usual answer of those respondents who accept downloading for private use was that it does not hurt either artists or the company because it does not really effect the sales that much.

The most usual answer of those respondents who did not accept downloading for private use was that they do not download because it hurts the artists and that sharing indeed does hurt the companies too, but they are not concerned with that fact.

### 5.10.3 Do active file sharers and first sources respond differently to approaches?

The groups that will be investigated here are the respondents that use the networks daily or weekly and those that act as active first sources copying for example CDs and DVDs and sharing them online. Their answers will be compared with those who have never used them or have tried but are not active users.

Active P2P network users and first sources were more pessimistic about the effectiveness of different approaches than non-downloaders; an average of 16% of non-downloaders found different approaches effective or very effective when the corresponding number with downloaders and active first sources was about half smaller.

All three groups found lawsuits to be the most effective way to stop file sharing, but there was a difference in the second most effective: Non downloaders found it to be copy protection while the two other groups had less faith in technological solutions and instead chose Internet shops.

	<i>Most effective</i>	<i>2<sup>nd</sup> most effective</i>		<i>Least effective</i>
<i>Active downloaders (279)</i>	Lawsuits	Internet shops		Watermarking, anti-piracy & educational campaigns
<i>Active first sources (61)</i>	Lawsuits	Internet shops		Opendisc/watermarking, Anti-piracy campaigns
<i>Non active downloaders (301)</i>	Lawsuits	Copy protection		Opendisc, educational campaigns, watermarking

An anonymous respondent puts into words the common opinion of many: “The industries are not adapting their sales model to the new technology fast enough. P2P attracts users because of its ease of use and amount of content. Stop treating customers like criminals and start listening what we want and how.”

These results show that what is needed to be done to curb the file sharing that goes on today, the most promising approaches (in addition to suing people) to appeal to the users of the P2P networks are not restricting the use of material by adding technological solutions that can be cracked, but developing flexible new business models to appeal more to the consumers with offering digital material with competitive pricing.

## 6 CONCLUSIONS

*This chapter provides the answers to the research questions asked as well as recommendations for future research*

### 6.1 Findings and conclusions

#### *6.1.1 RQ1*

*What are the opinions of young adults concerning sharing copyrighted music and movies via P2P networks?*

The respondents have an acceptable opinion towards downloading for private use although a large part of them think that it hurts not only movie and music companies financially but also the performing artists. The respondents who accept downloading for private think that it does not hurt either artists or the company because it does not really effect the sales that much. Those respondents who don't accept downloading for private say that they do not download because it hurts the artists and that sharing indeed does hurt the companies too, but they are not concerned with that fact

Almost half of all respondents are active file sharers; they use P2P networks daily or weekly. Males are more active file sharers as females. Only a very small part of the respondents acts as active first sources; copying material for example from CDs and DVDs and making them available in P2P networks. A large majority of respondents think that downloading music and movies can't be compared to stealing a physical copy from the shop, and a common opinion was that lawsuits of the music and movie industries against private persons are not justified.

#### *6.1.2 RQ2*

*What is the perceived effectiveness of the approaches taken to stop the sharing of copyrighted files in P2P networks by teenagers and young adults?*

When asked to reflect on the effectiveness of one approach at a time, each was seen to be more ineffective than effective. Lawsuits, Internet shops and copy protecting CDs and DVDs were generally seen as the most effective ways to stop the file sharing in P2P networks, educational and anti-piracy campaigns and watermarking were seen to be the least effective ways.

Active P2P network users and first sources are more pessimistic about the effectiveness of different approaches than those who do not use them. These groups do not pick technological solutions like copy protection as the most effective as often as non downloaders, instead they choose Internet shops, Opendisc technology and lawsuits.

#### *6.1.3 RQ3*

*How could these approaches be made more efficient according to teenagers and young adults?*

The respondents strongly felt that consumers should be notified if a CD or a DVD *is copy protected or watermarked*, for example by inserting a sticker on the cover as has been done in the US. Copy protection is not welcomed because it restricts the use of the product but watermarking received mostly positive feedback, pointing out for example that this technological solution does not restrict the use of the file, but still discourages file sharing.

*Anti-piracy and educational campaigns* should include live examples of what happens to those who get caught. Including people that are looked up to, like movie stars and musicians has more impact

than anonymous advertisements. Respondents felt that these campaigns should be more visible, but using them in schools sparked controversy as some people feel that educating youth about copyright issues could be started earlier while others strongly felt that these campaigns should be kept away from schools at least as long as they feel more like commercials than proper education.

*Cuckoo eggs* are mostly found more annoying than effective. It is noted that they might irritate to download more or alienate fans. Because cuckoo eggs do not normally survive long in P2P networks and anyone can download the song over again until they get the real thing, to be effective they should be leaked in very massive quantities. Also instead of using messages from artists, it was suggested that they were designed so that they only play once and become useless so that they would be harder to detect.

*Internet shops* were seen as a welcomed development but only a very small percentage of all respondents are active users, to improve the situation respondents felt that stores could be marketed more and prices should be lower since there is no physical product, one solution for this was that the companies could sell directly, removing the middle men. The current price for digital music is much bigger than what the consumers are willing to pay; the price for movies is at a more attractive level even though most shops only “rent” the movies for a limited time. Consumers clearly favour a pay per download business model over a subscription-based service.

What was desired was more country specific material to bigger stores like iTunes and ease of use, the same standard file format should be used in all Internet shops so that there is no worries about compatibility with your player. It was also very evident that consumers feel DRM should be removed so that the use of the file is not restricted and that lossless coding should be used so that the sound quality is not worse than in CDs.

*Opendisc* was found a welcomed development as it adds value to the content but discs with this feature should be advertised more. The drawback was that eventually someone might take bonus content offered and post it online. Opendisc could offer consumers for example extra songs, music videos, interviews, screensavers, e-cards, games, tour videos, karaoke versions of songs and so on

#### *6.1.4 other findings*

The knowledge of the respondents about copyright was relatively good; the majority knows what it protects, even though they did not have as good knowledge about how long it lasts or if it has to be applied for.

Females think that it is not acceptable to try and break copy protection or watermarking when most males find it acceptable. The majority of all respondents think that the kind of copy protection scheme or watermarking cannot be created that nobody can break as there is always someone who takes breaking them as a challenge.

The majority of the respondents buy 1-10 music albums and movies per year, and 10% buy more than 20. Females are more active buyers than men, and older age groups more active than the younger. The reason for the latter can be that older age groups usually have more money to spare since they might already have entered the working life.

Over half of those respondents who do not buy any CDs or DVDs at all per year use P2P networks daily, in addition to downloading, one reason for this might also be the fact that the majority of all respondents think that both are too expensive. P2P use is very high also in those groups who buy

very many music albums or movies. This supports the former theory that many use P2P networks to sample before they buy, and that young people who are active users of P2P networks are also most active in buying CDs and DVDs.

## 6.2 Recommendations for future research

There are many issues still to be researched in the field of P2P network use and the attempts of the concerned industries to stop it, four examples for interesting issues to research are provided;

As this research was only concerned with the opinions of private persons it would be desirable to do the same study concentrating on the opinions of the industries; music labels, movie companies and so on, maybe as an interview study. It would be interesting to know if the opinions of the industries towards different approaches differ significantly from those of the consumers and what are the most popular approaches used in the industries today.

As this research was limited to teenagers and young adults under the age of 30, a similar study could be done also including older age groups to see how their opinions towards issues concerned with P2P networks differ.

In the theory part of the thesis, different kinds of P2P network users were identified by their behaviour: The super swappers, the collectors, the first sources etc, but this factor was not reflected on the research. It could be an interesting idea to research how many percentages of P2P network users belong to each group.

Most of the respondents of this study were Finnish, and so the answers cannot be generalized anywhere else. It would be interesting to do a similar study with a different geographic coverage to see if there are differences in opinion with same age groups depending on their nationality.

## 7 TERMS USED

*BPI (British Phonographic Industry)*. Trade association for British record industry; music companies and associate members like manufacturers and distributors (BPI [2])

*Copyright*. A protection that covers published and unpublished literary, scientific and artistic works, whatever the form of expression, provided such works are fixed in a tangible or material form (Whatiscopyright.org)

*Downloading*. The process of fetching a file from a distant computer (a server or a PC) and transferring it to your own computer.

*File sharing*. A means by which individuals make files on their personal computers available to others to download via the Internet. (BPI [1])

*MPAA, (Motion Picture Association of America)*. Trade group that represents American motion picture, home video and television industries. (MPAA [1], 2006)

*Network*. A computer network is a system for communication between computers. These networks may be fixed (cabled, permanent) or temporary (as via modems).

*Opinion*. “A personal belief or judgment that is not founded on proof or certainty” (Princeton WordNet)

*Peer-to-peer (P2P) network*. Internet network that enables file sharing between private persons by taking advantage of the resources that lie on personal PC’s. (Shirky, 2000)

*Piracy*. Distributing copyrighted material without the consent of the rights holder; copying music or movies to digital files and sharing them in a P2P network, making mix tapes and more professional piracy aimed at making profit distributing this material. (Copyright protection and anti-piracy centre. 2006, RIAA [3])

*Server*. A computer that contains the services and information intended for the use of the Internet service. (Lammi et al, 2000)

*RIAA, (Recording industry association of America)*. A trade group that represents the recording industry in the US. (RIAA [1], 2006)

*WIPO (World Intellectual Property Organisation)*. An agency of the United Nations to develop an international intellectual property system that rewards creativity, contributes to economic development and safeguards public interest. (WIPO [1], 2006)

*Young adult*. The intermediate period between adulthood and such as adolescent, youth or teenager. In health and human development, roughly ages 16 to 30. In psychology, people of the age 20 to 40 are considered young adults. (Wikipedia)

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*Note that as some of the references are in Finnish language, own English translations of the titles were made that can be seen in brackets after the original title of the article or book.*

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## APPENDIX 1 – Questions for the survey

### APPENDIX 1 – Questions for the survey

#### *Background*

- 1 What is your age group?
  - Under 16
  - 16-20
  - 21-25
  - 26-30
  - 31-40
  - 41-50
  - Over 50
- 2 What is your gender?
  - Male
  - Female
- 3 What is your nationality?
  - Drop down list with automatic options
- 4 How many music CD's or movie DVD's do you approximately buy per year?
  - None
  - 1 to 10
  - 11 to 20
  - 21 to 30
  - More than 30
- 5 What do you think about the cost of music CD's and movie DVD's today?
  - The cost of CDs and DVDs is OK
  - The cost of DVDs is too high
  - The cost of CDs is too high
  - The cost of both CDs and DVDs is too high
  - I do not have an opinion

#### *Copyright*

- 6 Which ones of the following can be protected by copyright?
  - Books and movies
  - Buildings and databases
  - Photos and paintings
  - Songs and stories
  - All of the above
  - None of the above
  - I do not know
- 7 Do you have to apply to get your work a copyright?
  - Yes
  - No
  - I do not know
- 8 How long does the copyright approximately last?
  - 20 years
  - 50 years
  - The lifetime of the creator
  - 20 years after the death of the creator
  - 50 years after the death of the creator
  - Copyright is forever
  - I do not know

#### *P2P networks*

- 9 Have you used P2P networks to download or share copyrighted music or movies?

## APPENDIX 1 – Questions for the survey

- Never  
I have tried but am not an active user  
Once a month  
Once a week  
Almost daily
- 10 Have you copied copyrighted music or movies (for example from a CD or a DVD), and shared them in a P2P network?  
I have never copied music and movies  
I have copied some music and movies but I have not shared them  
I have copied some music and movies and shared them  
I copy music and movies and share them actively
- 11 Do you think that it is acceptable to download copyrighted music and movies from P2P networks for personal use?  
Yes  
No  
I do not have an opinion
- 12 Do you think that sharing copyrighted music or movies in P2P networks harms the performing artists financially?  
Yes, that is why I do not download or share  
Yes, but it does not concern me  
Yes, but they can afford it  
No, it does not affect sales that much  
No, the money from sales goes to record and movie companies  
I do not have an opinion
- 13 Do you think that sharing copyrighted music and movies in P2P networks harms the record and movie companies financially?  
Yes, that is why I do not download or share  
Yes, but it does not concern me  
Yes, but they can afford it  
No, it does not affect sales that much  
No, the money from sales goes to artists  
I do not have an opinion

### *Copy protection*

- 14 Do you think that if a CD containing music or a DVD containing a movie is copy protected, the consumers should be informed of this? (for example a sticker in the cover)  
Yes  
No  
I do not have an opinion
- 15 Do you think that it is acceptable to try and break copy protection from for example movie DVDs?  
Yes  
No  
I do not have an opinion
- 16 Do you believe that the kind of copy-protection scheme can be developed that nobody can break?  
Yes  
No  
I do not have an opinion
- 17 How effective do you think that copy protection is on stopping people from sharing copyrighted music and movies in P2P networks?  
Very effective

## APPENDIX 1 – Questions for the survey

Effective  
Moderate  
Not so effective  
Not effective at all  
I do not have an opinion

### *Digital watermarking*

- 18 Do you think that if a CD containing music or a DVD containing a movie is watermarked, the consumers should be informed of this? (For example a sticker in the cover)?  
Yes  
No  
I do not have an opinion
- 19 Do you think that it is acceptable to try and break watermarking from for example movie DVDs?  
Yes  
No  
I do not have an opinion
- 20 How effective do you think that watermarking is on stopping people from sharing copyrighted music and movies in P2P networks?  
Very effective  
Effective  
Moderate  
Not so effective  
Not effective at all  
I do not have an opinion
- 21 Do you have any comments on copy protection and watermarking or suggestions on how they could be improved?  
Open-ended question, respondent can provide own answer

### *Anti-piracy campaigns*

- 22 How effective do you think that anti-piracy campaigns are stopping people from sharing copyrighted music and movies in P2P networks?  
Very effective  
Effective  
Moderate  
Not so effective  
Not effective at all  
I do not have an opinion
- 23 Do you have any comments on anti-piracy campaigns or suggestions on how they could be improved?  
Open-ended question, respondent can provide own answer

### *Educational campaigns*

- 24 How effective do you think that educational campaigns are on stopping people from sharing copyrighted music and movies in P2P networks?  
Very effective  
Effective  
Moderate  
Not so effective  
Not effective at all  
I do not have an opinion

## APPENDIX 1 – Questions for the survey

- 25 Do you have any comments on educational campaigns or suggestions on how they could be improved?  
Open-ended question, respondent can provide own answer
- 26 Could educational campaigns be used anywhere else besides schools?  
Open-ended question, respondent can provide own answer

### *Cuckoo eggs*

- 27 How effective do you think that cuckoo eggs are stopping people from sharing copyrighted music and movies in P2P networks?  
Very effective  
Effective  
Moderate  
Not so effective  
Not effective at all  
I do not have an opinion
- 28 Do you have any comments on Cuckoos eggs or suggestions on how they could be improved? Could they contain other things besides messages?  
Open-ended question, respondent can provide own answer

### *Internet shops*

- 29 Have you ever purchased digital music or movies from Internet shops?  
Yes, a few times  
Yes, actively  
Yes, but I will probably not use them again  
No, never  
No, but I would like to  
No, and probably never will
- 30 How much do you think is a fair price per purchased digital music track?  
0.30-0.60 euros  
0.61-0.90 euros  
0.91-1.20 euros  
1.21-1.50 euros  
Over 1.50 euros  
I do not have an opinion
- 31 How much do you think is a fair price per purchased digital movie?  
3.00-6.00 euros  
6.01-9.00 euros  
9.01-12.00 euros  
12.01-15.00 euros  
Over 15.00 euros  
I do not have an opinion
- 32 How much do you think is a fair price for subscription based Internet shops that have a monthly fee?  
5.00-10.00 euros  
10.01-15.00 euros  
15.01-20.00 euros  
20.01-25.00 euros  
Over 25.00 euros  
I do not have an opinion
- 33 Would you rather use a subscription based Internet shop or a shop where you pay per each purchase?

## APPENDIX 1 – Questions for the survey

Subscription

Pay per download

I have no opinion

- 34 How effective do you think that Internet shops are on stopping people from sharing copyrighted music and movies in P2P networks?

Very effective

Effective

Moderate

Not so effective

Not effective at all

I do not have an opinion

- 35 Do you have any comments on these Internet shops that sell digital music and movies, or suggestions on how they could be improved?

Open-ended question, respondent can provide own answer

### *Opendisc technology*

- 36 How effective do you think that Opendisc is on encouraging people to buy more CD's instead of downloading them from P2P networks?

Very effective

Effective

Moderate

Not so effective

Not effective at all

I do not have an opinion

- 37 What kind of material would you like to receive with Opendisc technology?  
(For example screensavers, photos, music videos etc)

Open-ended question, respondent can provide own answer

### *Enforcing legal protection*

- 38 Do you think that lawsuits of the music and movie industries against private persons are justified?

Yes

No

I do not have an opinion

- 39 Do you think that downloading music or movies from the Internet from P2P networks can be compared to stealing them from the shop?

Yes

No

I do not have an opinion

- 40 How effective do you think that lawsuits are on stopping people from sharing copyrighted music and movies in P2P networks?

Very effective

Effective

Moderate

Not so effective

Not effective at all

I do not have an opinion

### *Conclusions*

- 41 Which attempt do you see as being the most effective in stopping people from sharing copyrighted music and movies in P2P networks?

Copy protection, preventing the duplication of a CD or a DVD

## APPENDIX 1 – Questions for the survey

Watermarking, inserting copyright information into possible copies

Antipiracy campaigns, appealing into peoples conscience in the for of for example advertisements

Educational campaigns, educating people about the negative sides of sharing copyrighted files

Cuckoo eggs, planting bogus files on P2P networks that might contain for example warning messages

Internet shops, selling music and movies trough authorized sources

Opendisc technology, providing customers with more content with their purchases

Lawsuits, Suing private persons who share copyrighted content on P2P networks

- 42 Do you have any additional suggestions on how the music and movie industries could stop the sharing of copyrighted music and movies on P2P networks?

Open-ended question, respondent can provide own answer