LAPPEENRANTA UNIVERSITY OF TECHNOLOGY
Faculty of Technology Management
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International Operations and Marketing in Industrial Enterprises

MASTER'S THESIS

MOBILE MUSIC MARKETING: WILLINGNESS TOWARDS MOBILE MUSIC RECOMMENDATIONS AND VIRAL MARKETING

The subject of the thesis was approved by the council of the Faculty of Technology Management on the 27th of August 2007.

Supervisor of the thesis	Professor Juha Väätänen
Instructor and supervisor	Professor Marko Torkkeli

In Kouvola 18th of September 2007

Henriikka Peni
Ruotsulantie 29 b 19
45100 Kouvola
+358400620243

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Henriikka Peni

ABSTRACT

Author: Henriikka Peni

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Mobile phones have become new marketing channels. People can be reached anytime, any place and it is possible to send personalized messages or to offer personalized services. Viral marketing can be utilized to spread the message via mobile channel as it has been done in the internet. In this study it is being focused on mobile music recommendations and how people would accept them and would they be willing to forward the message to their friends.

Mobile music survey was conducted in order to find out customers' willingness to receive personalized music recommendations to their mobile phones and their willingness towards viral marketing. There were altogether about 1300 students to respond to the survey.

The results of the survey suggest that there is to be done a further research among mobile phone users that are under 18 years old. There were discovered factors that are affecting on students' willingness to receive mobile music recommendations and their willingness towards viral marketing.

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Matkapuhelimet ovat uusia markkinointikanavia, joiden avulla ihmiset voidaan tavoittaa melkein missä ja milloin vain. Mobiilimarkkinoinnin avulla on mahdollista lähettää henkilökohtaisia mainosviestejä tai tarjota kullekin parhaiten sopivia palveluja. Viraalimarkkinointia voidaan käyttää apuna viestien levittämisessä, aivan kuten internetmainonnassa. Tässä tutkimuksessa on keskitytty matkapuhelimiin lähetettäviin musiikkisuosituksiin sekä siihen miten ihmiset suhtautuvat niihin ja olisivatko he valmiita lähettämään viestejä edelleen kavereilleen.

Mobiilimusiikkikysely tehtiin, jotta saataisiin selville asiakkaiden halukkuutta vastaanottaa musiikkisuosituksia matkapuhelimiin, sekä heidän halukkuuttaan viraalimarkkinointia kohtaan. Kyselyyn vastasi kaiken kaikkiaan lähes 1300 opiskelijaa.

Kyselyn tulokset osoittavat, että lisätutkimusta tulisi tehdä alle 18-vuotiaiden matkapuhelimenkäyttäjien joukossa. Tutkimuksen perusteella löydettiin tekijöitä, jotka vaikuttavat opiskelijoiden halukkuuteen vastaanottaa musiikkisuosituksia matkapuhelimiinsa sekä heidän halukkuuttaan viraalimarkkinointiin.

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ABBREVIATIONS

2G	Second generation mobile phone technology
3G	Third generation mobile phone technology
AAC	Advanced Audio Coding
DRM	Digital Rights Management
FOAF	The Friend of a Friend
GPRS	General Packet Radio Service
GPS	Global Positioning System
LUT	Lappeenranta University of Technology
MMS	Multimedia Messaging Services
NRC	Nokia Research Center
PDA	Personal Digital Assistant
RYM	Rate Your Music
S60	A user interface and platform for mobile phones that uses Symbian OS-operating system
SMS	Short Message Service
SPSS	Statistical Package for the Social Sciences, statistical analysis program
STT	Suomen Tietotoimisto, a Finnish news agency
TUT	Tampere University of Technology
WAP	Wireless Application Protocol
WMA	Windows Media Audio, a digital audio file format

1 INTRODUCTION

1.1 Overview

This thesis is done as a part of the Onions project with Nokia Research Center (NRC). NRC is Nokia corporate research center with special mission of long-term and high uncertainty research, which is balanced with business steering from Nokia strategic framework. Onions project was initiated in NRC in summer 2005. The goal is to enhance NRC innovation management to accelerate the creation of new business from NRC research surplus. (Karlsson 2007) During the year 2007 there are three parties in the Onions project: Lappeenranta University of Technology (LUT), Nokia Research Center (NRC) and Tampere University of Technology (TUT). The objective for LUT is to concentrate on people's willingness towards mobile music marketing and viral marketing.

We are living in an era where mobile phones play a huge role in everyday life and communication. People carry their mobile phones with them everywhere they go and mobile phones are on most of the time so that people can be reached no matter where they are and no matter what time of the day it is. This offers huge opportunities also for the marketers.

Nokia is investing a lot in the music business. In August 2006 Nokia acquired Loudeye, a global leader of digital music platforms and digital media distribution services. "*By acquiring Loudeye, Nokia can offer customers a comprehensive mobile music experience, including devices, applications and the ability to purchase digital music.*" (Nokia 2006a)

Viral marketing can be utilized in mobile phones. The idea is to get the message out to the customers who then forward it to their friends and then the message spreads like a virus. Recommendation systems use the idea of viral marketing. For example people can rate the songs they have listened to and then others can see these ratings and recommendations and based on them make their own purchasing decisions.

Figure 1 presents the basic idea of mobile marketing application. It is being assumed that advertiser is able to collect all kinds of data about consumers. The question is how to make sense of all data; i.e. produce knowledge of customer's preferences. The idea is to find out what kind of data about consumers have impact on their music preferences. Based on this information advertiser would be able to make more focused ads / recommendations for end users. (Karlsson et al. 2007a)

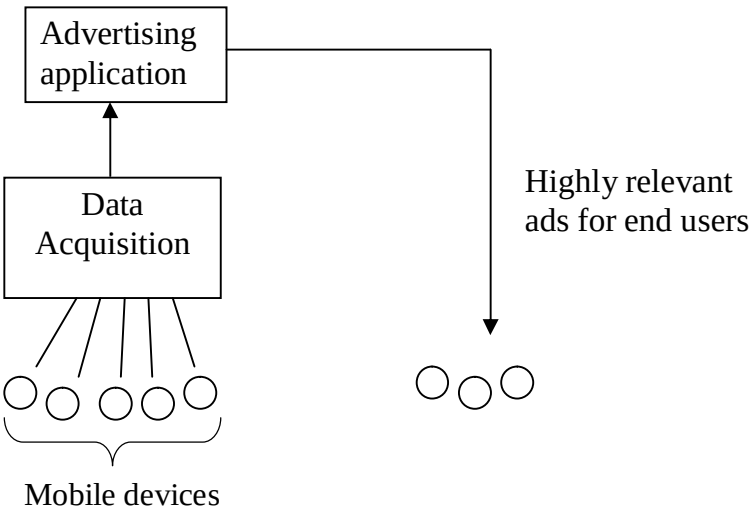

Figure 1. Mobile marketing application (Karlsson et al. 2007a)

1.2 Objectives and Restrictions

The purpose of the thesis is to find out factors affecting consumers' acceptance towards music marketing to their mobile devices and their willingness towards viral marketing. The plan is also to find out what kind of data about consumers is most important for the advertisers in order to make personalized and relevant music recommendations to consumers' mobile devices. The research questions can be phrased as follows:

What are the factors affecting consumers' willingness towards mobile music recommendations and mobile marketing?

What are the factors affecting consumers' willingness towards viral mobile marketing?

The theoretical part of the thesis consists of the literature review of mobile marketing, viral marketing, recommendation systems and mobile music. To detect consumers' opinions about mobile music marketing and factors affecting these opinions, a mobile music survey was conducted. The empirical data was mainly collected from the students of Lappeenranta University of Technology (the survey was also sent to about 70 students from the League of Finnish-American Societies). The Mobile Music Survey was sent to 5500 students of which 1299 responded (the response rate was 23.6%). The results of the survey were analyzed with SPSS-program by using correlation and cluster analyses.

Mobile marketing and viral marketing are wide concepts and this thesis is concentrating on mobile music marketing and music recommendations that utilize viral marketing. This thesis will not discuss any technical issues of the recommendation system but will concentrate on analyzes based on consumers' answers.

There is a potential user group for mobile marketing also among those under the age of 18 (Digitoday 2006). However, this study is mainly based on the user group of age 19-30 due to the fact that the survey was sent to the university students. The consumer behavior is also influenced by the region where consumers are living in and therefore it has to be taken into account that most of the respondents of the survey are living in the city of Lappeenranta, Finland.

1.3 Structure

The structure of the thesis is presented in the figure 2. Chapters 2 and 3 are based on a literature review of mobile marketing and viral marketing. Chapter 4 focuses on personalized recommendation services particularly music recommendation systems. In chapter 5 some examples of existing mobile music services and mobile phone manufacturers' music services are reviewed. Chapters 6 and 7 form the empirical part of the thesis. In these chapters the survey data is discussed and analyzes are made. Conclusions of the study are made in chapter 8.

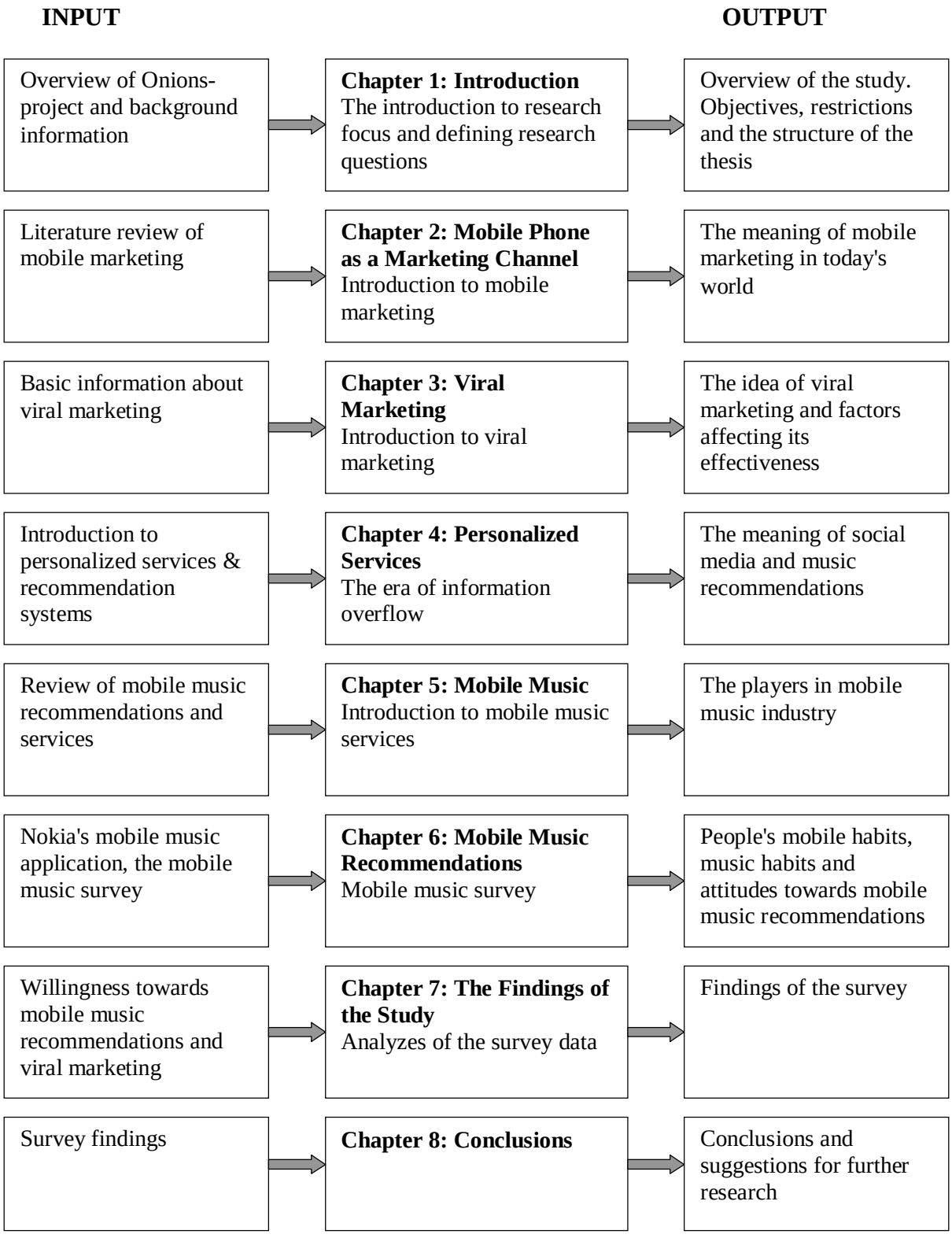

Figure 2. The structure of the thesis

2 MOBILE PHONE AS A MARKETING CHANNEL

"The mobile phone is the most ubiquitous communication channel on the planet, far surpassing fixed line telephones and internet connections" (Braiterman & Becker 2007).

Mobile phone has rapidly become an essential communication channel that is being used daily by billions around the world. It is becoming a dominant channel for marketing as well. Even though mobile marketing is still in its infancy, the use of the mobile phone as a marketing channel has already developed into a multi-billion dollar industry and it keeps on growing. (Braiterman & Becker 2007)

2.1 Mobile Marketing

Mobile marketing means marketing on or with mobile device, such as mobile phone. Ever since the rise of SMS (Short Message Service) in the early 2000s, marketing on mobile phone has become increasingly popular in Europe and over the past few years SMS has become a legitimate advertising channel. (MobileMonday 2007)

Mobile marketing uses a wireless medium to provide consumers with time and location sensitive, personalized information that promotes goods, services and ideas, thereby benefiting all stakeholders (Scharl et al. 2005, p. 165). Mobile marketing can also be seen as a use of the mobile medium as a communications and entertainment channel between the brand and end-user. Mobile channel is the only personal channel that enables spontaneous, direct, interactive and/or targeted communications, at any time, and at any place. (Leppäniemi et al. 2004, p. 93)

Mobile marketing can for example be used for (Pousttchi & Wiedemann 2006):

- building brand awareness
- changing brand image
- sales promotion
- enhancing brand loyalty
- building customer database
- mobile word-of-mouth

Mobile marketing can also be used for internal communications, direct marketing and as an effective business to business communications tool (MMA 2007).

Mobile Marketing utilizes technologies of all mobile devices including handsets and PDAs. Communications include Short Message Services (SMS), Multimedia Messaging Services (MMS), Wireless Application Protocol (WAP) mobile Internet and WAP Push services and full multimedia Third Generation (3G) services (MMA 2007).

According to Sultan and Rohm (2005, p. 89) the key challenge in mobile marketing is to interact with individuals in a meaningful manner that adds value to the brand-consumer relationship without being intrusive. Customers have to feel they get something that has for example information or entertainment value for them. The information that customers receive from mobile marketers has to be relevant for them.

Consumer behavior should be studied because it has a huge impact on the success of the mobile marketing. Customers' acceptance is the main factor that defines the future of mobile marketing (Leppäniemi et al. 2004, p. 94).

2.2 SWOT-analysis of Mobile Marketing

Based on a literature review a SWOT-analysis was conducted in order to find out the strengths, weaknesses, opportunities and threats of mobile marketing. SWOT-analysis involves monitoring the external and internal marketing environment (Kotler & Keller 2006, p. 52). The internal and external factors affecting on the success of mobile marketing can be seen from the table 1.

Table 1 SWOT-analysis of mobile marketing, based on a literature review

INTERNAL	
Strengths - interactivity - reaches customers at any time, any place - personalization - complements other media & vice versa - not for masses but individuals - one-to-one dialogue with consumers - individually addressable - multimedia capabilities - high-speed message delivery - fast and effective - direct response	**Weaknesses** - lack of research - lack of co-operation and knowledge sharing
EXTERNAL	
Opportunities - consumer behavior - viral marketing - value adding - information value - entertainment value - loyalty building - part of the overall marketing strategy - increasing adaptation of mobile services - high global penetration of mobile devices - device technology - customers more interactive - customers familiar with doing business with mobile devices - closer brand connection - cost sharing with customers (viral marketing) - time and place independent media - increasing use of mobile devices - increasing number of multimedia mobile phones	**Threats** - consumer inertia (habits, attitudes, images) - seen as spam - privacy concerns - technical barriers (transmission process, screen size etc.) - difficulties of implementation - resistance to change (marketers, marketing service providers) - permission based (consumers must opt-in before marketers can send them text messages) - legislations - needs other media in order to thrive

2.2.1 Strengths of Mobile Marketing

There are many strengths of mobile marketing as can be seen in table 1. Turban et al. (2002) (according to Salo & Tähtinen 2005) define mobile marketing as a medium that offers a context-sensitive, personal, interactive and quick way to communicate with customers.

The mobile phone is a highly interactive media channel that enables immediate reply from the receiver of the message (Bauer et al. 2005, p. 182). This interactivity is a key element that separates mobile channel from other media channels. With mobile marketing it is possible to personalize the message based on the consumer's location, time and preferences. Content of the message and how it is being delivered to customers are key success factors of mobile marketing. (Scharl et al. 2004, p. 165-166) One of the best advantages of mobile marketing is that it enables high-speed message delivery (Forrester Research 2002). Customers can also be reached fast and effectively (Takkula & Tähtinen 2006).

Mobile marketing enables one-to-one dialogue with consumers (Hein 2007). With mobile marketing it is possible to reach customers anywhere and any time because people carry their mobile phones with them almost everywhere and mobile phones are on most of the time (Bauer et al. 2005, p. 182). Because of the personalized messages and the personal nature of mobile devices, mobile marketing should not be targeted for masses but individuals (Salo & Tähtinen 2005). Mobile devices can be addressed individually, which means that it is possible to send very personalized and target oriented advertising (Bulander et al. 2005, p. 446).

"Mobile campaigns complement other media, such as television, print and Internet, and vice versa" (Leppäniemi et al. 2005, p. 250). Mobile marketing is most effective when it is being used with other more traditional media channels. Strength of the mobile marketing is also its multimedia capabilities. Multimedia capabilities enable more diversified advertising with pictures and sounds.

2.2.2 Weaknesses of Mobile Marketing

Because of the relative newness of the mobile marketing medium it has weaknesses starting from the lack of research. It also suffers from the lack of co-operation and knowledge sharing. (Virtanen et al. 2005)(According to Leppäniemi et al. 2006, p. 7) Mobile marketing is developing all the time and new technical features offer new opportunities. However, there is not much of experience of all possible ways that mobile marketing could be utilized. There is neither a lot of knowledge about how and what kind of mobile marketing consumers would be ready to accept. Mobile phone manufacturers are not willing to share their experiences or knowledge about mobile marketing which is a weakness of the development of mobile marketing.

2.2.3 Opportunities of Mobile Marketing

The amount of mobile phone users is increasing all the time. Increasing use of mobile devices is clearly an opportunity for mobile marketing and increasing adaptation of mobile services also offer great opportunities in the future. There is a high global penetration of mobile devices (Bauer et al. 2005, p. 181). Also the development of mobile device technology offers great opportunities for mobile marketing in the future. In addition to text messaging there are also multimedia, WAP, GPRS and Bluetooth capabilities that can be utilized. (MMA 2007) The number of mobile devices with multimedia capabilities is increasing all the time (Bulander et al. 2005, p. 446).

Messages can be delivered to consumers without time or place constraints which makes mobile marketing a time and place independent medium (Karjaluoto et al. 2004, p. 114). Consumer behavior and consumer acceptance are things that have probably the biggest effect on the success of mobile marketing. If consumers are willing to receive mobile marketing, it offers great possibilities for marketers. Consumers' acceptance is also a critical factor when considering viral marketing. Viral marketing means that customers forward the ad to their friends (Salo & Tähtinen 2005). Viral marketing has been used successfully in the Internet marketing and it can also be seen as a great opportunity for mobile marketing.

Consumers are becoming more interactive and more familiar with doing business with their mobile phones (Virtanen & Raulas 2004, p. 5). This is of course a positive and promising aspect of consumer behavior when thinking about mobile marketing. According to Becker (2006) consumers must receive value from the interaction with marketers. And when they do get some kind of value they are most likely more willing to receive marketing to their mobile devices. Entertainment value and information value are the strongest drivers of the acceptance of the mobile phone as an advertising medium (Bauer et al. 2005, p. 181).

Mobile marketing can be used for loyalty building (MMA 2007). Because of the personal nature of the hand-held electronic devices, mobile marketing offers possibilities of a closer brand connection (Sultan & Rohm 2005, p. 84). Mobile marketing can be used to build brand awareness or to change brand image. It is also possible to build customer database by using mobile marketing. (Pousttchi & Wiedemann 2006)

There are many opportunities to be seen when considering viral marketing. In addition to fastness of spreading the message there are some opportunities to save time and money. If picturing the situation where consumers are forwarding the message to their friends, the marketer has to send a lot less messages that they would have to if they would not utilize viral marketing.

2.2.4 Threats of Mobile Marketing

Probably the biggest threat for mobile marketing is consumer inertia and the fact that consumers might not be very interested and willing to receive marketing to their mobile devices. Consumers' habits, attitudes and images can be seen as obstacles for the wider use of mobile marketing (Virtanen & Raulas 2004, p. 4).

Based on the survey of Scharl et al. (2005) fear of spam is defined of the strongest negative influence on consumer attitudes towards SMS advertising. In addition to spam

other challenges for mobile marketing are limited user interface, privacy concerns and expenses of mobile data communication (Bulander et al. 2005, p. 446). According to Sultan and Rohm (2005, p. 88) wireless communications are less secure than transmissions over fixed ones and use of viral marketing might further erode an individual's sense of personal privacy.

Transmission process and technical barriers can create threats for mobile marketing operations. For example the text message may never arrive. There is either no guarantee that the messages will arrive within a few minutes. (Scharl et al. 2005, p. 168) If the message is highly location or time dependent then a message that arrives too late is easily seen as spam because of the non-usefulness of the message. A physical limitation for mobile marketing is the small screen size of mobile devices (Haghirian et al. 2005, p. 3).

Virtanen and Raulas (2004, p. 4-5) have listed the main barriers for the growth of mobile marketing as a marketing medium. There can be seen some resistance to change among marketing service providers and marketers. Fear of technology and possible complexity of implementation can be seen as threats for the mobile marketing.

Mobile marketing is permission based which means that marketers have to have consumers' permission before they can send them advertising messages (Finlex 2007). This is a strength for the consumers because they can decide whether they want to receive mobile advertising or not and what kind of advertising they want to receive to their mobile phones. However, permission based marketing can be a threat for the marketers. Mobile device users must opt-in before marketers can send them text messages (Finlex 2007). Mobile device users also have to have a possibility to opt-out anytime they want. There are also legislations that regulate to whom marketers can send mobile advertising. Those will be gone through later in this thesis.

Mobile marketing media is currently too limited to function effectively as a purely stand-alone channel. To get the most effective results it is important to integrate mobile marketing in multi-channel marketing campaigns. (Karjaluoto et al. 2004, p. 114-115) Mobile marketing has to be incorporated into the overall marketing strategy because of

the fact that mobile medium needs other media in order to thrive (Leppäniemi et al. 2005, p. 250).

2.3 Consumers' Willingness towards Mobile Marketing

The Pear research project run by University of Oulu has defined the Finnish consumers' readiness towards mobile marketing. There were over 20 000 participants in the research. Over 80 percent of the ones that participated in a text message campaigns want to receive mobile marketing in the future. (Digitoday 2005)

The research was conducted in the end of year 2004. The average age of the respondents was 40 years. Participants that were over 50 years old were denying text message marketing more often than other age groups. At the same time all the information was collected into a customer database in order to start mobile marketing in near future. (ITviikko 2005)

According to Sähköinen Suora 2006 -research, conducted by Taloustutkimus, the Finnish youth are a lot more willing towards mobile marketing compared to their parents. Clearly over a half of the under 25 year olds are approving the mobile marketing at least then when they have given the permission for it. On the other hand, over 55 year olds were a lot more critical and over 70 percent of them said that they do not want to receive any kind of advertising to their mobile phones. Altogether, according to Sähköinen Suora 2006 -research, people are a little bit more negative towards mobile marketing than towards advertising sent via email. (Digitoday 2006)

2.4 Legislation in the European Union

In July 2002 European Union (EU) announced a directive concerning privacy protection in electronic communication. Based on the directive, 2002/58/EY, a national electronic communication data protection law in Finland came into operation on the 1st of September 2004. (Viestintävirasto 2007)

For mobile marketing this law means that electronic direct marketing cannot be sent without permission that consumer has given beforehand. If service provider or product seller gets consumers contact information (for example phone number) in the context of selling the product or service, he is allowed to use this contact information for direct marketing purposes for certain products or services. Service provider or product seller is allowed to advertise his own products or services from the same product/service group or other similar products or services that the consumer had bought. (Finlex 2007)

Service provider or product seller has to give consumer a chance to deny the use of his contact information easily and for free. Consumer has to be given a chance to do this after he has given the information and in a context of each advertising message. Service provider or product seller has to clearly inform consumers about the chance of denial. (Finlex 2007)

There are two types of mobile marketing: push and pull marketing. Push marketing means that the marketer sends information to the consumer without any specific request, but the marketer must have the consumer's permission to do so. When consumer is requesting information from the provider or marketer, it's called pull marketing. (Barnes 2002)(According to Leppäniemi et al. 2004, p.94)

3 VIRAL MARKETING

Consumers are starting to show increasing resistance towards traditional forms of advertising such as TV and newspaper ads. This is why marketers have started to use alternative strategies including viral marketing. The idea of viral marketing is to exploit existing social networks and encourage customers to share product information with their friends. (Leskovec et al. 2006)

Viral marketing can be used as one message delivery method in mobile marketing. According to Wilson (2000) viral marketing means any strategy that encourages people to pass on a marketing message to others. The basic idea of viral marketing is that customers forward information to their friends and this way the information spreads really fast. It is assumed that ads have a higher credibility when they are received from relatives rather than marketers. (Bulander et al. 2005, p. 447)

3.1 The Use of Viral Marketing

Viral marketing has been used successfully in the Internet and a classic example of viral marketing is hotmail.com. According to Lescovec et al. (2006) free email services such as Hotmail and Yahoo have had very fast adoption curves because every email sent through them contained an advertisement for the service. They give away free email addresses and services. At the bottom of every e-mail message sent from hotmail, there is an ad: *"Get your private, free email at http://www.hotmail.com"*. And when people send e-mail messages to their friends, the advertisement message will automatically spread inside the network. (Wilson 2000)

Wilson (2000) has listed six principles for an effective viral marketing strategy:

- Give away valuable products or services
- Provides for effortless transfer to others
- Scales easily from small to very large
- Exploits common motivations and behaviors
- Utilizes existing communication networks
- Takes advantage of others' resources

To attract customers, most viral marketing programs give away valuable products or services. Viral marketing has been compared to viruses because it spreads easily and fast, just like viruses. In order the message to spread fast, it has to be easy to transmit. If and when the viral marketing campaign starts to spread fast, the transmission method must be easily scalable from small to very large. The marketing campaign must be built on common motivations and behaviors, in order to be successful. (Wilson 2000)

We all have our own social network. Our closer network that consists of family and closest friends is usually from 8 to 12 people. In addition to this each person has their broader network, which can be even hundreds or thousands of people depending on person's position in the society. Marketers should utilize these already existing networks. The last principle that encourages of taking advantage of others' resources is more easily done in the Internet marketing than mobile. In the Internet marketer can for example place its ad to others' websites. (Wilson 2000)

3.2 Value for Customer and Marketer

Customers will only forward mobile adverts that they consider to be of some value, monetary or entertainment. By offering added value, customers could and should be encouraged in viral marketing. However, marketers should take into account the fact that customers may easily forward also negative information about the marketer. (Salo & Tähtinen 2005)

By using a viral marketing strategy it is possible to lower promotion costs and increase the amount of consumer interaction. For the music industry, viral marketing can be seen as a digital version of ‘street’ marketing. Because of the fact that viral marketing can be done cheaply and it strives to break out of the traditional marketing mold, it may be considered a guerilla marketing tactic. (Russel 2002, p. 1, 38)

The ratings of the products can help consumers discover new products and receive more accurate evaluations. However they cannot completely substitute personalized recommendations that the consumer receives from a friend or a relative. It is human nature to be more interested in what a friend buys than what an anonymous person buys. It is more likely that consumers trust their friends’ opinion and they are more influenced by their actions. Our friends also know our needs and tastes, and that is why they can make appropriate recommendations. (Leskovec et al. 2006)

3.3 The Right Amount of Marketing Messages

Repeated interaction and an increasing amount of recommendations might not have a positive influence on products’ sales. A study made by Leskovec et al. (2006) observed that the probability of interaction decreases with repeated interaction. They also discovered that the probability of purchasing a product increases with the number of recommendations received, but quickly saturates to a constant and relatively low probability. This means that individuals are often impervious to the recommendations of their friends, and will resist buying items that they do not want. The success per recommendation declines, as a person sends out more and more recommendations past a certain number of products. Individuals have influence over only a few of their friends but not everybody they know. The effectiveness of recommendations varies by category and price.

4 PERSONALIZED SERVICES

According to Perik et al. (2004) more and more services will be personalized towards the users in the future. The challenge in today's world is to fight against information overflow and how to find the information that is the most relevant for each consumer.

4.1 Personalization and Privacy

Personalization can be seen as one solution to the information overflow. It is possible to make personally relevant information or services more easily available to the consumers. Personalization of the software means making it more responsive to the unique and individual needs of each user. Yahoo was one of the first sites on the Internet to use personalization on a large scale. (Kaasinen 2005, p. 19)

Perik et al. (2005) have done an empirical research concerning privacy preferences and individuals' behaviors regarding personalization in music recommender systems. They found out that information about the purpose of the disclosure and recipients of the information, the degree of the information involved and the benefits people expect to gain from disclosing personal information, are the main factors influencing disclosure behavior.

Based on Perik et al.'s (2005) questionnaire it seems that participants were more willing to disclose music preferences than their personality. Participants considered information about personality traits more personal and more sensitive information than preferences for music genres. Participants expressed worries about not knowing how their information will be used in the system and who gets access to their personal information. The sensitivity of information affects on the disclosure decision. The questionnaire also shows that some participants even consider what benefits they will gain from disclosing the information. Participants can be divided into two groups based on their disclosure behavior, depending on whether they want to disclose anonymously or including identity information.

Perik et al. (2004) define factors that have an influence on people's disclosure behavior. Based on their study the amount and clarity of information about the purpose of the information disclosure and who gets access to the information had an influence on disclosure behavior. Also the degree of confidentiality of the information and the benefits people expect to gain from disclosing personal information seemed to have an impact on the disclosure decision.

Personalized services, such as personal recommender service, need appropriate and sufficient information about the users in order to operate. This however may cause privacy concerns because of the acquisition, storage and application of sensitive personal information. There are many things affecting on the perception of privacy. How and what kind of information is collected and how the information is used but also the degree of accessibility of the information by others have an impact on the perception of privacy.

There are two ways to collect the information: explicitly or implicitly. Explicit information gathering means that user consciously gives the information. Implicit means that information is collected without users' intervention. The challenge in personalization is to offer personalized services without violating users' privacy and at the same time give them an opportunity to fully exploit the benefits of personalization. (Perik et al. 2004) The challenge is also to collect the personal data from users in a way that users feel comfortable for giving it. According to Orwant (1996, p. 403) users will be less likely to trust a system that continuously records sensitive information about their interests or tastes.

4.2 Social Media

Social media can be used as a definition for all the new kinds of online media that are based on user participation. Social media encourages to give feedback and to take part in. It in a way blurs the line between the concept of media and audience. Social media are very often open to feedback and participation. Social media is seen more like a

conversational media whereas the traditional media is based on the idea of content being distributed to audience. (Spannerworks 2007)

With social media it is possible to quickly form communities and communicate effectively around common interests. Blogs, social networks, content communities, wikis, podcasts and forums are the most common forms of social media. There has been a great change in media and nowadays it is possible for almost everyone to produce and distribute content. With the digital technology and Internet it has become a lot easier for people to create their own content. (Spannerworks 2007)

The Internet is full of different kinds of websites where people can create their own content or then people can just simply create their own website. You Tube is a good example of how effectively this content can spread through the Internet. This is also a good example of the effectiveness of viral marketing.

One example of the effectiveness of You Tube is how coca cola drinking record attempt spread like a wildfire. There is this “Ennätystehdas” (Record factory) program in Finland. Olli Hokkanen was trying to drink one and a half liters of coke as fast as possible. After three glasses he stopped and said he can not do it that it is too acid. This phrase became commonly known, the video clip of the record attempt was watched in a You Tube by over a half a million people. One company even started selling t-shirts and other products with the phrase on them. Olli Hokkanen has not gotten any of the profits, but he is commonly known as “Kola-Olli” (Coke-Olli). This example shows how powerful viral marketing can be and how fast the message can be spread. (Salo 2007)

Another example of the viral marketing power of You Tube is how a Dutch amateur singer Esmée Denters got a recording contract after she had downloaded her own singing videos to You Tube. She has been singing a number of pop music hits in her own room and filmed it with a web camera and then shared her videos in You Tube. She built up buzz in You Tube where over 21 million people have watched her videos over the past nine months. Now with a recording contract in her hand she is performing on some of Justin Timberlake’s European concerts and she is planning to release her first album during this year. (News.com 2007)

4.3 Recommendation System

The purpose of recommender systems is to suggest items to be purchased or examined. These suggestions are based on user preferences. Recommender system produces individualized recommendations or guides the user in personalized way towards interesting or useful objects in a large space of possible options. (Burke 2002, p. 331)

There is a huge amount of information in the Internet and it is becoming harder and harder for consumers to find the most suitable product or service just for their needs. The recommendation service is one of the most important services for the users to escape from this information overloading problem (Chen & Chen 2005, p. 113). Recommender systems are software applications. The purpose of recommender systems is to deliver information to people that need it. (Celma et al. 2005)

Based on the definition above there is no difference between a recommender system and a search engine. Purpose for both of them is to select objects from a repository whose features were found to satisfy the querying users' needs. However, there are two meaningful differences to be seen between recommender systems and search engines. The first difference is whether the information need is related to solving a situation or the information need is periodic or steady. The second difference is related to the use of different words to describe the system. Whether the system retrieves information from relatively static repository of information or does the system filter objects that are embedded in an incoming stream of information. The recommender system term has emerged from the evolution of the research of information retrieval systems. (Celma et al. 2005)

"There are two major approaches for general recommendation systems, the content-filtering approach and the collaborative filtering approach" (Chen & Chen 2005, p. 113). According to Kortelainen (2006, p. 14) recommendation technologies can be divided into three main categories. These are collaborative, content-based, and hybrid recommendation approaches. In collaborative approach the idea is to find similarities

between different users. The recommendation is based on the profiles which resemble the current profile the most. Content-based approach is trying to find items that resemble the ones the user has preferred in the past. Hybrid methods are combinations of the collaborative and content-based methods. (Kortelainen 2006, p. 14)

4.3.1 Content-Based Filtering

Content-based methods utilize the previous ratings of the user. The system is trying to find commonalities among the items that have a high rating. In content-based systems the profiles of other users do not have any effect. This is just the opposite when compared of collaboration systems. Content-based systems are designed mostly to recommend text-based items. By comparing these text strings the recommendation is made. Text strings can be acquired by examining the source data. The profile of the item is formed from a set of keywords that are extracted from an item. (Kortelainen 2006, p. 16)

Content-based filtering means that based on the user profiles, the system recommends only the data items that are highly relevant to the users. The user profiles are formed by extracting features of the data items that have been accessed in the past. The system computes similarities between the features of the data items and the user profiles. In content-based filtering the recommendation system can recommend only those data items that the user has indicated his/her interests. (Chen & Chen 2005, p. 114)

The goal for content-based filtering is to extract useful information from the items of the user's collection that could be useful to represent users' needs. In content-based filtering approach it is possible to recommend new items even before the user knows anything about that item. New items can be recommended by comparing the actual set of user's items and calculating the distance with some sort of similarity measure. (Celma et al. 2005)

Content-based filtering approach tries to extract useful information from the items of the collection that are good indicators of their usefulness for a user. Content-based

filtering is closely related to the field of information retrieval. It aims to develop better techniques to locate documents that satisfy a user's information need. (Uitdenbogerd &Van Schyndel 2002)

4.3.2 Collaborative Filtering

Collaborative methods utilize ratings from different users. In collaborative approach all the users in the system or a group of users can be used. The groups are formed based on user profiles. A user can belong to one or more groups at the same time. (Kortelainen 2006, p. 15)

The idea of collaborative filtering is to make use of feedback from users to improve the quality of material presented to the users. (Celma et al. 2005) The collaborative filtering approach computes the similarities between the user profiles. It means that users of similar profiles are grouped together to share the information in their profiles. The purpose of the collaborative filtering approach is to make the recommendation among the users in the same group. The collaborative filtering system has a high possibility to recommend surprising data items by sharing the information. This cannot be achieved by using the content-based filtering approach. (Chen & Chen 2005, p. 114)

The obtaining feedback can be divided into explicit and implicit feedback. Explicit feedback can be user ratings or annotations. Implicit feedback can be extracted from users' habits. Compared to the content-based filtering approach there are some limitations when using collaborative filtering approach. In this approach the only way to recommend brand new items is that some user has to rate or review that item beforehand. (Celma et al. 2005)

Collaborative filtering means collecting users' opinions of how good or useful an item is. Based on this information items are ranked for presentation to other users. Collaborative filtering uses feedback from users to improve the quality of material presented to other users. By combining personal information from users, such as

personality, age, origin and occupation, with collaborative filtering it is possible to improve nearest neighbor estimation. (Uitdenbogerd &Van Schyndel 2002)

4.3.3 Hybrid Methods

Some systems can use both content-based and collaborative filtering approaches. (Chen & Chen 2005, p. 114) These approaches can be combined in different ways. A straightforward way is to use both of them separately and then combine the results. Another way is to use pipelining where filters are applied one after another. (Kortelainen 2006, p. 19)

4.4 Music Recommendation System

The music recommendation system is a website (can also be not Internet-based system) which provides the service of music recommendation. Those recommendations are based on music grouping and user grouping. (Chen & Chen 2005, p. 116) The idea of music recommendation system is to propose interesting and unknown music artists to the end users based on their musical taste. In order to do this, music recommendation system should be able to get new music dynamically. (Celma et al. 2005)

Most of the current music recommenders in the Internet are based on collaborative filtering approach. There is also a hybrid version which includes clustering and users' communities. The purpose of a music recommender system based on a collaborative filtering approach is to keep track of which artists a user listens to. Based on this information it is being searched other users with similar tastes. According to these similar listeners' tastes, music is being recommended to users. (Celma et al. 2005)

When thinking from the user's point of view, the purpose of a music recommendation system is to recommend music that the user will be interested in. To get users to use the recommendation system, it has to be easy to use requiring a minimum input from the user. If the system requires more input from the user, there must be a clear and obvious

incentive to the user that more effort in providing input will lead to better recommendations. (Uitdenbogerd &Van Schyndel 2002)

There are several factors, even demographic and personality traits, affecting to users' musical taste and music preferences. (Celma et al. 2005) Demographic and personality factors have been shown to have an influence on music preference. (Uitdenbogerd &Van Schyndel 2002)

Examples of music recommendation systems in the Internet:

- iLike, http://ilike.com/
- Rate Your Music, http://rateyourmusic.com/
- Last.fm, http://www.last.fm/
- Amazon.com, http://amazon.com/
- Pandora, http://www.pandora.com/
- Foafing the Music, http://foafing-the-music.iua.upf.edu/

The iLike music recommendation website allows users to check out what their friends are listening to, browse the libraries of people with similar tastes, and get free mp3-downloads by new artists. Users can share music libraries with friends, browse and sample their most played songs and compare it with their own. It is also possible to auto-organize user's iTunes library, share music tastes with friends, and get music recommendations directly in iTunes. Users however do not have to have iTunes in order to use iLike and iLike is not affiliated with Apple Computer. It is possible to let user's network recommend music and this way discover new music. At the same time it is possible to discover people with similar music tastes by comparing tastes with others. (iLike 2007)

Rate your music (RYM) is an international metadata database where music is added, rated and reviewed by users. Based on this data, automatic music recommendations are generated. RYM is also a community where users can send private messages and music recommendations to other users. Users can catalogue or rate their music and based on this information RYM creates a music map which represents users' music taste. RYM

website also gives recommendations on albums users might like and shows other users with similar music taste. (Rate Your Music 2007)

Last.fm is an online radio station that adjusts to users tastes. Users sign up to the service and create a profile. Based on these musical profiles Last.fm is able to make personalized recommendations, connect users who share similar tastes. Last.fm also provides custom radio streams. Users are able to discover new artists, find out their gigs and invite friends. Last.fm also offers some free tracks for its users. (Last.fm 2007) On July 10th 2007 Last.fm announced a global deal with Sony BMG Music Entertainment. The deal will make Sony's huge music catalogue available to Last.fm users. Now Last.fm can be said to have the most comprehensive music catalogue when compared to any other online radio station. (Digital Lifestyles 2007)

Amazon.com uses collaborative filtering system. For example when customer buys something there will be an announcement that people who bought this, also bought these. Already in 1999 Amazon.com introduced an expanded and improved recommendation center that offers music fans authoritative guides to the best CDs in more than 100 musical styles. (Amazon.com 1999)

Pandora is a music recommendation and Internet radio service from the Music Genome Project. Right now it is available mostly in the U.S. due to licensing constraints but earlier it has been available for users around the world. There are about fifty music-analysts that listen to music and collect hundreds of musical details on every song. Based on this data, the system searches music similar to what users are already listening. Users can create stations, tell a friend, find shared stations and find other listeners. (Pandora 2007)

Foafing the music is a music recommendation system that is based on user's profile. Based on users' FOAF (friend of a friend) profile and listening habits, Foafing the music recommends users similar artists to ones they like and music releases form iTunes, Amazon, etc. Foafing the music also recommends album reviews, mp3-blogs to download music, podcasts to download, automatic creation of playlists and incoming concerts near where users live. (Foafing the Music 2007)

4.5 Music Stores in the Internet

There are many stores in the Internet that sell music. Table 2 gives some examples of the net stores that sell music tracks that users can download from the Internet.

Table 2. Examples of music stores in the Internet (updated in August 2007)

Music Store	Songs available	Price per song
iTunes (global)	>5 000 000	0.99 €
eMusic (global)	>2 000 000	<0.43 € (a monthly subscription >12.99 €)
Musiikkilataamo (local)	>1 400 000	1.39 €
The Nokia Music Store (opens during the fall 2007)	millions	1.00 €

Apple has its own music store called iTunes. The iTunes store has more than five million songs, 100 000 free podcasts, 20 000 audiobooks and also iPod games. Music tracks cost 99 euro cents a piece. Music tracks are high quality AAC songs that are users to keep once they have paid for them. (Apple 2007a)

The eMusic is the world's largest retailer of independent music and the world's second largest digital music retailer overall. A subscription based service allows consumers to own the music. According to eMusic it is the largest service to sell tracks in the mp3 format. There are over two million songs in eMusic's library. The subscriptions start 12.99 € a month for 30 downloads which means that one song costs about 43 cents. The more users buy per month the more they save. (eMusic 2007)

Musiikkilataamo is a Finnish music store which has over 1 400 000 music tracks. Musiikkilataamo is a music store of Helsingin Sanomat where people can buy music in digital files. Music tracks cost 1.39 euros a piece. (Musiikkilataamo 2007)

The Nokia Music Store will be opened across key European markets during fall 2007 and additional stores in Europe and Asia will be opening over the coming months. The Nokia Music Store offers millions of tracks and in Europe one track sill costs 1 euro. The store can be accessed via a desktop computer or from a compatible Nokia device. The Nokia Music Store will offer full track streaming on PC as well as individual track and album purchase. There will also be a recommendation engine and genre-based instant playlists provide access to show what others are enjoying. (Nokia 2007)

When talking about downloading of music tracks, Digital Rights Management (DRM) is something that has to be taken into account. In today's wired and wireless world content control is becoming increasingly important. Digital Rights Management Systems enable to control the access and the usage of digital content. They also enable content providers to fight against piracy. On the other hand, Digital Rights Management Systems restrict consumers in their usage of the purchased content and therefore reduce the consumer's utility of the legal download versus the copy. (Fetscherin 2006)

5 MOBILE MUSIC

MobileMonday (2007) defines mobile music as a music that is downloaded to mobile devices and played by mobile devices. Some examples of mobile music services are StreamMan, Vodafone Radio DJ and Mobile Jukebox.

5.1 StreamMan

"Today's digital consumers want instant access to their favorite music with the freedom and flexibility to listen to what they want, when they want, where they want." (Sony 2004)

As a response to a rapidly increasing consumer demand for personal music entertainment on the mobile phone, Sony Network Services Europe and telecommunications operator TeliaSonera Finland launched the world's first mobile music streaming service in June 2004. (Sony 2004) The service was called StreamMan and the idea was to offer customers a unique musical experience anywhere and anytime. The service was released for the first time in the world in Finland. (TeliaSonera 2004a) The StreamMan service was the world's first personal mobile music service. (End2End 2004) In the INDICARE workshop held on the 30th of September 2004, Tina Rodriquez, director of eMedia and new technology at Sony Music, said that the StreamMan is the first personalized music service in the world that provides access to a huge music collection and value-added services. (Kerényi 2004, p. 12)

The StreamMan service was targeted towards consumers who had S60 3rd edition devices and also a 3G connection to their mobile operator. (Nokia 2006c) The StreamMan service allowed customers to listen only to their personal favorite or certain type of music and there were no commercials. StreamMan was a personalized music service, which utilized streaming technology and enabled mobile phone users to listen to music, create playlists, listen to news, read on artists and send messages and playlists to friends. (TeliaSonera 2004a)

Sony's StreamMan service offered a wide variety of music. There was music from both large and independent labels. (TeliaSonera 2004a) There were over 400 000 licensed tracks from international and local artists on the StreamMan's database (Sony 2004).

The service was highly interactive. It allowed customers to give feedback on currently playing songs by rating "like" or "dislike". Based on this feedback StreamMan adjusts the channel to suite for customer's needs. Subscribers could also save songs in personal playlists and listen only to the music of their choice. Service subscribers were able to share playslists with friends and send them messages or cards. The service also provided news, not just music and entertainment but also business and sports news, which were provided by the Finnish news agency, STT. All Sonera customers were allowed to use StremMan. The service required registration and application download. At the very beginning there was no connection or monthly charges, only the data transfer charge according to Sonera's valid price list. (TeliaSonera 2004a)

An updated version of StremMan was launched on the 8th of October, 2004. In addition to instant access to a vast library of music, the new version allowed users to download songs to their phone, access special community features such as messaging and even listen to personalized channels and playlists on their PC via broadband. The unique personalization technology allowed customers not only to define personal radio channels, but also to refine them by interacting with the service. The new version gave subscribes the ability to download tracks and listen to personal channels and playlists also at home on the PC. (Sony 2004)

With Sony StreamMan, it was possible to listen to latest hits, the classics or users' personal favorites on the mobile phone and share them with friends. In October 2004 downloading the StreamMan application cost 3.95 euros and the service was subscribed on a month-by-month basis. When the service was used by mobile phone the customer was also charged a data transmission charge. (TeliaSonera 2004b)

End2End is Europe's leading managed service solution provider for mobile data services. It was responsible for the hosting, management, and delivery of the

StreamMan service, including the streaming and digital rights management platforms. (End2End 2004) In developing StreamMan and bringing it to the market, Sony Net Services received also assistance from Forum Nokia Pro. Forum Nokia Pro solved many technical issues and lent prototypes of new devices so that Sony NetService was able to test the software on the newest terminals. (Nokia 2006c)

5.2 Vodafone Radio DJ

Sony NetService's StreamMan application is used by the Vodafone Radio DJ service to present a superior music experience to S60 device owners with 3G connections. (Nokia 2006c) On the 9th of January 2006 Vodafone and Sony NetServices introduced Vodafone Radio DJ. It is called the world's first fully convergent music service. It enables customers to tailor music to their tastes through its personalization ability. Vodafone radio DJ offers interactive, personalized radio channels streamed to both 3G mobile phones and PCs. (Sony 2006)

Vodafone Radio DJ users have access to hundreds of thousands of songs from the world's largest record companies and many smaller independent record labels. Users are able to make the pre-programmed radio channels to fit with their personal tastes. Users can press "like" or "dislike" during the song. If user indicates "dislike" the music skips to the next song and this way the channel only plays the music the users want to hear. (Vodafone 2006)

The Vodafone Radio DJ service consists of three elements, pre-defined channels, personal channels and collections. Pre-defined channel means that users can select a radio channel based on mood or genre. Users are also able to buy any songs that they like and those can be downloaded both to mobile phone and PC. Personal channels mean that users can rate the songs on existing radio channels and this way create new, personal channels. Vodafone Radio DJ also presents programmed collections of songs to user's mobile phone or PC. Collections will be created by local music experts around a theme and these collections will be updated regularly and they will include about 15 songs. (Sony 2006)

Songs that are purchased from the Vodafone Radio DJ service will be available for both mobile or PC and can also be bought with both devices. The subscriptions for the service will be offered on monthly basis and users subscribers will have unlimited listening to music on both mobile phone and PC. There will be no extra charge of the data transfer. (Vodafone 2006) In addition to purchased songs, all personal settings and personal channels created on the mobile phone will also be accessible from the PC (Nokia 2006c). The Vodafone Radio DJ service is part of the Vodafone live! –portal, which is already available in 24 countries (Vodafone 2007).

5.3 Mobile Jukebox

T-Mobile launched a Mobile Jukebox service for mobile phone users on the 4th of July 2007. Mobile Jukebox gives T-Mobile users 500 000 music tracks to choose and download from. Tracks can be downloaded to mobile phone and PC. Tracks cost £1 a piece. With this price customers will get two downloads, an AAC format to mobile phone and a WMA version that is sent to customer's email address. T-Mobile stores all its customers' downloads to its "My Music" section on their website just in case someone looses its mobile phone. If this happens, people can log in and pick up their downloads. (IT Week 2007)

There is a range of 32 phones that this service is available for. T-Mobile is running the Mobile Jukebox service on 2G and 3G phones so that as many people as possible would have an opportunity to use it. (3G 2007) The mobile Jukebox service offers full length music tracks that can be downloaded over the T-Mobile network. Tracks can be downloaded where ever people can make calls, any time of the day. To find the tracks customers can browse weekly charts and new artist promotions or look for a specific track by using the Search Mobile Jukebox feature. (T-Mobile Jukebox 2007)

5.4 Mobile Phone Manufacturers' Music Services

At the same time as Apple is moving into mobile phone business, mobile phone manufacturers are moving into music business. As can be seen from a table 3 almost all the mobile phone manufacturers already have their own music service or they are planning to launch one in a near future.

Table 3. Mobile phone manufacturers' music services

Features	Ericsson/ Sony Ericsson	Samsung	Motorola	Nokia
Song purchasing	X	X	X	X
Ringtones	X			
Music news	X			X
Artist interviews/ pictures	X			X
Music clips	X			X
Up-coming artists	X			
Music search	X			X
Song identifier	X			
Podcasts				X
Apple iTunes			X	
Music recommendations	X			X

5.4.1 Sony Ericsson's Music Services

Already in November 2003 Ericsson developed a mobile music service with Sony Music. The service was called M-USE and Swisscom Mobile was the first operator in the world to launch it. The M-USE service offers customers artist pictures, ringtones, mobile music clips, artist news and a music recommendation service. It is accessible over WAP and SMS and later also over the Internet. (Ericsson 2003) In August 2004 M-USE was launched in Sweden by TeliaSonera (Ericsson 2004a). In October 2004 M-USE was introduced in Asia (Ericsson 2004b). After that also some other mobile operators around Europe have launched the M-USE service.

In September 2006 Sony Ericsson launched the M-BUZZ service. It is a wireless music website that integrates mobile multimedia with the concept of social networking. The service introduces up-coming unsigned artists that are hoping to see their work distributed over cellular networks. (Teleclick 2006)

Sony Ericsson's W910 Walkman phone and K850 Cyber-shot phone will be the first handsets to offer Gracenote's Mobile Music Platform. This solution was announced on June 14th 2007 and it will power mobile music search and discovery services. There are more than 60 million tracks in Gracenote's Global Media Database. The platform provides users a completely integrated solution where PC, online music store and handset are used as a comprehensive service for music search, discovery, management and enjoyment. Users are able to do more than just search songs; they are able to identify almost any song that is being played on the handsets' built-in FM-tuner or anywhere within the proximity of the handset, for example at a party or restaurant. Gracenote's Mobile Music ID service identifies these songs and then delivers information about the song and a possibility to buy it. The platform also provides music recommendations. (Gracenote 2007)

5.4.2 Samsung's Mobile Music Service

In September 2006 Samsung announced its deal with MusicNet and introduced its subscription digital music service that will first be available in United Kingdom, Germany and France. The service offers more than 2 million licensed songs. MusicNet will power the service and provide the technology and content library. Samsung is planning to launch the service throughout the Europe and Asia after its initial launch. (Samsung 2006)

Samsung's service includes content from all the major record labels and more than 40 000 independent labels (Samsung 2006). Users will be able to subscribe to Samsung's music service for a flat monthly fee. Users can also purchase and download individual tracks and albums from the service. Monthly subscriptions in Germany and France will cost €14.99 and in the UK £10.25. Individual tracks' prices will start at 1.15 € or 0.79p. (Digital Trends 2007)

5.4.3 Motorola and Mobile Music

In September 2005 Apple, Motorola and Cingular wireless announced the world's first mobile phone with iTunes. Users are able to transfer up to 100 of their favorite songs from the iTunes jukebox on their PC to their mobile phone. (Apple 2005) The Motorola ROKR is the music phone featuring the Apple iTunes (Motorola 2005).

5.4.4 Nokia's Music Recommenders

In September 2006 Nokia introduced several new phones and at the same time it also announced a music recommendation service, Music Recommenders. The Music Recommenders started in the end of the year 2006. It is a free website service that presents new music each month. The music is selected by experts in 40 independent music stores around the world. Users can freely browse the music and listen to music clips, read weekly updates and search for music. Users can also read artist interviews,

city music guides and information on the stores and recommenders. In addition to all these David Bowie contributes monthly features and podcast about new music he has discovered. (Nokia 2006b)

In order to get customized recommendations consumers have to register to the service. After users have registered they can set and save their favorite music genres and styles. Based on these preferences Music Recommenders pick music tracks and the top 10 matches will be emailed to the user every month. Registered users can then purchase music tracks based on these recommendations. Users can listen to a 30 second samples for free so they can hear the track before purchasing it. Music tracks can be purchased by credit card. (Music Recommenders 2007)

The digital music service on the Music Recommenders website is provided by On Demand Distribution Ltd (OD2) which is a wholly owned subsidiary of Nokia. So far the Music Recommenders service is available only in the United Kingdom and Australia. Outside these countries customers can use the service otherwise but they are not yet able to purchase downloads. (Music Recommenders 2007)

Windows Media Audio file (WMA) is the format available from the Music Recommenders service. Music tracks are encoded at 128kbps and protected by Microsoft Windows Media Digital Rights Management. To be able to download music tracks users must have Windows XP or 2000 and Windows media player 10.0 or higher. Users also have to install the MediaBar software to be able to download and listen to music tracks. The Music Recommenders supports Nokia N91 multimedia computer and other portable devices that support Windows DRM-protected WMA tracks. The Music Recommenders' downloads will not play on iPods or other portable music players that do not support Windows DRM. (Music Recommenders 2007)

5.4.5 Nokia's Ovi Service

On the 29th of August Nokia introduced its new Internet service called Ovi. It includes the Nokia Music Store, Nokia Maps and N-Gage games. Ovi is a gateway to Nokia's

Internet services. It enables consumers to easily access their existing social network, communities and content while acting as a gateway to Nokia services. Nokia Music Store and N-Gage services offer consumers a chance to discover, try and buy music and games from a blockbuster range of artists and publishers. Nokia is aiming to bring more Internet based services to Ovi in the coming months. The first version of Ovi is scheduled to go live in English during the fourth quarter of 2007. Additional features and languages are expected to go live during the first half of 2008. (Nokia 2007)

6 STUDY OF MOBILE MUSIC RECOMMENDATIONS

Apple launched its brand-new iPhone in June 29th 2007. iPhone combines three products in one handheld device. There is mobile phone, a widescreen iPod and the Internet. iPhone introduces an entirely new user interface, which is based on a multi-touch display and a new software that allows users to control iPhone with a tap, flick or pinch of their fingers. (Apple 2007b)

6.1 Music Recommendation Service for Mobile Phones

While Apple is moving into mobile phone business, mobile phone manufacturers are moving more and more into music business. Also Nokia is investing more and more to the music business. NRC has been researching music recommendation through mobile phones in the Onions project (Karlsson et al. 2007b).

Figure 3 presents how a music recommendation system could work in mobile phones. There are two ways that mobile phones could be used as recommendation medium. In the first option the consumer that has opted in the music advertiser / recommender service can get music recommendations, promotions of new releases and buy music from the music content provider. After that this consumer could recommend that music to his friends and people in his / her network and this way share the recommendations. This can be seen as viral marketing and the information could spread really fast and effectively. (Karlsson et al. 2007a)

In the second option the consumers can browse each other's music collections and listening habits in their mobile phones. It would also be possible to see what their friends are listening to right now. There could be a possibility to make top lists / charts of their favorite artists / songs and then everyone in their network (the ones they have given the permission to see what they are listening) could go and see them. In a music recommendation application there could be relevant music related advertisements for example about concerts tickets or fan products. (Karlsson et al. 2007a)

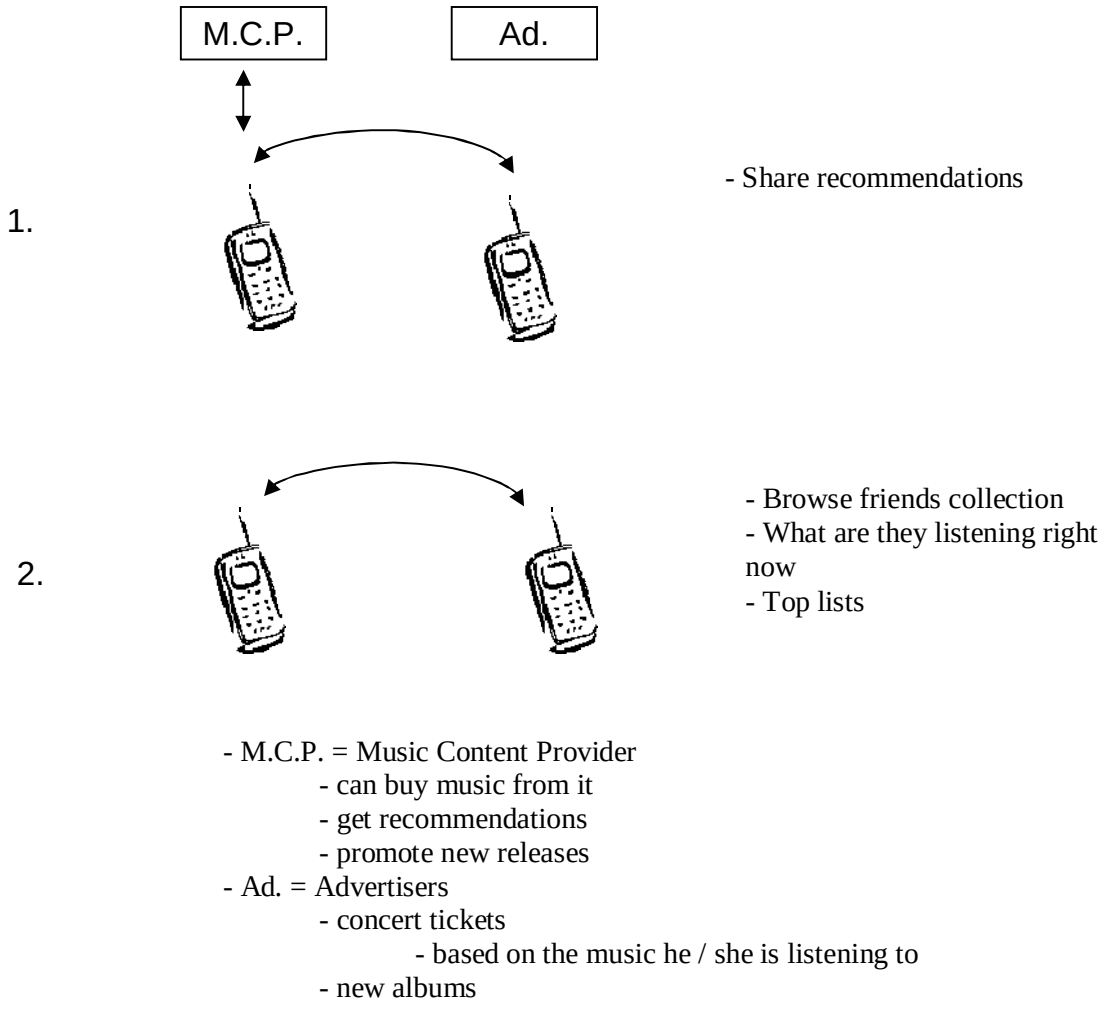

Figure 3. Music recommendation application (Karlsson et al. 2007a)

The advertiser would have to have consumer's permission before they could send them any kind of advertising. But once they have got the permission they could encourage consumers to forward the ads to their friends and people in their network. This way the advertiser wouldn't have to get all of those people's permission because the message would come from a friend, not from the advertiser. The advertiser could promote for example concert tickets and new albums based on users' music preferences and music listening habits.

6.2 Mobile Music Survey

The purpose of this thesis is to find out who would be the most interested and willing to use a mobile music recommendation system and forward recommendations to their friends. The purpose is also to find out what kind of factors are affecting on people's willingness. In order to find out all this a Mobile Music Survey was conducted (see appendix 1). The survey had questions about respondents' mobile phone habits, music habits and their opinions towards music recommendation system and viral marketing. The survey was conducted from the middle of April 2007 until the beginning of May 2007.

Mobile Music Survey was sent to all the students of Lappeenranta University of Technology and some other students through the League of Finnish-American Societies. Altogether the survey was sent to about 5500 students. Students were sent an email in which was explained that the survey will be part of a master's thesis and there was a link to the webpage of Kouvola Research Unit where the survey could be filled. There was also a chance to win a Nokia's music phone which was drawn among all participants.

Students had about three weeks time to answer the questions and after this the Nokia music phone was drawn. There were altogether 1299 answers to the questionnaire. This big amount of data gives really good and reliable results from the answer group. However it has to be taken in to consideration that 42 percent of all respondents were 22-25 years old and 25 percent were 26-29 years old. The youngest age group was 18-21 years old and the last group was 30 and more years old. There is a huge potential mobile music recommendation system user group that is under 18 years old but because this survey was conducted among university students, there were no respondents that are under 18 years old. This is why this study concentrates on the students that could be possible users.

Also the fact that most of the respondents were from the Lappeenranta University of Technology, has to be taken into account when considering the results of this study.

These students do not represent the opinion of all the students of different parts and universities of Finland. These results do however give a direction of what is the common opinion among students but still they cannot be completely generalized to all students across the country.

Altogether there were 1299 respondents to the Mobile Music Survey. The amount of female respondents is 30 percent and 70 percent are male. The age groups and their distributions can be seen from the figure 4. The percentage of master/bachelor of science (technology) students is almost 70, whereas master/bachelor of science (economics and business administration) students are 23 percent of all the respondents and the rest 9 percent are students of other fields of education.

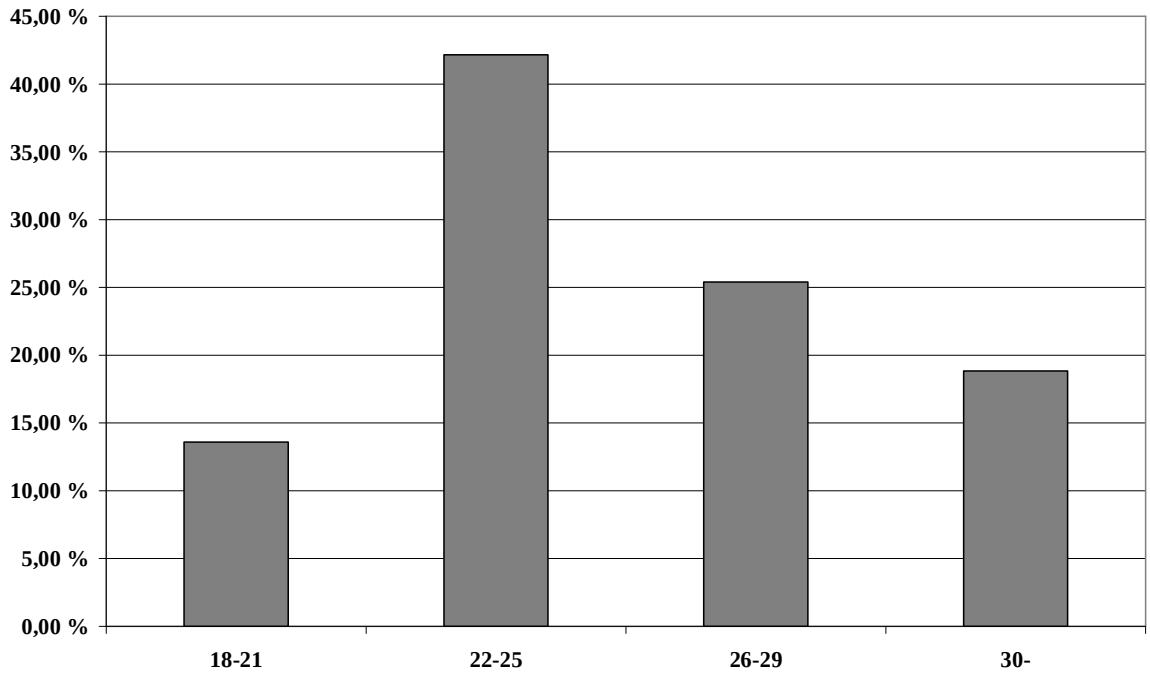

Figure 4. Respondents' age

The survey consisted of four parts. First respondents were asked general information about age, gender and degree of education. In the next part respondents were asked questions about their mobile phone habits. After that there was a part, which purpose was to find out respondents music habits. The last part of the questionnaire was about music recommendation systems and the idea was to find out respondents' willingness towards music recommendations and viral marketing.

6.2.1 Mobile Phone Habits

In order to sort out the mobile phone heavy users, respondents were asked how many text messages they send per day and second how many text messages they receive per day. Distributions of these answers were almost the same. The biggest group, 71 percent send less than 3 text messages per day, 26 percent send 3-9 text messages per day and the rest (only about 3 percent) send 10-49 text messages per day. The percentages for received text messaging per day are almost the same.

Next question considered regularly used mobile phone features (see figure 5). Calling (99 %) and text messaging (86%) were the most used features as could be expected. About 30 percent of the respondents use mobile phone camera regularly and about 20 percent use the Internet from their mobile phones. Almost 16 percent also use mobile phone's music player. Over 10 percent of respondents use games, email or radio. In addition to all these there are small user groups for GPS locating service, video calling and mobile TV. A little over 13 percent said they use some other features that were mentioned in the list. The most common ones of those features are alarm clock and calendar.

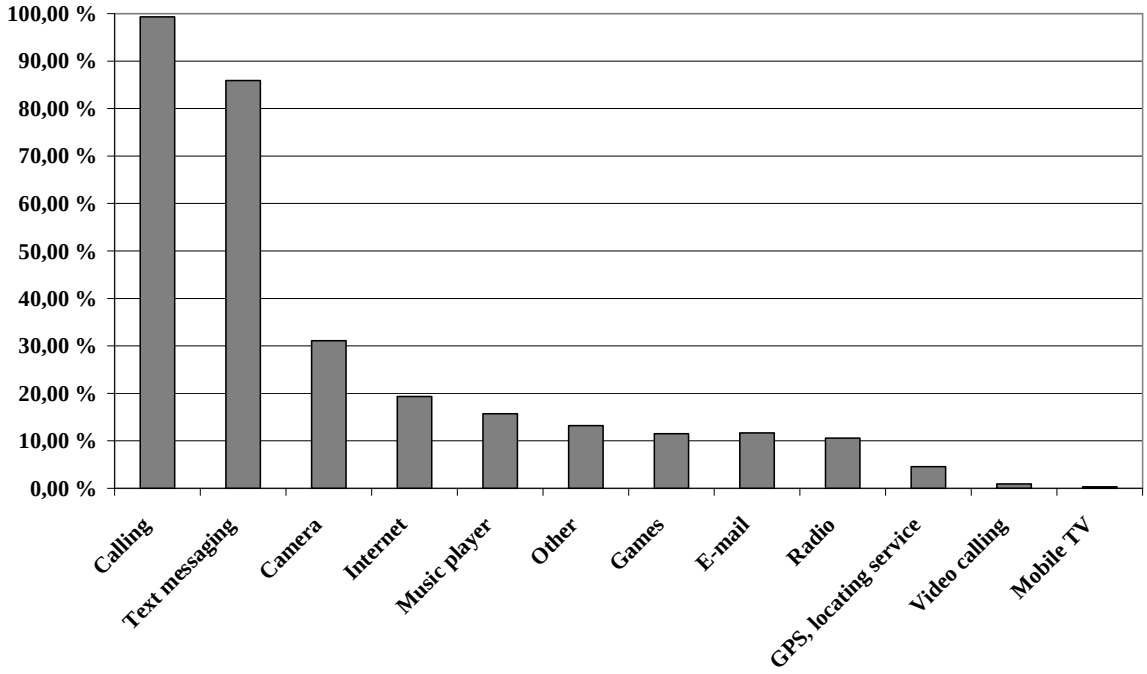

Figure 5. Regularly used mobile phone features

After regularly used mobile phone features respondents were asked whether they have received advertising to their mobile phone or not. The result was that 67 percent had received advertising and most commonly adverts were from phone operators. Respondents were also asked if they ever had participated in a competition or voting by using their mobile phone and if they had ever downloaded ring tones or background pictures to their mobile phones. Almost 40 percent had participated a competition or voting and about 80 percent had downloaded ring tones or background pictures to their mobile phones.

6.2.2 Music Habits

The third part of the questionnaire was about respondents' music habits. The first question of this part was how many hours per day respondents are listening to music. It was not defined whether it is passive or active listening. It was left for the respondents' own consideration. As the figure 6 shows, about 27 percent of respondents listen to music less than 1 hour per day. The biggest group (41 %) was the ones that listen to

music 1-2 hours per day. About 22 percent of the respondents listen to music 3-5 hours per day and about 10 percent listen to music more than 5 hours per day.

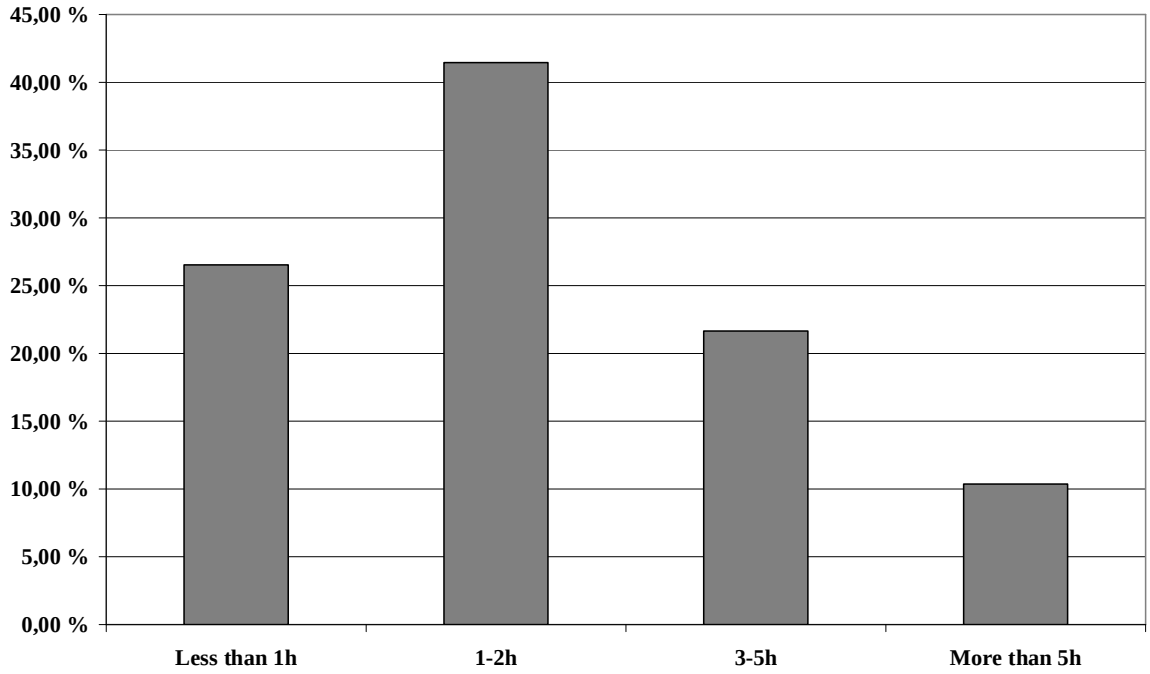

Figure 6. Hours / day respondents listen to music

Almost 60 percent of all the respondents have an MP3-player and 26 percent of those listen to it every day, 32 percent a couple of times a week and 43 percent sometimes. Respondents were also asked if they listen to music from their mobile phone music player or mobile phone radio. The result was that 24 percent listen to music from their mobile phone music player and 25 percent from their mobile phone radio. Those who listen to mobile phone music player or mobile phone radio were also asked how often they listen to them. About 18 percent said to be listening mobile phone music player every day, about 25 percent listen to it couple times a week and little over 57 percent sometimes. Only about 6 percent of the once who listen to mobile phone radio, listen to it every day. A little over 14 percent listen to mobile phone radio couple times a week and 80 percent only sometimes.

When respondents were asked how they hear about new music the most common answer (82 %) was from the radio (Figure 7). The Internet was second when 66 percent

of respondents hear about new music from the Internet and about 58 percent from friends or from TV. One fifth of the respondents hear about new music from the top music charts, 17 percent from the professional reviews in the Internet and magazines and around 10 percent hear about new music from the concerts and music stores.

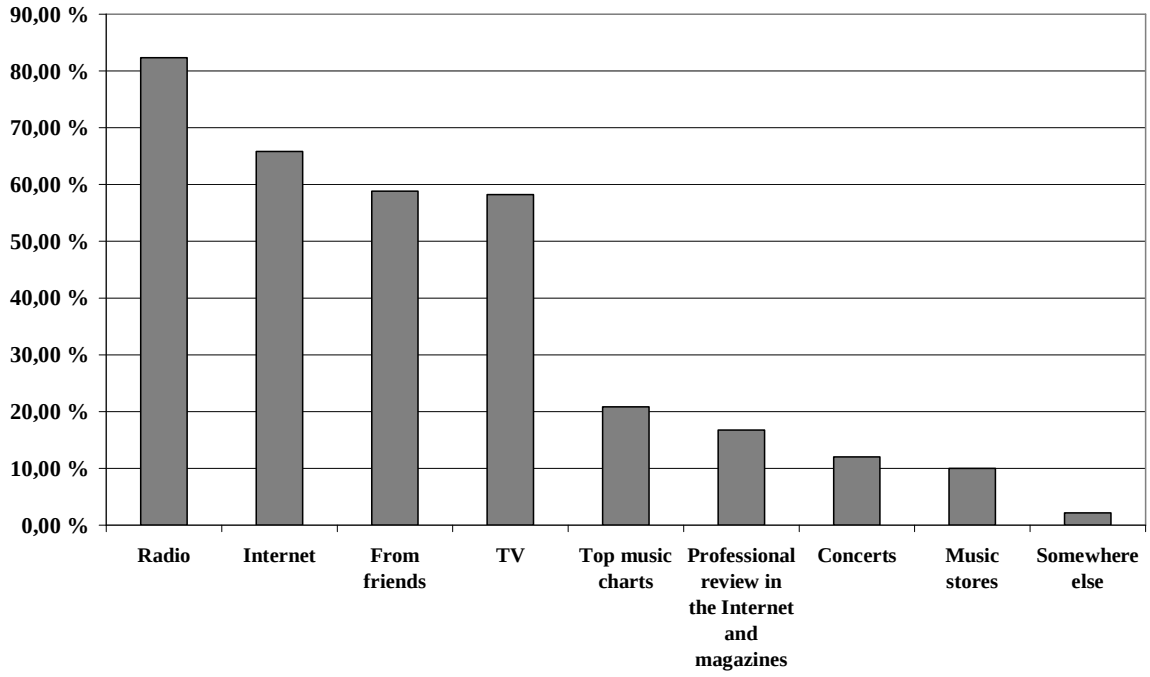

Figure 7. How respondents hear about new music

When finding out respondents' music habits it was also interesting to find out how much money respondents spend on buying music. There were quite a few respondents (37%) that said they spend nothing on buying music, which basically means that if and when they listen to music from music devices or computer they get it for free from friends or possibly illegally from the Internet. A little over a half of the respondents said they spend 1-20 euros per month on buying music. Only about 9 percent spend more than that per month on buying music.

Respondents' interests and attitudes towards music from the bands that are new to them are factors affecting also respondents' willingness towards music recommendations. That is why in the questionnaire was also asked how often respondents buy music from the bands' that are new to them and how much they spend on buying music from these bands. About 40 percent said that they never buy music from the bands that are new to

them. A little over 40 percent said they buy once per year or less and 15 percent once per three months or less. There were only a few respondents that buy music, from the bands that are new to them, more often than that. Almost 55 percent spend nothing on new bands' music. However, it has to be taken into account that about 65 percent of them do not spend money on buying music at all. About 41 percent of the respondents spend 1-10 euros per month. Only about 5 percent spend 11-25 euros per month on new bands' music.

In order to find out respondents' attitudes towards buying music by using their mobile phones it was asked if respondents had ever bought songs by using their mobile phone and if they would be willing to buy songs by using a mobile phone. Only about 7 percent of all the respondents had bought songs with their mobile phones, although about 38 percent would be willing to purchase songs by using a mobile phone. Those who were not willing to buy songs by using a mobile phone were asked the reasons why.

Here are the biggest reasons why respondents are not willing to buy songs by using mobile phone:

- too expensive 51,7 %
- too complicated 38,1 %
- other 31,3 %
- fear of fraud 7,0 %
- fear of loosing privacy 6,1 %

A little over 50 percent said it is too expensive and 38 percent think it is too complicated. Some respondents were afraid of fraud and loosing their privacy. Other reasons for not buying songs with mobile phone were following: Some respondents want the original CDs or they can download music with their computer so they do not need to do it with their mobile phone. Some respondents also said that they do not have a mobile phone that allows music listening and some were concerned about the quality of the music tracks.

The last question in the music habits part was where do respondents buy music. Almost 66 percent buy music from music or department stores. About one third of the respondents buy CDs or DVDs from the Internet, 29 percent download music from the Internet and about 30 percent of the respondents said they do not buy music because they get it for free. About 17 percent buys music from a second hand stores. Based on these we can say that about 65 percent buy their music on CDs and about 33 percent downloads music or gets it for free. There are also some respondents that do both, buy CDs and download music.

6.2.3 Music Recommendation System

The last part of the questionnaire handled music recommendation systems and how willing respondents would be to use such a system. In this part the purpose was also to find out if the respondent would be ready for viral marketing. One fifth of the respondents said they would be willing to get music recommendations to their mobile devices. New songs and albums were the most interesting information that respondents would like to have. About 50 percent were also interested in information about upcoming concerts and special offerings. Also artist products such as t-shirts, posters, etc. were seen interesting among 10 percent of the respondents. A little fewer than that was interested in all kinds of fan club information.

In order to find out how willing respondents would be to do viral marketing, they were asked who could recommend music to their mobile devices and here is the ranking:

1) Friends
2) A music provider
3) A trusted brand

Friends were clearly the first ones that respondents would give a permission to recommend music to their mobile devices. Music providers were considered the second option and a trusted brand was considered the third.

Respondents' willingness towards forwarding music recommendations to their friends was asked next and about one third of the respondents would be ready to forward music recommendations that they get from the music provider to their friends. It was also asked what the respondents want to get for return from the music provider. When forwarding the recommendations, about 67 percent want discounts. About 38 percent want a chance to win something and somewhat over 10 percent of the respondents would like to have entertainment, games, etc. for return when forwarding the music recommendations.

When respondents were asked if they would like to know what kind of music their friends are listening, 46 percent said they would be interested to know. A little less, but still about 40 percent of the respondents would also like others to know what kind of music they are listening. It was interesting to know to whom respondents would be willing to tell what kind of music they are listening. It was no surprise at all, that friends are the ones that respondents would like to share the most what kind of music they are listening. Next comes family and then community and everyone else.

In the figure 8 it can be seen what kind of data respondents are willing to give about themselves to music stores (advertisers) to ensure better and more personalized music recommendation service. Favorite music genre and favorite band or bands were the data that respondents would be the most willing to give. A little less than one third of all respondents were not willing to give any kind of data about themselves. There were about 28 percent that would be ready to tell music stores what songs they are listening and about 25 percent would also be ready to tell how often they are listening music. Some respondents would be willing to tell their hometown to get information about local concerts for example. A few would be willing to reveal their entire music collection and even their friends' contact information.

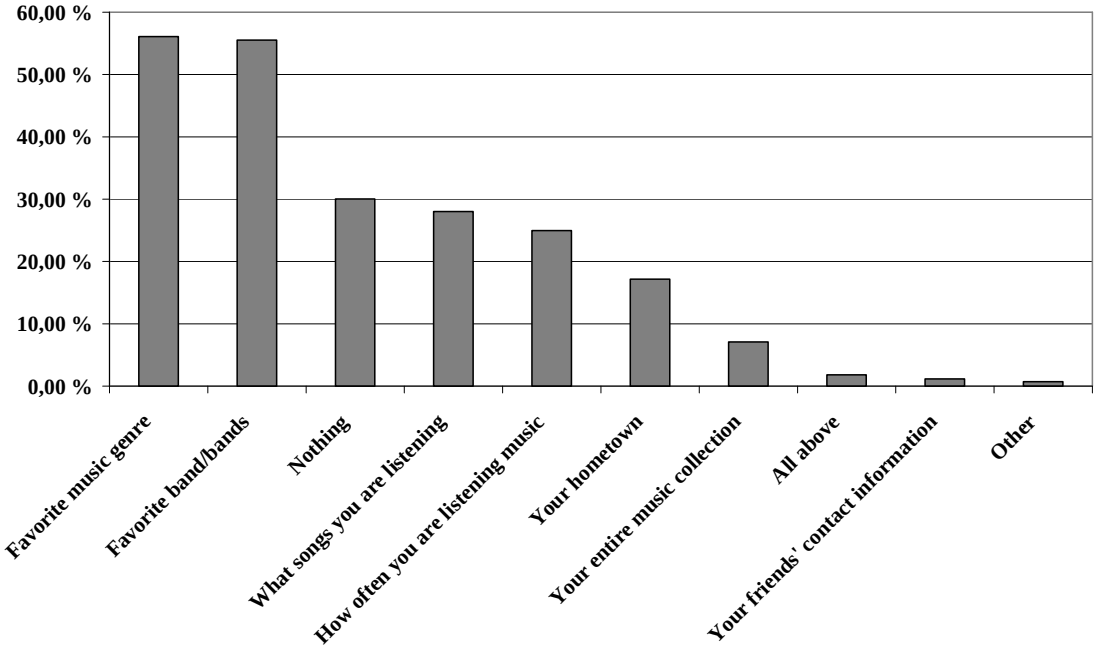

Figure 8. Data respondents are willing to give about themselves to music stores

There are quite a few music recommendation systems in the Internet. When asked, 24 percent of the respondents said to have used some music recommendation systems in the Internet already. In addition to this, about 57 percent of the respondents would be willing to try a music recommendation system. Only 5 percent said to be very confident to use a music recommendation system and about 38 percent would not be confident at all to use such a system.

In the end of the questionnaire, the respondents were asked which brand they would trust the most for delivering recommendations to their music devices and Nokia became a clear winner. Apple, Google and Sony Music were considered the next trustable brands. However, it has to be taken into account that there was a chance to win a Nokia music phone and this could have affected the results of this question. Respondents were also asked if they would be willing to take part in a further research about the subject and about 20 percent said they were interested.

7 FINDINGS OF THE STUDY

The data from the questionnaire was analyzed by using a SPSS-program. In order to find out what factors are affecting on respondents willingness towards mobile music recommendations and forwarding the recommendations correlation analyses were conducted.

Correlation means direct, linear connection between two variables. Correlation coefficient can vary between -1 and 1. The closer the coefficient is to zero, the smaller the connection between two variables is. If the correlation coefficient value varies between 0.8 and 1.0, it is very high. If the value is between 0.6 and 0.8 it can be said to be high and 0.4 and 0.6 pretty high. (Metsämuuronen 2003, p. 465, 305)

Five main questions form the questionnaire were chosen and compared to other variables in order to find out answers to the research questions. After comparison it was possible to see if there is any significant correlation between these variables. Based on these correlations it is possible to find out which factors are affecting, if any, on respondents' willingness towards viral marketing and music recommendation systems.

Five main questions are:

- Are you willing to receive personalized music-related recommendations to your mobile phone?
- Would you like to know what kind of music your friends are listening?
- Would you like others to know what kind of music you are listening?
- Would you be willing to purchase songs by using a mobile phone?
- Are you ready to forward music recommendations (that you get from the music provider) to your friends?

When all the other variables were compared to these there were really no high correlations between most of the variables. However, those who want to know what kind of music their friends are listening are also very likely willing to let others to know what kind of music they are listening. Based on the correlations cross tabulations were

conducted of the variables that seemed to have at least some kind of a connection with each other.

7.1 Willingness to Receive Music Recommendations to Mobile Phones

Respondents' spending on music of the bands that are new to them is affecting on respondents willingness towards receiving music recommendations to their mobile phones (see figure 9). The more respondents spend, the more willing they seem to be to receive music recommendations.

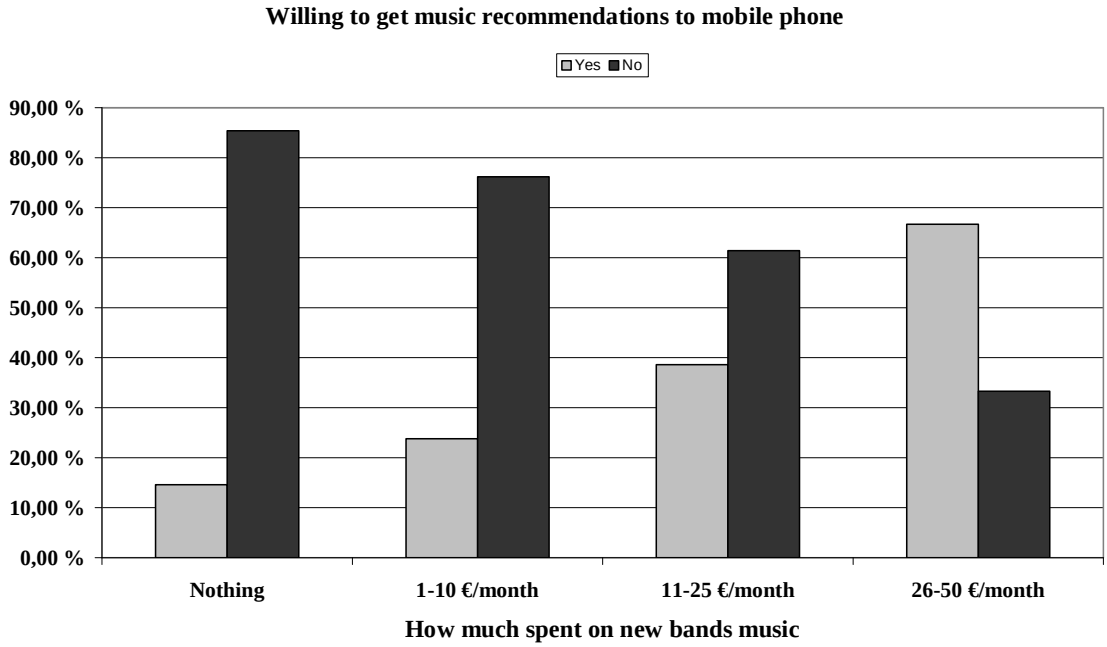

Figure 9. Respondents' spending on new bands' music affecting on their willingness to get music recommendations to their mobile phones

Those respondents that are willing to purchase songs by mobile phone also seem to be more willing to get music recommendations than those who are not willing to purchase songs. Respondents confidence towards using a music recommendation system was measured by *not confident*, *willing to try* and *very confident*. Those respondents that are willing to try or very confident also seem to be more willing to get music recommendations than those who are not confident at all.

7.2 Desire to Know What the Friends Are Listening to

About 60 percent of those respondents who are ready to forward music recommendations to their friends also want to know what their friends are listening. In figure 10 it is shown the connection between the respondents' wish to know what friends are listening and respondents' willingness to let others know what kind of music they are listening. Over 85 percent of those respondents who like to share what they are listening also want to know what their friends are listening.

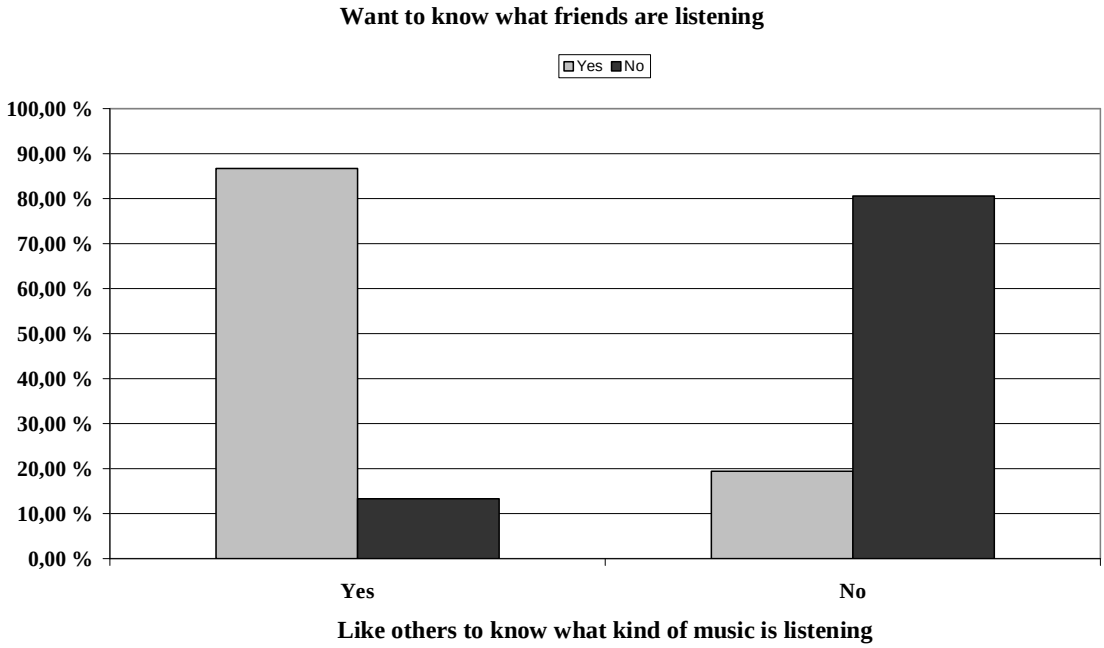

Figure 10. Respondents' willingness to share what they are listening affecting on their willingness to know what their friends are listening

The figure 11 represents how respondents' confidence towards using a music recommendation system affects on their wish to know what their friends are listening. It can be said that the more confident the respondents are, the more they want to know what kind of music their friends are listening.

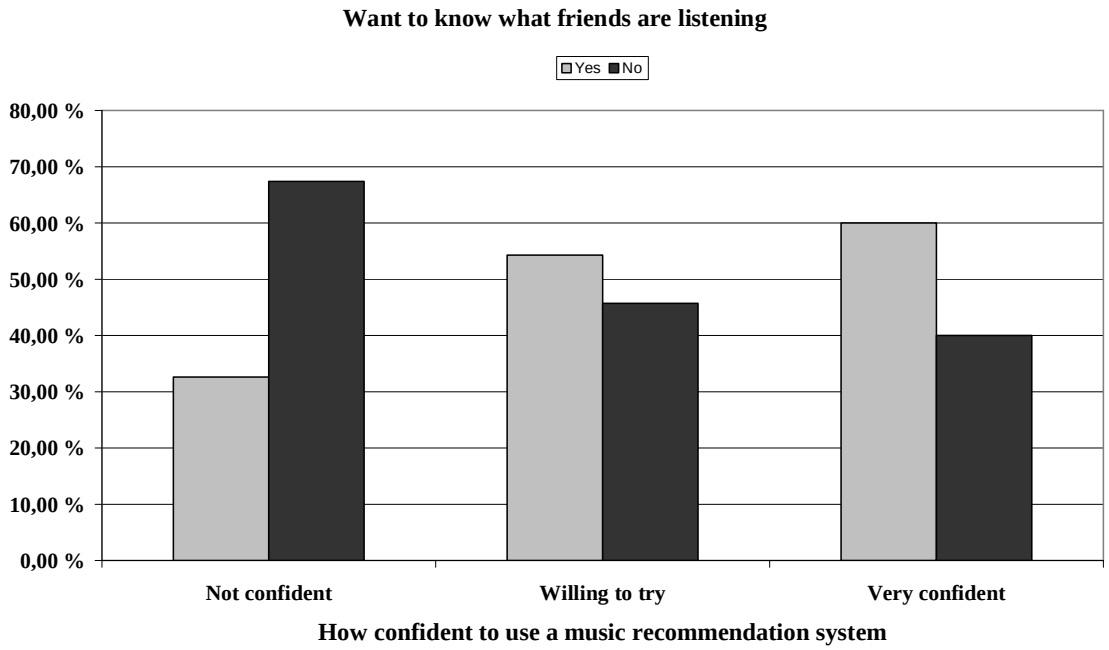

Figure 11. Respondents' confidence on using a music recommendation system affecting on their desire to know what kind of music their friends are listening

7.3 Willingness to Share What Kind of Music One is Listening to

Age seems to have an effect on respondents' willingness to share what kind of music they are listening. In the figure 12 it can be seen that the younger respondents are the more they like others to know what kind of music they are listening. This also refers to the fact that there is a potential user group for music recommendation systems among users under 18 years old.

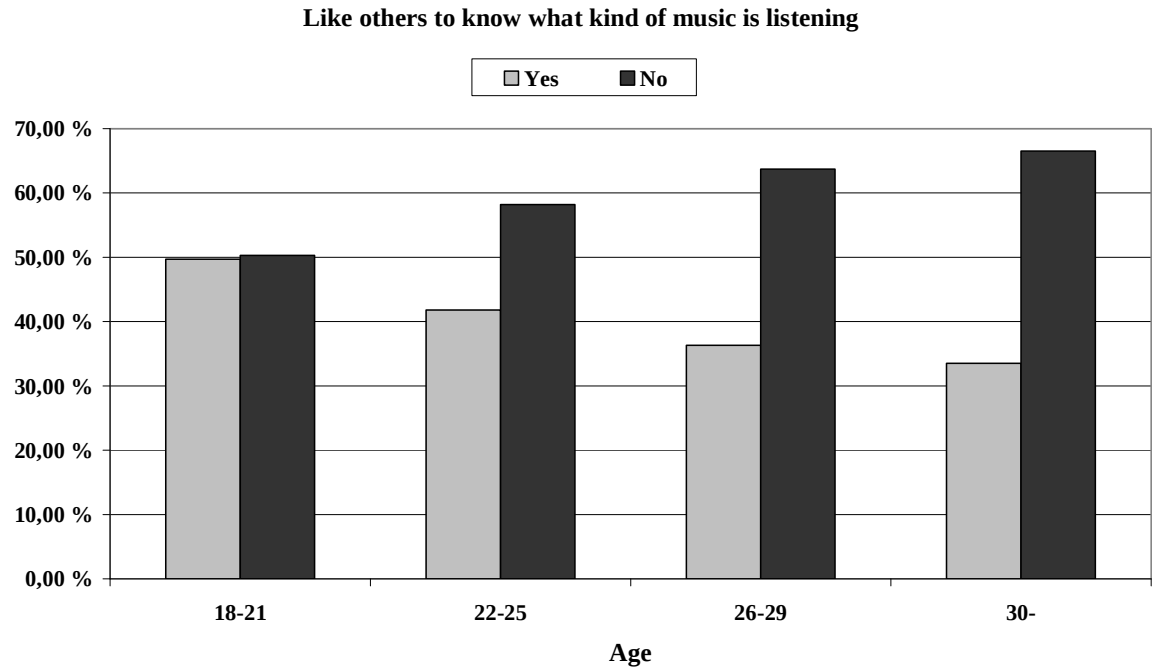

Figure 12. Respondents' age affecting on their desire to share what kind of music they are listening

It seems that the more often respondents buy music from the bands that are new to them, the more willing they are to share what kind of music they are listening. Those that buy this kind of music once per three months or less or once per month or less are the ones that the most like others to know what kind of music they are listening.

Almost 60 percent of the respondents that are ready to forward music recommendations to their friends also like others to know what kind of music they are listening. The figure 13 shows that those respondents that are very confident to use a music recommendation system are the most willing to share what kind of music they are listening.

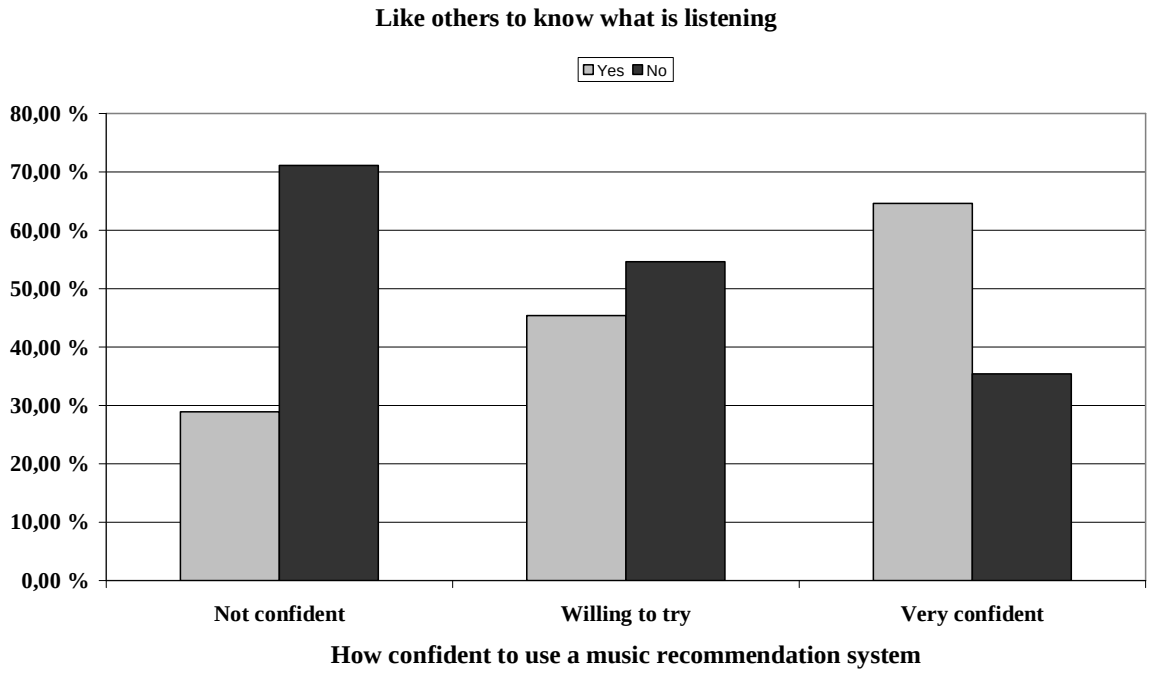

Figure 13. Respondents confidence to use a music recommendation system affecting on their willingness to share what kind of music they are listening

7.4 Willingness to Purchase Songs by Using a Mobile Phone

Only about 7 percent of all the respondents had bought songs with their mobile phones. The figure 14 shows, however, that 70 percent of these respondents would be willing to purchase songs by mobile phone also in the future. About 35 percent of those who have not yet bought songs by mobile phone would be willing to purchase them in the future.

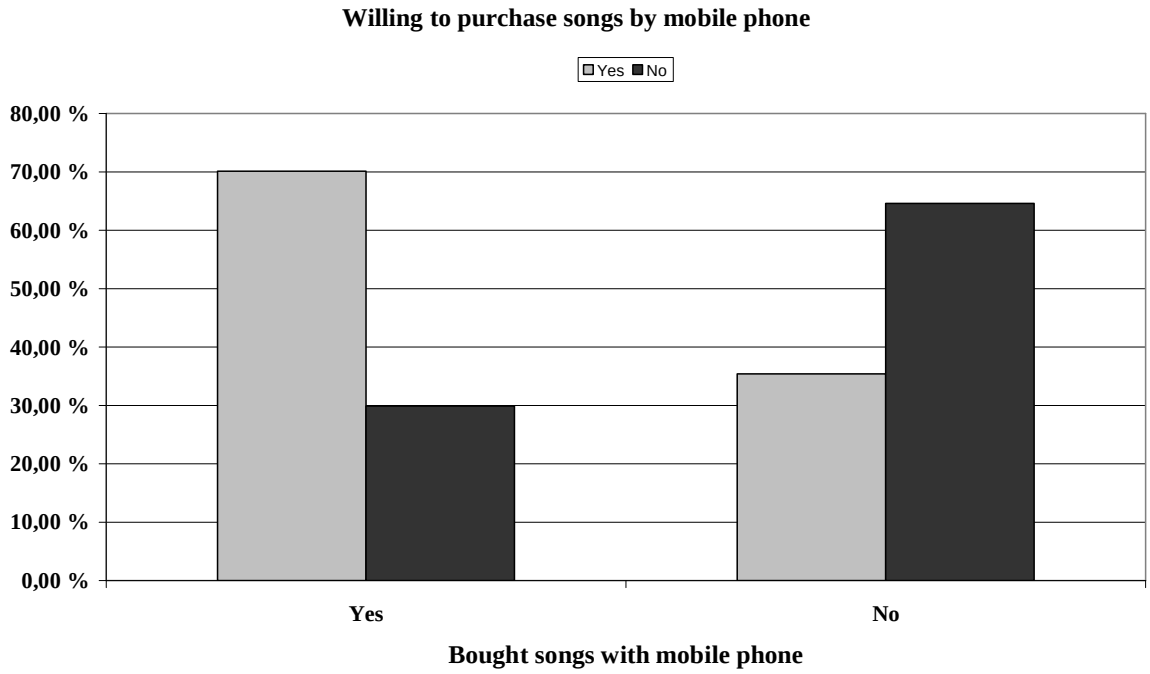

Figure 14. Respondents' willingness to purchase songs by mobile phone

7.5 Readiness to Forward Music Recommendations to Friends

Respondents' mobile phone habits are affecting on their willingness towards viral marketing. Based on the cross tabulation it can be said that the more text messages the respondents send, the more ready they are to forward music recommendations to their friends. Almost 45 percent of those respondents that are willing to try a recommendation system are also ready to forward music recommendations to their friends. Over 65 percent of those who are willing to get music recommendations to mobile phones are also ready to forward those recommendations to their friends, as can be seen in the figure 15.

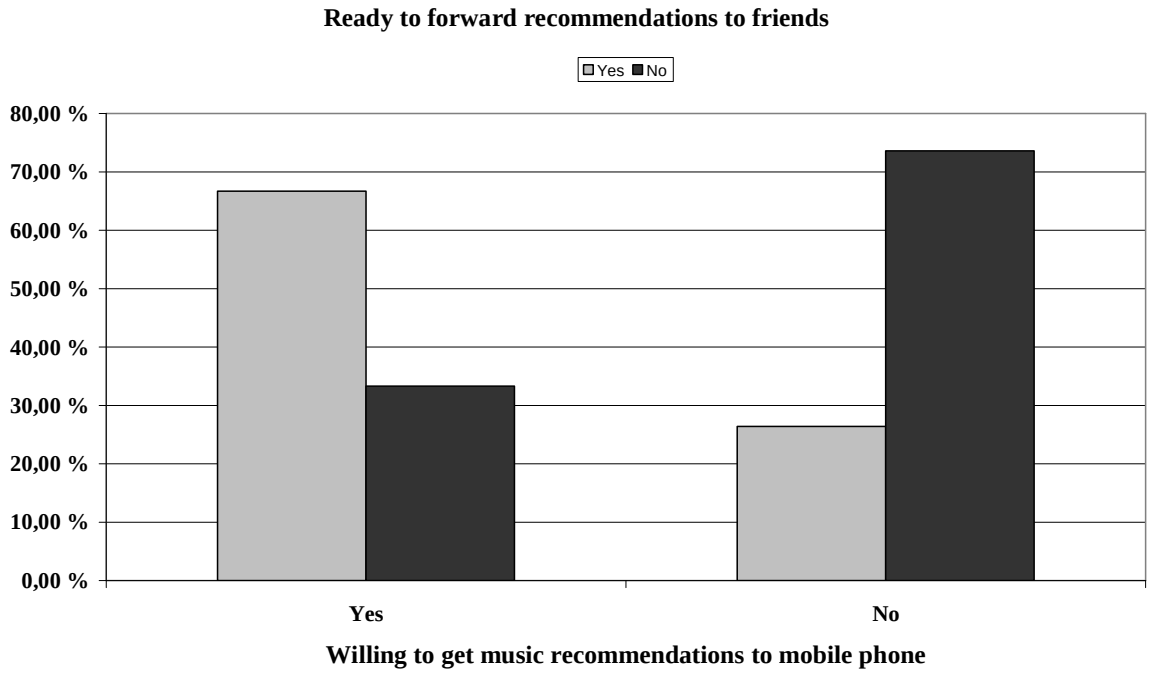

Figure 15. Respondents' willingness to get music recommendations affecting on their readiness to forward these recommendations

7.6 Non-Willingness to Pay Anything for Music

Nowadays, that it is still easy to get music for free, it is interesting to know what kind of factors are affecting on people's willingness to pay or not to pay for music. Based on the questionnaire there are quite a few people who are not paying anything for their music. In order to find out who these people are the respondents were chosen who:

- spend nothing on buying music
- spend nothing on buying music from the bands that are new to them
- do not buy music but they get it for free

These respondents were then compared to different kinds of variables in order to find out what kinds of factors are affecting on respondents' willingness to pay for music they are listening. In the end there were not that many factors that seemed to have a straight forward effect on respondents' willingness to pay for music.

Age was the first factor that seemed to have at least some kind of an effect on respondents' willingness on paying for music (figure 16). It seems that the older people get, the more willing they are to pay for music. Gender does not really have an affect on respondents' willingness to pay or not to pay for music. Only thing that can be said as a difference between genders is that the male seem to get music for free a little bit more than the female.

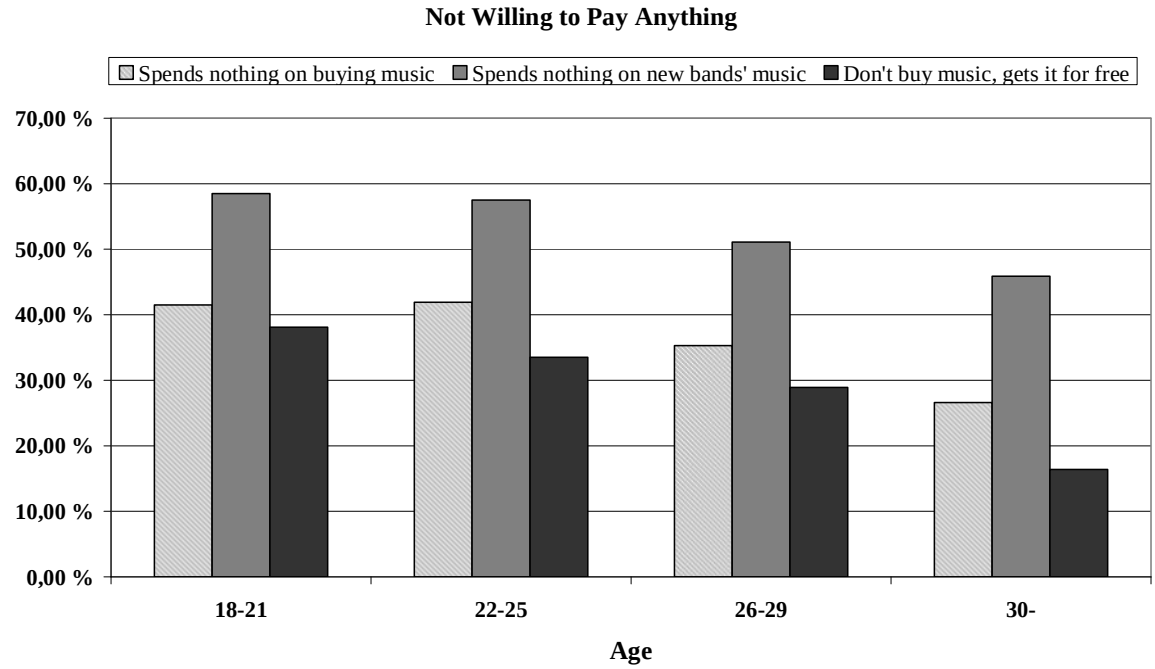

Figure 16. The effect of respondents' age on their willingness to pay for music

As we can see in the figure 17 respondents' music listening time also has an impact on how much respondents are willing to pay for music. Those that listen to music less than one hour per day are the ones who are most unwilling to pay anything for the music. On the other hand those who listen to music more than five hours per day are the ones who are most willing to pay for the music they are listening. Basically, the more respondents listen to music, the more willing they are to pay for the music. However, the amount of the respondents who do not buy music but get it for free stays the same no matter how much respondents listen to music.

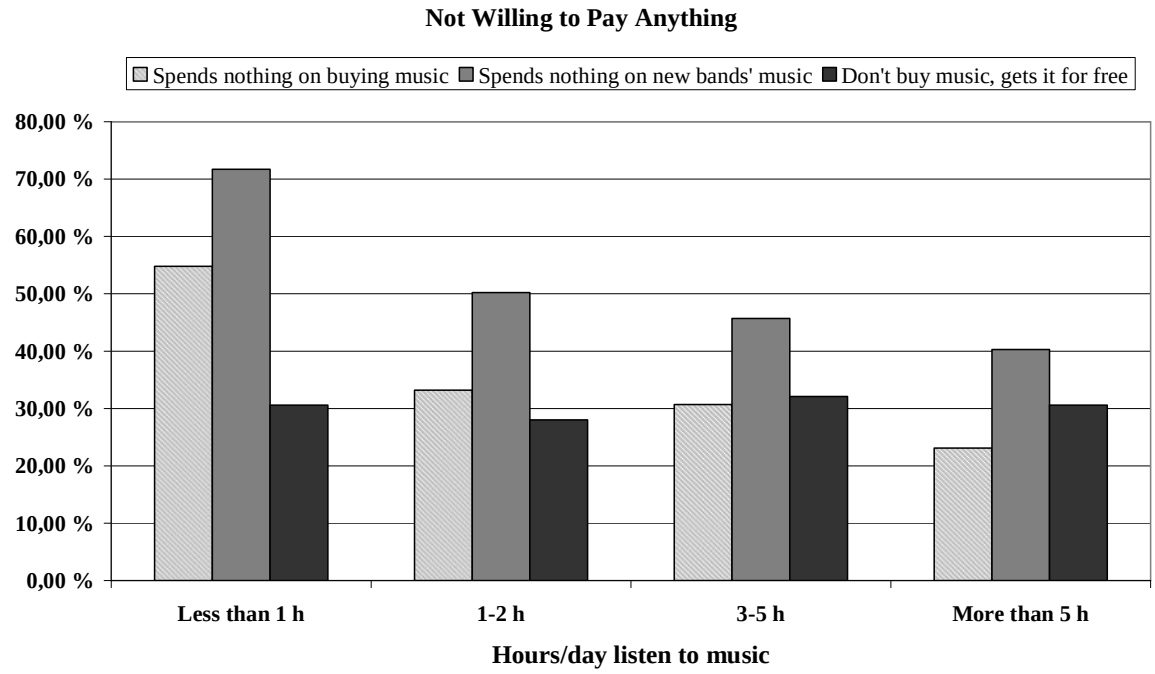

Figure 17. The effect of respondents' music listening time on their willingness to pay for music

The last variable that seemed to have some kind of an impact on respondents willingness of paying for music was whether respondents have an MP3-player or not. The ones that have an MP3-player are getting more music for free than those without the MP3-player. At the same time MP3-player owners are however spending more on music than the ones that do not own an MP3-palyer.

7.7 Further Analyses

Cluster analysis is an analysis method which purpose is to help to group variables into groups where variables are as similar to each other as possible. There are two kinds of cluster analyses, hierarchical and k-means cluster analysis. Hierarchical cluster analysis starts so that it is being tried to find variables that are that are as similar to each other as possible and then create groups or clusters. In the next phases the clusters that are similar to each other are connected. After that these cluster groups are connected to others so that in the end the whole data will form one big cluster. (Metsämuuronen 2003, p. 724-725) In this thesis the hierarchical method is being used.

Due to the fact that there were 1299 responses in this questionnaire it was necessary to decrease the amount of data because the SPSS-program cannot run such a big cluster analysis. There had to be selected a smaller amount of cases. These cases were selected randomly in order to get results that can be generalized to the whole data. It was taken about 35 percent of the cases for which the cluster analysis were run.

7.7.1 Clustering

Based on cluster analysis new variables (clusters) were created. Regularly used mobile phone features were divided into three clusters which were:

- **Basic:** Calling, text messaging
- **Internet:** Internet, email, mobile-TV, video calling
- **Entertainment:** Music player, radio, camera, games, gps-locating service, other

The ones that used mobile phone to calling and text messaging belonged to the first cluster. The Internet cluster consists of users that use Internet, e-mail, mobile-TV and video calling. And to the entertainment cluster belonged all the respondents that use music player, radio, camera, games, gps-locating services and other mobile phone features.

Two clusters were formed based on how respondents hear about new music:

- **Basic:** Friends, radio, TV, Internet
- **More interested:** Concerts, music charts, professional reviews, music stores

The cluster called *basic* consists of the respondents that hear about new music from friends, radio, TV and/or Internet. The ones that hear about new music in concerts, from

top music charts, professional reviews in the magazines or in music stores, are situated in the cluster called *more interested*.

Where people buy music is simply divided in to two clusters, whether respondents buy their music on CDs or download it from the Internet:

- **CD:** Music stores/department stores, from the Internet; buying a CD/DVD, from a second hand store
- **Download:** Internet; downloading, gets music for free

Four clusters are formed based on what kind of data respondents would be willing to give about themselves to music stores:

- **Not willing to give anything**
- **Careful:** Favorite band/bands, favorite music genre
- **In the middle:** What songs listening, how often listen to music
- **Confident:** Entire music collection, hometown, friends' contact information, all above

Those that are not willing to give any kind of data form the first cluster. The ones that are willing to tell their favorite band/bands and favorite music genre belong to the cluster called *careful*. The respondents that are willing to tell what songs they are listening and how often they listen to music are considered to belong in a cluster called *in the middle* and finally the cluster called *confident* consists of the respondents who are willing to reveal their entire music collection, their hometown, their friends' contact information or all the things mentioned earlier.

These new clusters were saved as new variables in SPSS-data and they were compared to different factors in order to see which factors are affecting on them. There seemed to be at least some correlation between the new variables and age, gender, sent and received text messages per day.

In the figure 18 it can be seen how respondents' age is affecting on their mobile phone habits. The use of basic mobile phone features and entertainment features seemed to have no big difference in different age groups. However, it seems that the older respondents get the more they use Internet features in their mobile phones.

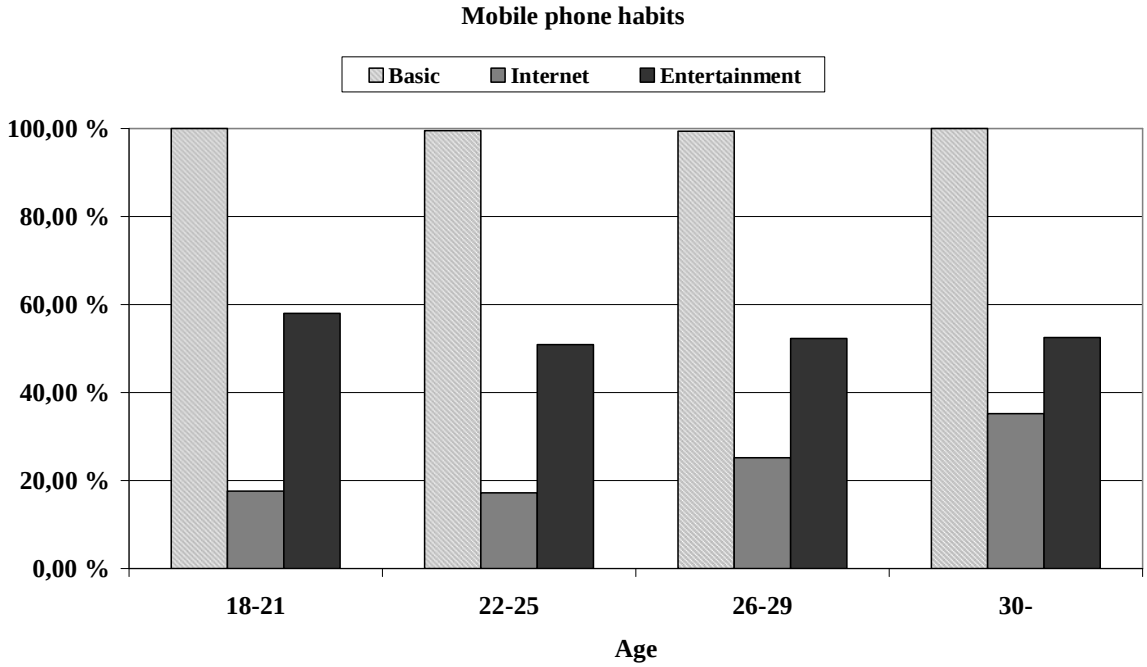

Figure 18. The effect of respondents' age to their mobile phone habits

Respondents' age was compared to all the other new variables as well and there seemed to be some correlation between the age and where the respondents buy music (see figure 19). And as a result it can be said that the older respondents get, the more they buy CDs compared to downloading music.

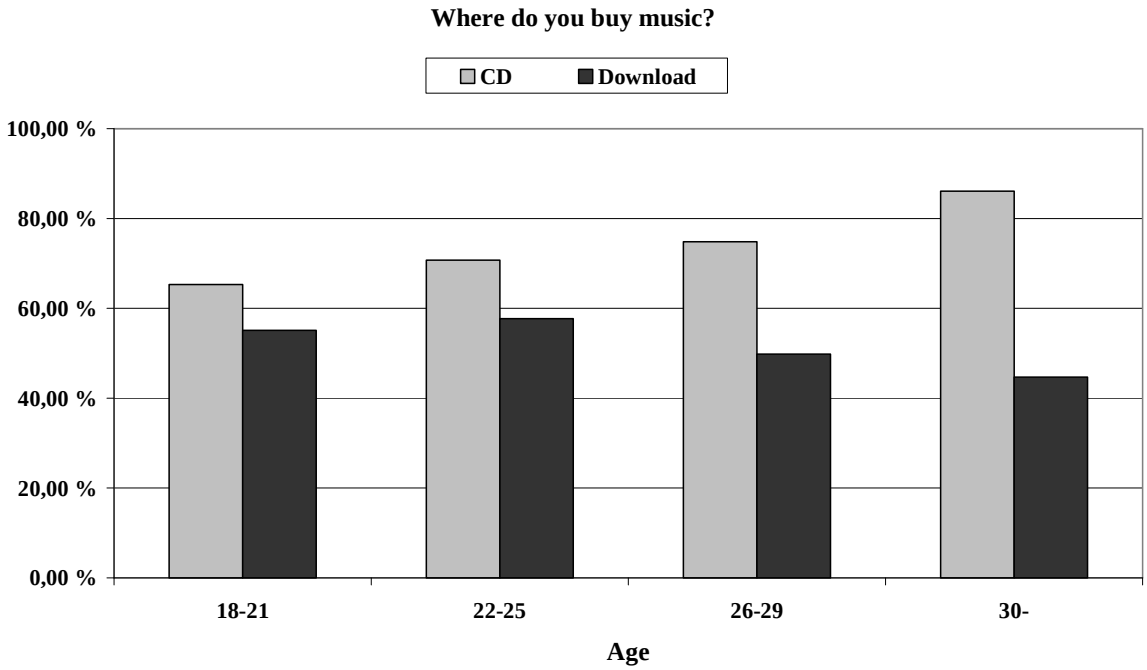

Figure 19. The effect of respondents' age on where they buy music

Next variable that seemed to have at least some kind of an effect on these new variables is gender. Figure 20 shows the effect of respondents' gender on their mobile phone habits. When mobile phone habits of female and male were compared the only difference was that male use more Internet features but other than that there was no difference between genders. In addition to this it can be said that there was no difference in female and male music downloading amounts, but the results show that female buy a little bit more CDs than male.

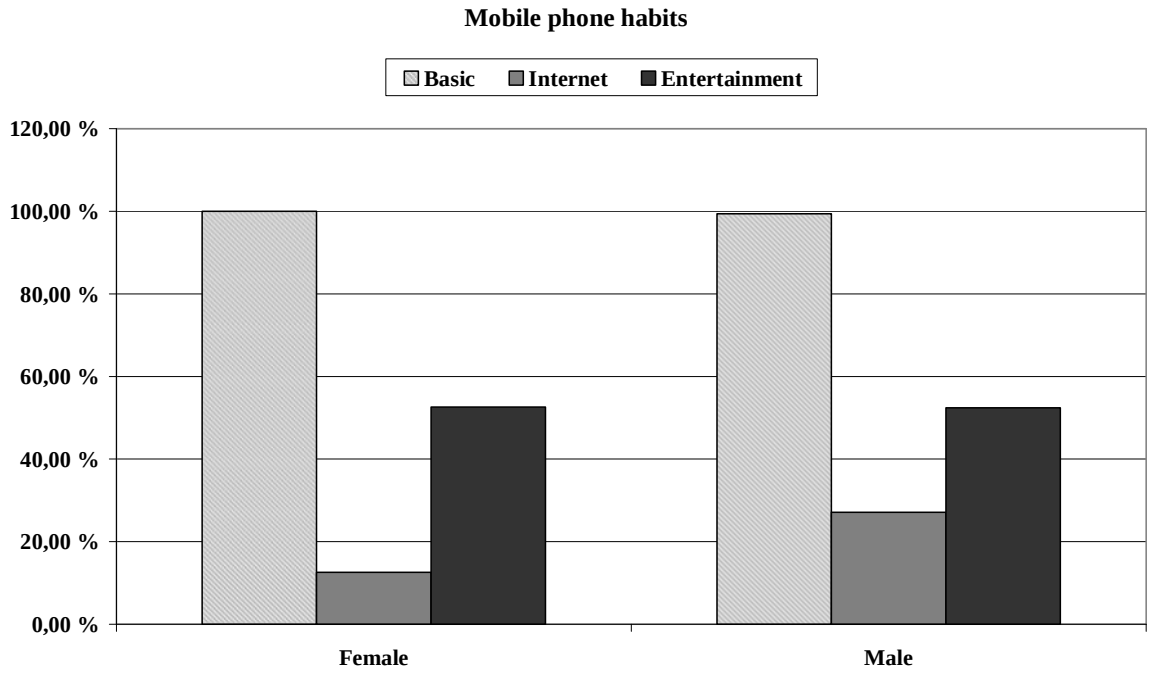

Figure 20. The effect of respondents' gender on their mobile phone habits

When respondents' amount of sent text messages per day were compared with their mobile phone habits the result was very expected. In the figure 21 it can be seen that the more text messages respondents send the more mobile phone features they use.

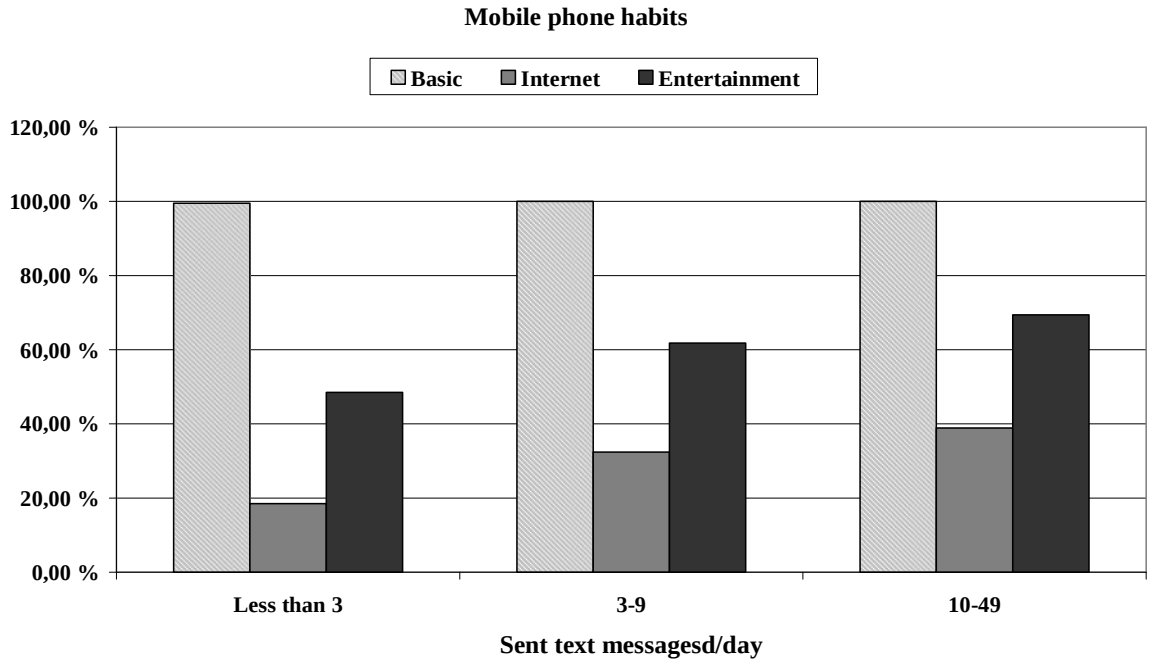

Figure 21. The connection between sent text messages/day and mobile phone habits

The amount of sent text messages per day seems to affect on how respondents hear about new music. The more messages respondents send the more interested they are about new music, which means that they hear about new music for example in concerts or professional reviews. Respondents' amount of sent text messages per day was also compared to their music buying habits. There seems to be some correlation between these two and it seems that the more text messages respondents send the more they download music.

The amount of received text messages per day seems to have same kind of an effect on respondents' mobile phone habits as sent text messages: the more they receive the more they use mobile phone features. Also the more messages respondents receive the more they seem to be downloading music. There is also some correlation between the amount of received text messages and how respondents hear about new music. The more text messages they receive per day the more interested they are about new music.

7.7.2 Clusters Affecting Respondents' Willingness towards Mobile Music Recommendations and Viral Marketing

After detecting new variables with cluster analysis correlation analyses were conducted in order to see which variables have at least some kind of an effect on respondents' willingness towards mobile music recommendations and viral marketing. These new variables were compared with the main questions, like it was done earlier with all the original variables (see chapter 7). Based on correlation analyses it can be said that the factor that seemed to have the most effect is how willing respondents are to give data about themselves to music stores.

It can be said that the more confident respondents are to give data about themselves to the music stores, the more willing they are also to get music recommendations to their mobile phones. The figure 22 shows that the more confident respondents are to give data about themselves, the more they also want to know what kind of music their friends are listening.

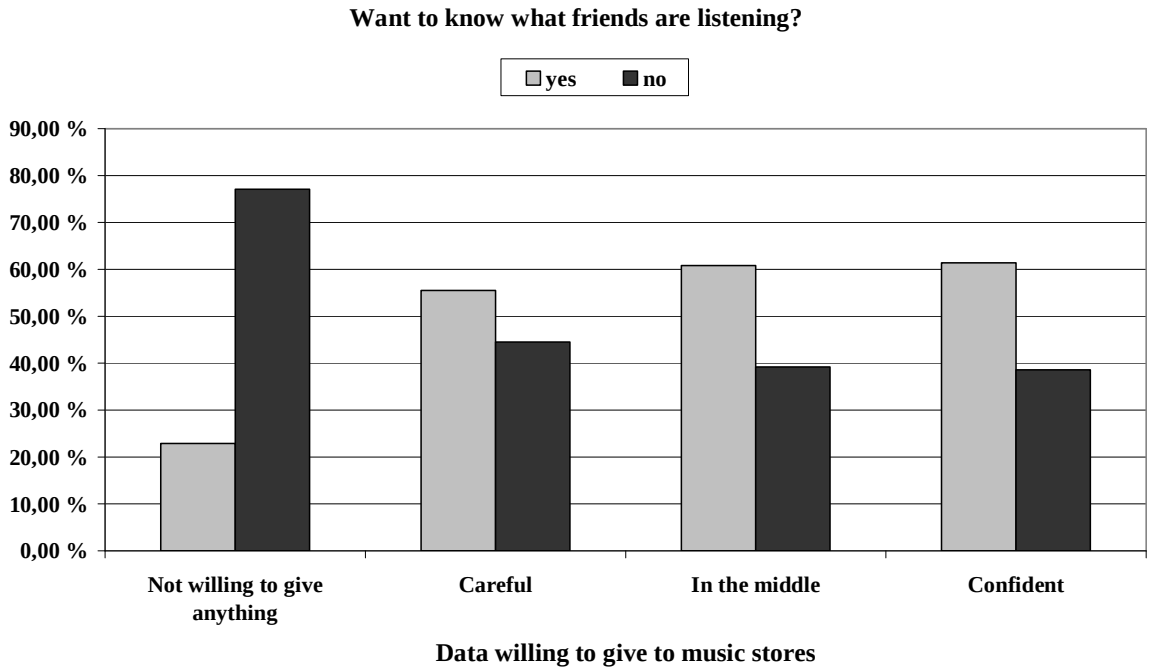

Figure 22. The effect of respondents' willingness to give data about themselves on their desire to know what their friends are listening

The same seems to be situation with respondents' willingness to let others know what kind of music they are listening to. As it can be seen in the figure 23 the more confident respondents are to give data, the more they like others to know what kind of music they are listening to.

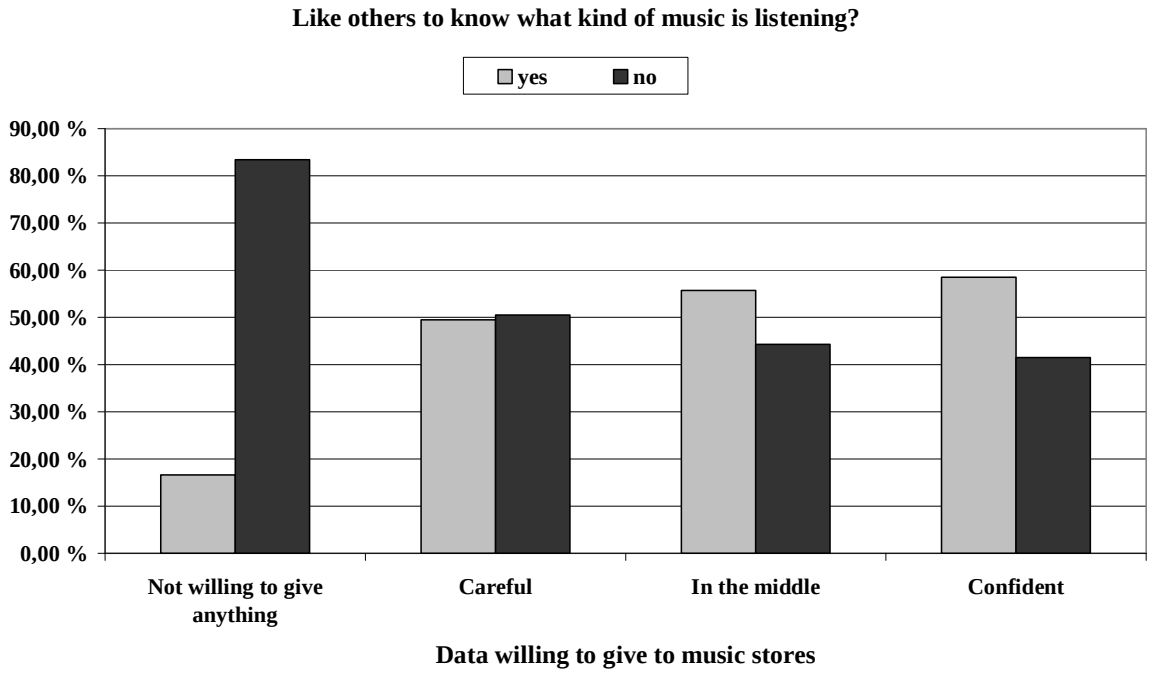

Figure 23. Respondents' willingness to give data about themselves affecting on their willingness to share what kind of music they are listening to

Respondents' willingness to give data about themselves to music stores and their music listening habits was next compared to respondents' willingness to purchase songs by using a mobile phone. Over forty percent of those respondents that are willing to give at least some kind of data about themselves to music stores are willing to purchase songs by using a mobile phone. Based on the figure 24 it can also be said that the more confident respondents are to give data to the music stores, the more ready they are to forward music recommendations to their friends.

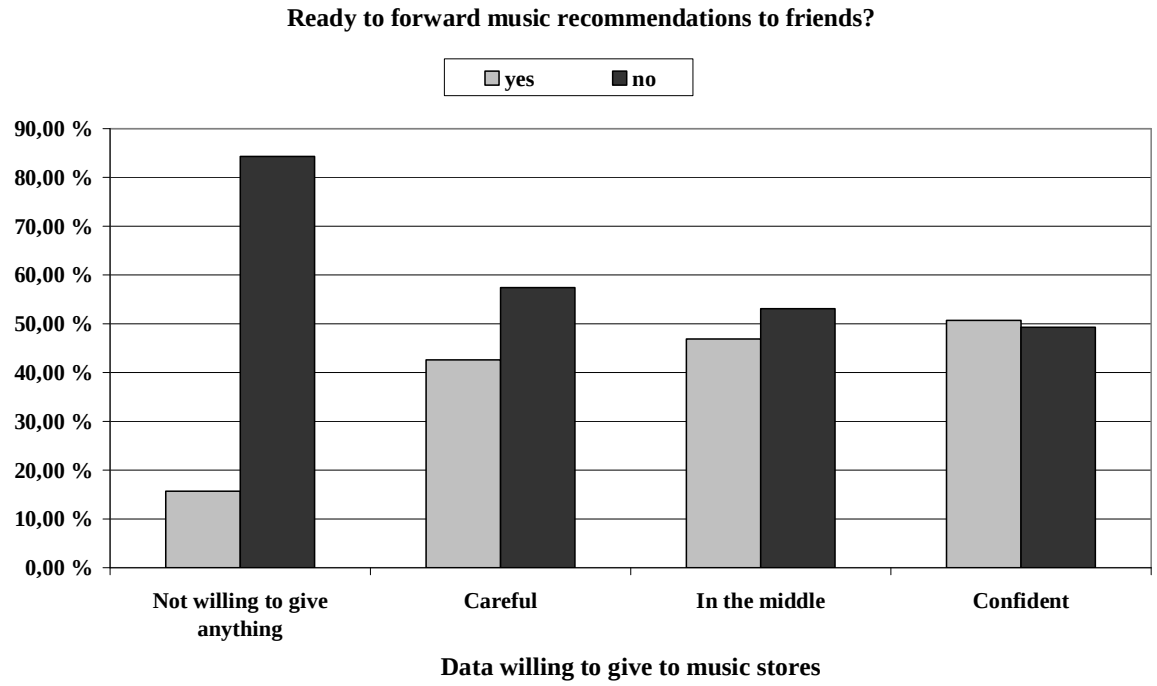

Figure 24. Respondents' willingness to give data about themselves affecting their willingness towards viral marketing

After all these analyses it can simply be said that the more confident the respondents are to give data about themselves and their music habits to the music stores the more willing they are towards mobile music recommendations and also viral marketing.

Based on how respondents hear about new music they were divided into two groups, basic and more interested. It seems that those who are more interested are little more willing to get music recommendations to their mobile phones. The same thing with the respondents' desire to know what kind of music their friends are listening, the more interested they are, the more they want to know what their friends are listening to.

This seems to be the trend with all the factors. The more interested about new music the respondents are the more they like others to know what kind of music they are listening. And the more interested they are the more ready they are to forward music recommendations, which they get from the music provider, to their friends. So it can be said that the more interested the respondents are about new music the more willing they are to get music recommendations and more ready they are to forward them to their friends.

Mobile phone habits seemed to have some kind of an impact on respondents' willingness towards viral marketing too. Based on correlation analyses and cross tabulation it can be said that the more mobile phone features respondents use, the more they want others to know what they are listening.

Respondents were divided into two clusters based on where they buy their music from. However, it does not seem to have an effect on respondents' willingness to receive music recommendations to their mobile phones. Whether respondents buy their music on CDs or download it from the Internet, it does not really affect on their willingness to receive and forward music recommendations. The only thing that can be said as a difference between CD buyers and those who download their music, is that the ones who download are a little bit more eager to know what kind of music their friends are listening.

8 CONCLUSIONS

8.1 The Trend of Mobile Marketing and Mobile Music

Mobile phones have become the new channels for marketing. It has been assumed that there were over 2.7 billion mobile phones in use in the world in the end of year 2006 and the amount is increasing every day. This offers marketers new ways to fast and effectively reach their customers. Viral marketing has already been a great success in the Internet and now mobile phones offer another marketing medium where viral marketing could be utilized to spread the message at least as effectively as in the Internet.

However, while living in the world of information overflow, consumers do not want irrelevant advertisement to their mobile devices. Personalized services are the things customers are seeking for today. Personalized music recommendations are the answers for consumers who are interested in finding new music but yet do not have time or possibility to search for new artists from the huge amount of new artists. There have been these music recommendation systems already in the Internet and they have been successful.

Mobile phone manufacturers have started to offer music services in order to better fulfil customer needs and be able to compete in the field of mobile music. Mobile music recommendations offer customers personalized music recommendations anywhere and anytime. Now that Apple's iPhone is on the market, it is interesting to see how well mobile manufacturers' music applications will do compared to iPhone and what are the features and services consumers are the most eager to use in the future.

8.2 Willingness towards Mobile Music Recommendations and Viral Marketing

Value is the key issue when considering consumers' willingness towards mobile music recommendations and viral marketing. People have to feel they get at least some kind of

value when receiving or forwarding the message. The value does not always have to be monetary. It can also be entertainment or even status value. According to the survey almost 80 percent of the respondents wanted to have something for return when forwarding the message to their friends. One thing marketers have to take into account is that different people appreciate different things and this means that something that has value for one person does not mean it has value for another. Also the relevance of the message varies between different people. When considering mobile marketing where the channel is highly personal, also the message has to be personal and relevant for the consumer. This is one thing where viral marketing can help marketers. People, who forward recommendations or ads to their friends, know what kind of things their friends like and need, better than any marketer and this way they will most likely recommend only products / services they feel they friends would be interested in.

Due to the fact that there were no big correlations between variables it is hard to form clear user segments for the mobile music recommendation system. However, it can be said that the more people listen to music and the more interested they are to listen to new bands' music, the more willing they are towards mobile music recommendations. Also those who have already used such a system in the Internet are more confident and willing to use it also on mobile phone than those who have never used such a system.

Based on the results of the survey it can also be said that people's spending on music from the bands that are new to them has an effect on people's willingness to get personalized music recommendations to their mobile phones. The more people are spending the more willing they seem to be to receive music recommendations.

People's age affects on their willingness to share what kind of music they are listening to. The results of the survey show that the younger people are the more they want others to know what kind of music they are listening.

People's readiness to receive mobile music recommendations has an effect on their willingness to also forward the message. The survey shows that those who are willing to receive personalized music recommendations to their mobile phones are also very likely to be ready to forward those recommendations to their friends. Also people's willingness

to give data about themselves affects on their willingness towards mobile music recommendations and viral marketing. The more willing people are to give data about themselves to music stores (service provider) the more willing they are towards mobile music recommendations and also viral marketing. The more interested people are in new music, the more willing they are to receive music recommendations to their mobile phones.

Factors affecting on people's willingness to pay or not to pay for their music were also detected. Age seemed to have an effect on people's music paying behavior. The older people get, the more willing they seem to be to pay for their music. Also people's music listening time has an effect on people's music paying behavior. It is not a surprise that music heavy users are more willing to pay for the music than for example those listening to music less than one hour a day.

8.3 Further Research

Further research should be done among users under the age of 18 years. As the results of this study show, the younger people are the more they like others to know what they are listening to. This refers, that mobile phone users under the age of 18 years old could be willing to viral marketing and sharing the information of their music collections in their mobile phones.

In addition to this thesis, there will be done a focus group study, purpose of which is to give detailed information of how music and mobile phone heavy users would accept a mobile music recommendation application. The purpose of the focus group is also to find out possible improvements for the mobile music application.

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APPENDIX 1

Mobile Music Survey

Answer the questions and you will have a chance to win a **Nokia 5300 XPressMusic Phone**.

General Information

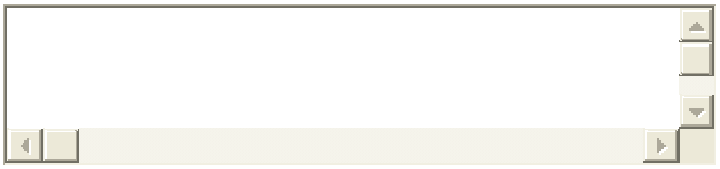
1. Age

- 18-21
- 22-25
- 26-29
- 30-

2. Gender

- Female
- Male

3. Degree of Education

- Master/Bachelor of Science Student (Technology)
- Master/Bachelor of Science Student (Economics and Business Administration)
- Other, what? 

Mobile Phone Habits

4. How many text messages do you send per day (in average)?

- Less than 3
- 3-9
- 10-49
- More than 50

5. How many text messages do you receive per day (in average)?

- Less than 3
- 3-9
- 10-49
- More than 50

6. Which features of your mobile phone do you use regularly?

- [ ] Calling
- [ ] Text messaging
- [ ] Internet
- [ ] E-mail
- [ ] Music player
- [ ] Radio
- [ ] Camera
- [ ] Games
- [ ] Mobile TV
- [ ] GPS, locating service
- [ ] Video calling
- [ ] Other, what?

7. Have you ever received advertising to your mobile phone?

- ( ) Yes
- ( ) No

If yes, what kind?(e.g. phone operator, search engine, sports scores, news, etc.)

8. Have you ever participated a competition/voting by mobile phone (sending a text message)?

- Yes
- No

If yes, please describe (e.g. Idols, Big Brother, Texting a code from a chocolate bar/coke bottle, etc.)

9. Have you ever downloaded ring tones/ background pictures to your mobile phone?

- Yes
- No

Music Habits

10. How many hours per day do you listen to music?

- Less than 1 h
- 1-2 h
- 3-5 h
- More than 5 h

11. Do you have an MP3-player?

- Yes
- No

If yes, how often do you listen to music on your MP3-player?

- Every day
- Couple times a week
- Sometimes

12. Do you listen to music from your mobile phone music player?

- Yes
- No

If yes, how often?

- Every day
- Couple times a week
- Sometimes

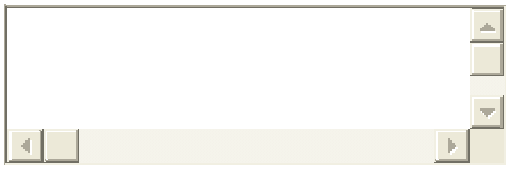
13. Do you listen to music from your mobile phone radio?

- Yes
- No

If yes, how often?

- Every day
- Couple times a week
- Sometimes

14. How do you hear about new music?

- [ ] From friends
- [ ] Radio
- [ ] TV
- [ ] Internet
- [ ] Concerts
- [ ] Top music charts
- [ ] Professional review in the Internet and magazines
- [ ] Music stores
- [ ] Somewhere else, where? 

15. How much do you spend on buying music?

- ○ Nothing
- ○ 1-20 €/month
- ○ 21-50 €/month
- ○ 51-100 €/month
- ○ Over 100 €/month

16. How often do you buy music from the bands that are new to you?

- ○ Never
- ○ Once per year or less
- ○ Once per 3 months or less
- ○ Once per month or less
- ○ Twice per month or more

17. How much do you spend on buying music form the bands that are new to you?

- Nothing
- 1-10 €/month
- 11-25 €/month
- 26-50 €/month
- Over 50 €/month

18. Have you ever bought songs with your mobile phone?

- Yes
- No

19. Would you be willing to purchase songs by using a mobile phone?

- Yes
- No

If no, why not?

- Too expensive
- Too complicated
- Fear of loosing privacy
- Fear of fraud
- Other, what?

20. Where do you buy music?

- [ ] From music stores/department stores
- [ ] From the Internet: Buying a CD/DVD
- [ ] From the Internet: Downloading
- [ ] From a second hand store
- [ ] I don't buy it, I get it for free
- [ ] Somewhere else, where?

Music Recommendation System

The music recommendation system is a website/service that recommends music based on the users' interests and earlier purchases. One example of recommender systems is amazon.com.

21. Are you willing to receive personalized music-related recommendations to your mobile phone?

- ( ) Yes
- ( ) No

If yes, what kind of information would be most interesting for you?

- [ ] New songs and albums
- [ ] Up-coming concerts
- [ ] Special offerings
- [ ] Fan club information
- [ ] Artist products (e.g. t-shirts, posters, etc.)
- [ ] Other, what?

22. Who can recommend music to your mobile device? (From 1 to 3, mark 1 for the one you are most willing to give the permission)

Friends

Music provider

Trusted brand (e.g. Nokia, Apple, Sony Ericsson, etc.)

23. Are you ready to forward music recommendations (that you get from the music provider) to your friends?

Yes

No

If yes, what do you have to get for return (from the music provider)?

Nothing

Discounts (e.g. on your next music purchase, concert tickets, etc.)

A chance to win something

Entertainment, games, etc.

Other, what?

24. Would you like to know what kind of music your friends (family, community, etc.) are listening?

Yes

No

25. Would you like others to know what kind of music you are listening?

- Yes
- No

If yes, who?

- Friends
- Family
- Community
- Everyone
- Other, who?

26. What kind of data are you willing to give about yourself to music stores (advertisers) to ensure better and more personalized music recommendation service?

- Favorite band/bands
- Favorite music genre
- What songs you are listening
- How often you are listening music
- Your entire music collection
- Your hometown (e.g. for local concerts, etc.)
- Your friends' contact information
- All above
- Nothing
- Other, what?

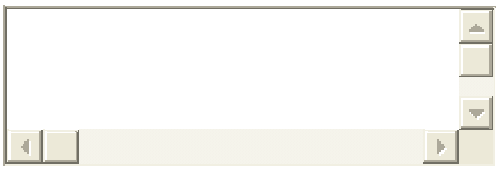
27. Have you used any music recommendation system in the Internet (e.g. amazon.com)?

- Yes
- No

28. How confident would you be to use a music recommendation system?

- Not confident
- Willing to try
- Very confident

29. Which brand would you trust the most for delivering recommendations to your music device?

- Apple
- Google
- Nokia
- Sony Ericsson
- Sony Music
- Other, what? 

30. Your name and e-mail address if you want to take part in a prize draw. (prize: Nokia 5300 XPressMusic phone)

Name:

E-mail address:

Are you willing to take part in a mobile music research session held in Lappeenranta in May 2007?

- Yes
- No