

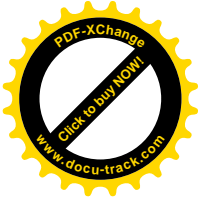
Radio Frequency Identification (RFID) Technology in Marketing Communication

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Bachelor`s Thesis

2010





Johdon assistenttityön ja kielten koulutusohjelma

Tekijä Anna Ala-Kortesniemi	Ryhmä tai aloitusvuosi 2007 Kevät
Opinnäytetyön nimi Radio Frequency Identification (RFID) Technology in Marketing Communication	Sivu- ja liitesivumäärä 49 + 0
Ohjaaja Mia-Maria Salmi	
<p>Tämä opinnäytetyö tutkii etätunnistuksen käyttöä ja mahdollisuuksia muuttuvassa markkinointiviestinnän maailmassa. Toimeksiannon opinnäytetyötä varten antoi saksalainen IT- ja media-alan yritys XiLLeR GmbH, jonka toimipiste on Nürnbergissä. XiLLeR GmbH haluaa tällä toimeksiannolla selvittää mikä on jo mahdollista etätunnistuksen avulla markkinointiviestinnän alueella ja mihin suuntaan asiantuntijat näkevät tämän teknologian olevan kehitymässä.</p> <p>Tutkimuksen tekeminen alkoi kesällä 2009 keräämällä mahdollisimman laajasti tietoa aiheesta. Itse opinnäytetyöprojekti alkoi syksyllä 2009 ja päättyi aikataulun mukaisesti toukokuussa 2010. Opinnäyte ei mene pintaa syvemmälle etätunnistusteknologian esittelyssä eikä keskity etätunnistukseen logistiikassa.</p> <p>Tutkimuksen tietoperustassa käydään läpi etätunnistuksen peruseriaatteita ja esitellään lyhyesti myös Near Field Communication-ohjelmisto (NFC), joka mahdollistaa puhelimella käytettävän etätunnistuksen. Etätunnistusteknologiaa markkinointiviestinnässä käsitellään muun muassa erilaisten, jo toteutettujen esimerkitapausten kautta. Lukijan on näin helpompi hahmottaa mitä etätunnistusteknologia käytännössä tarjoaa markkinointiviestinnälle. Etätunnistuksen etiikkaa markkinointiviestinnässä on tutkittu erityisesti kuluttajan yksityisyydensuojan näkökulmasta.</p> <p>Tutkimusmetodina on käytetty kvalitatiivista tutkimustapaa. Empiirinen materiaali koostuu henkilökohtaisista haastatteluista, artikkeleista ja esimerkitapauksista, joita analysoidaan enemmän sanoin ja kuvin kuin numeroin. Tämä lähestymistapa valittiin, koska aihe on uusi ja tutkimusta varten tarvittiin muun muassa haastatteluja alan asiantuntijoilta, jotta päästään parhaaseen mahdolliseen tulokseen.</p> <p>Etätunnistusteknologia nähdään yhtenä tulevaisuuden työkaluna, jonka avulla vuorovaikutteiset verkostot kurottavat ihmisten jokapäiväiseen elämään. Markkinat muuttuvat massamarkkinoista kohti pienempiä, enemmän keskittyneitä markkinoita, joilla vaaditaan kohdennettua, yksilöllistä mainontaa jota esimerkiksi etätunnistusteknologia voi tarjota. Nuoremmat sukupolvet osaavat käyttää erilaista tekniikkaa paremmin kuin yksikään aiempi ja heidän kasvavat tarpeensa teknologian saralla vahvistavat myös käsitystä etätunnistusteknologian mahdollisesta voittokulusta myös markkinointiviestinnässä.</p>	
Asiasanat etätunnistus, markkinointiviestintä, siru, lukija	



Degree Programme in Modern Languages and Business Studies for Management Assistants

Author Anna Ala-Kortesniemi	Group or year of entry 2007 Kevät
The title of thesis Radio Frequency Identification (RFID) Technology in Marketing Communication	Number of pages and appendices 49+0
Supervisor Mia-Maria Salmi	
<p>This thesis researches the potential and usage of Radio Frequency Identification (RFID) technology in marketing communication. The commissioning company for this thesis is the German company XiLLeR GmbH, which operates in the fields of IT and the media. XiLLeR GmbH would like to know what is already possible with the help of RFID technology in marketing communication and in which direction this technology is developing.</p> <p>This research started in the summer 2009 by collecting information about the topic from a variety of sources. The project itself began in the fall 2009 and ended on schedule in May 2010. This thesis does not specifically concentrate on researching RFID technology in logistics, and a broader research of RFID technology itself is not included in this research.</p> <p>The information framework is about the basics of RFID technology, and there is a short introduction of Near Field Communication (NFC) software. NFC enables the usage of RFID in mobile phones. A chapter about traditional marketing communication tools interacting with RFID presents, among other things, different cases around the world and what RFID technology could bring to marketing communication. This helps the reader to build a larger picture as to how marketing communication can benefit from this technology. The ethicality of the RFID technology in marketing communication is researched, especially from the consumer's privacy point of view.</p> <p>The research method in this thesis is qualitative. Empirical material consists of personal interviews, articles and cases. The analysis of this material is based more on words and pictures than on numbers. This approach was chosen because the subject is new and the research needed interviews from professionals with a certain level of technological knowledge in order to get optimum results.</p> <p>RFID has been identified as one of the cornerstones of the upcoming "Internet of Things", where interconnected networks are everywhere and part of people's everyday life. The shift from mass-markets to more personalized micro-markets give marketers the need to create more personalized targeted marketing, which could be offered with the help of RFID technology. The younger generation can use technology better than any previous one. Their growing needs in the field of technology make it easy to envision future success for RFID technology in marketing communication.</p>	
Key words Radio Frequency Identification (RFID), marketing communication, tag, reader	



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1 Introduction

Marketing communication is changing constantly and the marketers are trying to find new ways to win new customers and keep the existing ones. Technology is influencing the communications with enormous impact, at the moment the Internet is popular to advertise in but considering the speed the technology is developing, the next step in marketing communications will be even more personalized and targeted communication form. (Fill, C. 2005. 154)

Company called XiLLeR GmbH gave the commission to make this research. XiLLeR GmbH is specialized in Design, IT and Media and has 1-10 employees, depending on the need, in other words how many projects are on. This research will help the commissioning company to build their opinion whether it would be worth to invest into this extremely innovative targeted marketing form. XiLLeR GmbH is interested to start to implement RFID technology in their and their customers` marketing communications and to be able to consult what everything is possible with it.

The fact that 2.2 billion RFID tags, such as the ones used at toll booths or to identify shipping containers, were sold worldwide in 2008 and the worldwide market value for RFID tags is estimated to be of €4 billion in 2008 and to grow to about €20 billion by the year 2018, makes it even more interesting for XiLLeR GmbH to know what is possible, where is the technology already in use and what opinions people have for and against it. XiLLeR GmbH wants to be in the frontline to test marketing communications with RFID technology. (Europe`s Information Society 2009)

Also Kotler writes that marketing communication is going through two big changes; mass markets are dividing into smaller micro markets and marketing communications have to change towards to attract one certain target group and build a relationship with it. The other change is the development of information technology. New, modern technology makes it possible to follow the needs of the customers and make them true. New ways of communications make it possible to communicate in a closer, more personal way with the target group. Generations to whom mass media was introduced to, are getting old and the younger generations want more targeted marketing messages. Young people are used to get lots of information and fast, everybody can use a computer and the information flood of today is making people more selective in which kind of advertising they are willing to receive and that is why we need new,



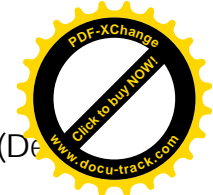
different marketing strategies. (Kotler, P. et al. 2005. 846)

Younger generations need to get the wanted information quicker in the future. Specialist Heikki Laaksamo from TIEKE Finnish Information Society Development Centre stated in an interview that he thinks that in the future all mobile phones will be equipped with RFID readers and NFC (Near Field Communication) software combined with Internet connection. With this combination you can read for example a RFID tag from a poster advertising a concert, get all the additional information about it and the tag would direct your mobile phone to an Internet service where you could already buy the ticket to the concert. Public RFID tags and the systems and devices that manage and read them can bring all sorts of very pertinent information straight to consumers, exactly when and perhaps more importantly where they need it. (Laaksamo, H. 17.12.2009)

The film director Stephen Spielberg is on the same lines with Mr Laaksamo and he even gathered, as he refers, some of the best minds in technology, environment, social services, transportation and computer technology together to come up with ideas and concepts about society in the middle of the twenty-first century for his science fiction film *Minority Report*. The film has some exciting, though futuristic marketing and communication concepts. In one scene the main character is going through an entrance of a mall and the retinal sensors in the surrounding walkways instantly read his identity and project personalized advertising on some video advertising panels as he walks by. In another scene, there is a Guinness beer advertisement with Irish dancing tunes calling his name: "Hey Mr X, you could use a Guinness right now." When the character walks by a video monitor at the entrance to The Gap store, it asks him how the items were, which he purchased during his last visit there. This vision can be everyday life in the future, but at the moment specialists see that in the future people will be carrying a reader and decide which tag, when and where they want to read. (*Minority Report* 2002. Laaksamo, H. 17.12.2009)

1.1 Research Objectives and Limitations

This research is about RFID technology in marketing communications which is divided into below-the line and above-the line marketing communications. Thesis writes about the ethics of the RFID-systems in marketing communication and how it can influence the customer behaviour and satisfaction. RFID in distribution and logistics or the RFID-technique itself are not researched. There is not an own chapters about Personal Selling and Public Relations be-



cause RFID is not that strongly related to them and there were no fitting cases found. (De Pelsmacker, P., Geuens, M. & Van de Bergh, J. Marketing Communications. 5-6)

This thesis answers the following questions:

- How the marketing communications could benefit from RFID technology?
- What are the potential ways to use RFID technology in marketing communication?
- What constrains the wider implementation of RFID in marketing communication?
- How ethical is it to use RFID in marketing communication?

1.2 Definitions

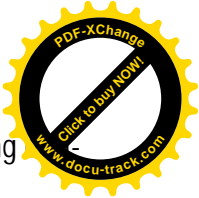
This section explains some of the main terms used in this research. It makes it easier for the reader to understand the text and to realize already in the beginning what this thesis researches.

Radio Frequency Identification: Radio frequency identification (RFID) is a technology using radio waves in different frequencies to transmit the information inside a transponder (RFID tag) about an object or person wirelessly.

RFID tag: An RFID tag is a microchip combined with an antenna in a compact package. It can be attached to an object to be tracked. The tag's antenna picks up signals from an RFID reader and then returns the signal, usually with some additional data like a unique serial number.

RFID reader: An RFID reader emits radio waves in ranges from two and a half centimetres to 300 metres or more, depending upon its power output and the radio frequency used. When an RFID tag passes through the electromagnetic zone, it detects the reader's activation signal and returns the signal with some data.

Near Field Communication (NFC): A software which enables simple and safe two-way interactions between electronic devices, allowing consumers to perform contactless transactions, access digital content, and connect electronic devices with a single touch. NFC is a new,



short-range wireless connectivity technology that evolved from a combination of existing tactless identification and interconnection technologies.

Internet of Things: The term Internet of Things has come to describe a number of technologies and research disciplines that enable the Internet to reach out into the real world of physical objects and communicate with each other.

1.3 Structure of the Thesis

This research is structured into seven chapters. Introduction, research objectives and definitions in the first chapter should give the reader an overall idea what this work is all about. Thesis's second chapter is about RFID technology, Near Field Communication (NFC), Internet-of-Things and data security issues. Technology part is kept simple and it provides the reader with needed information about the technology to understand how it would work together with marketing communications.

Third chapter handles ethics of RFID technology especially in marketing communication. There is also a chapter about a movement called Consumers against Supermarket Privacy Invasion and Numbering and their objectives to show the reader that consumers have to be informed about new technologies and not let the situation develop into this kind of movements. Fourth chapter is all about the traditional marketing communications tools and in which ways they can be developed in a more modern way and also introduces some existing cases in the area of marketing communications where RFID technology has been trialed or is already in everyday use.

Fifth chapter of this thesis is about the research method, in this case qualitative approach. This chapter also includes the motives why this research method was chosen and how it is put into practice. Sixth chapter compiles all the conclusions based on the information framework, interviews and other material gathered during the process. In the seventh chapter is the evaluation about my own working and how the whole process proceeded.



2 Welcome to the World of RFID

Radio frequency identification (RFID) is a technology using radio waves in different frequencies to transmit the information inside a transponder (RFID tag) about an object or person wirelessly. RFID is already in use all around us. It is used to chip your pet in case it gets lost. In many countries all the new passports and identification cards have RFID tags in them. You can pay the tolls on a road via RFID. Tickets in the skiing resorts or amusement parks have their tickets chipped, you do not have to get your ticket from your purse or pocket anymore, you go through a gate which reads your ticket through your clothes and makes sure it is valid. You get into your office with an RFID card, you can use the public traffic with a rechargeable travel card with an RFID tag, many libraries already have the system, logistics use the system side by side with UPC (Universal Product Code) bar codes and the list goes on, potential this technology offers, is huge. (Discover RFID 2009a)

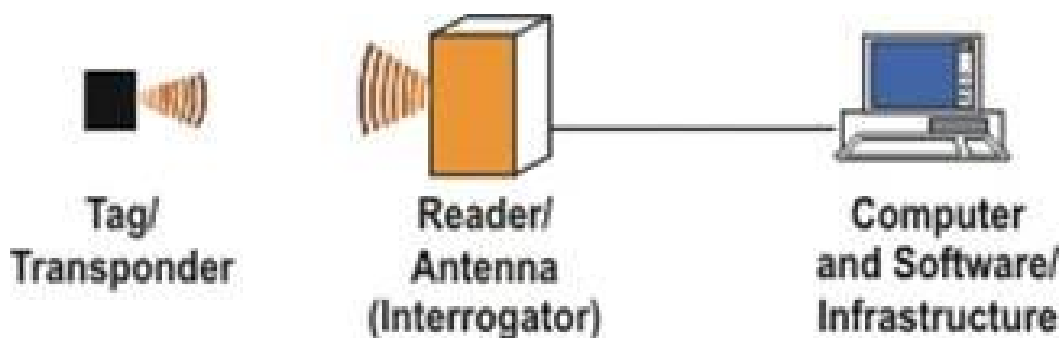
Unlike the widespread UPC bar code technology, RFID technology does not require contact or line of sight for communication. RFID data can be read through a human body, clothing and non-metallic materials. Bar code and RFID technology are working side by side for example in transportation and controlling the stock. Until now, RFID has been too expensive and too limited to be practical for many commercial applications. But if tags can be made cheaply enough, they can solve many of the problems associated with bar codes. RFID can identify bulks of products at once instead of bar code, which can only identify one product a time and RFID tag does not have to touch the reader. Depending whether it is an active or passive tag it can be read from small to long distance. (Discover RFID 2009b, Association for Automatic Identification and Mobility 2009a)

Radio Frequency Identification and the Internet are both developed to be military tools. The Internet was developed to make communication possible in case of nuclear wars and was later adapted by academics to share information. Nowadays the Internet is a unique, independent medium with huge range of characteristics. RFID has also its roots in early military identification systems as its technological precursor is radar. Internet is already deeply in commercial use and RFID technology is on its way to become a new marketing communication tool. Side by side with the Internet it offers new interactive media for marketing communications. (Shepard, S. 2005.42-48. De Pelsmacker, P. 2007. 489. Laaksamoinen, H. 17.12.2009)

A basic RFID system consists of three components: an antenna or coil, a transceiver (with decoder) and a transponder (RFID tag/chip) electronically programmed with unique information.

- The antenna emits radio signals to activate the tag and to read and write data to it.
- The reader emits radio waves in ranges of anywhere from two and a half centimetres to 300 metres or more, depending upon its power output and the radio frequency used. When an RFID tag passes through the electromagnetic zone, it detects the reader's activation signal.
- The reader decodes the data encoded in the tag's integrated circuit (silicon chip) and the data is passed to the host computer for processing.

Association for Automatic Identification and Mobility 2009b



Picture 1. How RFID technology works. Association for Automatic Identification and Mobility 2009c.

2.1 Near Field Communication Technology (NFC)

What is then “the reader”, which enables us to read all the RFID tags around us? The answer is as simple as our own mobile phones equipped with Near Field Communication technology software. Almost all new mobile phones have a Near Field Communication tool in them which enables simple and safe two-way interactions between electronic devices, allowing consumers to perform contactless transactions, access digital content, and connect electronic devices with a single touch. NFC is a new, short-range wireless connectivity technology that evolved from a combination of existing contactless identification and interconnection technologies.

NFC is both a “read” and “write” technology. Communication between two NFC-compatible devices occurs when they are brought within four centimetres of one another, a simple wave or touch can establish an NFC connection, which is then compatible with other known wireless technologies such as RFID, Bluetooth or Wi-Fi. Because the transmission range is so short, NFC-enabled transactions are inherently secure. Also, the physical closeness of the device to the reader gives users the reassurance of being in control of the process. NFC can be used with a variety of devices, from mobile phones that enable payment or transfer information to digital cameras that send their photos to a TV set with just a touch. The possibilities are endless, and NFC is sure to take the complexities out of today’s increasingly sophisticated consumer devices and make them simpler to use. (NFC-Forum. 2010a)



Picture 2. NFC-enabled Motorola Mobile Phone making a contactless transaction. VIVOTech 2010



Millions of people around the globe already have experience with NFC-enabled products services. In Europe and Asia, people carrying mobile phones or smart cards with built-in NFC can already make purchases, get directions, exchange information, and buy transportation simply by bringing them close to NFC-enabled devices embedded for example in information kiosks, retail registers, advertising signs, street posters, vending machines etc. Rapid progress has been made since 2004 toward an NFC-enabled world. Strategy Analytics forecasts mobile phone-based contactless payments will facilitate over 36 billion dollars of worldwide consumer spending by the year 2011. According to research firm Frost & Sullivan, one third of all mobile phones will be NFC-equipped in a span of three to five years. (NFC-Forum. 2010b)

2.2 Internet of Things

The term "Internet of Things" has come to describe a number of technologies and research disciplines that enable the Internet to reach out into the real world of physical objects. Technologies like Radio Frequency Identification, short-range wireless communications, real-time localization and sensor networks are getting more and more common, bringing the Internet of Things into commercial use. That predicts future where the physical world and cyberspace are tightly linked, a development that is not only relevant to researchers, but to corporations and individuals alike. (Internet of Things-conference 2008)

A thinktank for the Internet of Things called the Council believes that the "winning solution" to making the most open, inclusive and innovative Internet of Things is to transcend the short-term opposition between social innovation and security by finding a way to combine these two necessities in a broader common perspective. The Internet as most people know it is 16 years old. In these sixteen years we have seen numerous innovations in content, for example blogs and in formats for example Youtube.

The next step is the change we are witnessing daily in our conceptual models of framing data, information and knowledge in our environments. Any object that carries an RFID tag relates not only to you, but also through being read by a RFID reader nearby, to other objects, relations or values in a database. In this world, you are no longer alone, anywhere. It holds dangers, but it also holds promises. As the Council puts it: "It may be the positive solution, the logical step in the history of outsourcing memory to objects, devices and the environment, for the challenges we all face today of an ever growing individualization." (Council 2010)



3 Ethicality of RFID Technology

The biggest ethics issue with RFID in marketing communication is the privacy. Consumers are afraid about their privacy and important data be stolen. Especially the still missing laws and standards around RFID technology might make people skeptical.

Especially direct marketing uses a lot of data banks to get consumer information and send sometimes not wished marketing material and making people upset. Some companies go too far when building these data lists and even sell the lists further to another company. In 2003, EU made a law concerning consumers` private information: organizations have to ask permission from the customer before for example sending them emails. Direct marketing should try to build a relationship between the consumer and the company so that the customer could also gain something from this interactivity. (Kotler, P. et al. 2005. 990-991)

Market research is getting disapproved by more and more people and it is getting a big problem in the branch. People do not want to answer the questions market researchers are asking them. One reason for this is the misuse of the gathered information. Some consumers are afraid that these researchers could use some sophisticated technology to manipulate our purchasing behaviour. To fight the misuse of market research the industry has developed many standards, for example European Society for Opinion and Marketing Research (ESOMAR). (Kotler, P. et al. 2005. 440)

Through technology, marketing community has more power and information than never before. However, no marketing communications function in any organization is allowed to abuse this power. One of the biggest reasons why people are against RFID technology is that the RFID systems still can be tricked and hacked. (O`Connor, J. Glavin, E. & Evans, M. 2005. 150)

3.1 Data Security

There are RFID chips in passports, credit cards etc. and people are afraid that their personal information will be stolen and misused. RFID-based high security systems normally have a cryptographic key, which has to be cracked before getting the wanted information and this need specific equipment and talent. Even though it is hard to crack the system, it is possible. High security RFID systems should have a defence against unauthorized reading of a data carrier in order to duplicate or modify data, by placing a foreign data carrier within the inter-



rogation zone of the reader to get an unauthorized access to a building or receiving service without paying and eavesdropping into radio communications and replaying the data in order to imitate the genuine data carrier. (Spychips 2009a, Finkenzeller, K. 1999. 221-227)

Today's RFID applications are still exposed to numerous technical risks with direct consequences for the business such as revenue loss, customer safety, fraud, brand damage, business continuity and liability. Luckily there are already companies who offer different security systems to protect individuals and organizations against RFID attacks and risks, for example NeoCatena Networks Inc. (NeoCatena Networks Inc. 2010)

European Union have given out recommendations how to respect RFID privacy, but there is no law to that or punishment if someone is reading the information from one's RFID-chip and misusing it. (Europe's Information Society 2009)

Consumers should be in control whether products they buy in shops use smart chips or not. When consumers buy products with smart chips, these should be deactivated automatically, immediately and free-of-charge at the point of sale, unless the consumer explicitly opts-in by asking to keep the chip operational. Exceptions can be granted to avoid unnecessary burden on retailers, for example, but only after an assessment of the chip's impact on privacy.

Companies or public authorities using smart chips should give consumers clear and simple information so that they understand if their personal data will be used, the type of collected data (such as name, address or date of birth) and for what purpose. They should also provide clear labelling to identify the devices that 'read' the information stored in smart chips, and provide a contact point for citizens to obtain more information.

Retail associations and organisations should promote consumer awareness on products containing smart chips through a common European sign to indicate whenever a smart chip is used by a product.

Companies and public authorities should conduct privacy and data protection impact assessments before using smart chips. These assessments, reviewed by national data protection authorities, should ensure that personal data is secure and well protected.

Europe's Information Society 2009.

3.2 Consumers against Supermarket Privacy Invasion and Numbering

CASPIAN (Consumers Against Supermarket Privacy Invasion and Numbering) is an organization founded in 1999 by Dr. Katherine Albrecht to warn and inform people about the dangers of loyalty cards and RFID tags, she has also written a book called *Spychips*. Katherine Albrecht is recognized by some people as one of the world's leading experts on consumer privacy. She regularly speaks on the consumer privacy and civil liberties impacts of new technologies, with an emphasis on RFID and retail issues:

Imagine walking into a store and having a computer take an inventory of everything you're wearing--right down to the size and colour of your underwear. Store employees could even read the contents of your wallet to determine whether you're a desirable customer or someone they want to ignore based on your financial value. The possibilities for discrimination are quite disturbing.

CASPIAN has proposed legislation, the so-called The RFID Right to Know Act, which would require companies that use RFID tags in their products to inform consumers when an item contains an RFID tag. It would also prohibit companies from linking the chips with personally identifying information. (*Spychips* 2010b)



Picture 3. Different Kinds of RFID Tags. Jestic Technology Ltd. 2008



4 Traditional Marketing Communication Tools Meet RFID

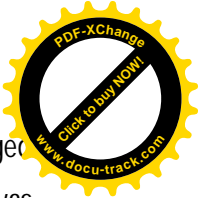
Marketing communications are one of the most visible tools of the marketing mix and have a huge impact on both society and business. Everybody are in some way exposed to advertising, it can be by buying some famous brands, being a target for sales promotion, visit an exhibition or get a telemarketing phone call. When you visit a store, there is no stone left unturned in trying to influence your buying behaviour. There are lots of different marketing communication instruments, each with their own characteristics, good and bad sides. In this thesis marketing communication tools are divided into above-the-line media and below-the-line media. (De Pelsmacker, P. et al. 2007. 5-8, Fill, C. 2005, 155)

The development of the Internet has changed the needs of business, the approach of business and especially the speed of the business. In the contemporary marketing environment the competition is very hard and the marketing messages are getting ignored, that marketers have to keep experimenting with different ways and means to direct their messages to increasingly bored consumer audiences. Other challenge for the marketing communication decision makers is the growing fragmentation of their target audiences. But implementing a new technology to marketing communications is easier said than done. Lots of people should be taught how to use the new technology and how it works. (Levy, M. & O`Donoghue, D. 2005, 13)

A major trend is for communication media to facilitate two-way, not just passive one-way, interaction between organization and customers. Also, media such as telephone, Internet and interactive television, if used correctly, can lead to the enhancement of relationships between organizations and their customers. (O`Connor, J. Glavin, E. & Evans, M. 2005. 142)

Advertising platform is a very important element of advertising strategy because it has to convince the consumers to make the buying decision. Advertising can only be effective if it benefits the consumer. Marketers have to start from the target consumers` motives, whether they are interested in moped`s colour, gas consumption, safety features or something else. With RFID technology the customer could decide which information s/he wants to read and obtain about a certain product or service. (De Pelsmacker, P. et al. 2007. 195)

The growth of new technologies and applications requires new marketing frameworks and models. A critical factor in the development of a new medium is that it generally has to have something better than the already existing ones. For example, newspapers were more effective



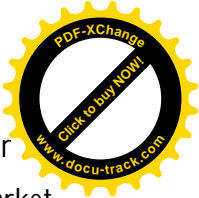
than town criers because they provided a method of recording information, radio emerged because it was more effective than papers delivering live and timely content, television was more effective than radio because it combined audio and video images, the Internet is better than television because it combines all of these elements and adds the element of interactivity. Interactivity offers marketers the possibility to form stronger relationships with people, providing an advantage compared to traditional media. (O`Connor, J. Glavin, E. & Evans, M. 2005, 133)

Marketing communication activities are becoming more targeted as a result of access to more and better information. Customer segmentation is moving into a new information-rich time based on behaviour rather than to traditional demographic methods. Distribution channels are multiplying and private marketers are coming under increasing threat as manufacturers market their products direct to the end customer. Advertising professionals are trying to break through the advertising clutter by trying to find more creative channels to reach their target group. Companies are being forced to adapt their marketing communication models in order to create an effective response to these changes. Technology and the greater amount and availability of information are driving changes in the organization, customer interaction. "Traditional marketing" is giving way to "electronic marketing" and a series of new marketing methods and tools are being deployed, among these RFID technology. (Gruen Thomas, W. 2005, 192)

Businesses like outdoor advertisers, public transportation companies, museums, event organizers, brands, retailers etc. are interested in RFID technology in media planning. Why to manufacture and install a touch screen information map to put in the lobby of a museum, when there is an opportunity to do something new and innovative that can potentially bring even new generations to the museum. RFID system for example in a museum can be provided with tools to create location and time based content, manage tags and view them on the map, and develop and adapt mobile content, applications and websites. (Discover RFIDa. 2010)

4.1 Below-the-Line Marketing Communication

Advances in information systems and technology have enabled new channels and communication tools to be developed. That in turns has stimulated the design of alternative, more targeted and personalized communication opportunities. There are two main forms of marketing communication that can be identified: advertising, also called as above-the-line media, which



uses paid-for media and all other tools, which do not use paid-for media and are in other words “below-the-line” communications. The “line” and the key element in dividing marketing communications into two groups is the notion of commission.

The core tools of “below-the-line” communications are sales promotion, public relations, personal selling and direct marketing. Variety of other communication tools are derived from these primary ones, like field marketing, point-of-purchase and merchandizing actions, product placements, customer magazines, conferences, facility visits, websites and exhibitions. Their role in a marketing campaign can be significant, but mostly they are used to support and supplement the primary methods. Below-the-line tools offer depth, character and more targeted methods in order to avoid clutter. Below-the-line marketing communication tools bring an important counterbalance to advertising because they are capable to deliver the call to action, actually to make the purchase. All the tools except public relations have the capacity to have a behavioural response. Below-the-line tools have quite many same characteristics but their strength is their capacity to stimulate action and to bring about behavioural responses in target audiences. Below-the-line tools can complement and assist the development of brands and at the same time reduce cost and dependence on advertising. (O`Connor, J. Glavin, E. & Evans, M. 2005, 154-159)

Information technology is also becoming a vital component in developing customer loyalty. In addition to consumers benefiting from cheaper shopping, loyalty programs can also potentially provide the retailer with a great deal of information about individual customers. This information can be used in targeting customers with offers via direct marketing at point-of-purchase or later in-home. For example large UK retailer Tesco has shifted the emphasis of its advertising and marketing budget from above-the-line expenditure on advertising to direct marketing. It is using its loyalty card, the Tesco Clubcard, to drive its marketing and gather information on its customers in order to target them more precisely. (O`Connor, J. Glavin, E. & Evans, M. 2005, 142-143)

According to Chris Fill, One of the authors of Marketing Communication: New Approaches, Technologies, and Styles: information technology has quickly developed in many different ways and with enormous impact to marketing communication over the recent years. Although the Internet lies at the heart of current and future marketing applications, three main developments can be identified: wireless networking, smart devices and intelligent communications services. An example how future technology might influence the in-store shopping experience



and drive consumer behaviour has been provided by German Metro “Future Store”. Entire building has been covered by a wireless network, which enables the use of variety mobile devices, such as personal shopping assistants (PSAs), personal digital assistants (PDAs) and static devices such as electronic shelf labels (ESLs), check-out points, and flat-screen displays for product promotion. PSAs are for the shoppers whose shopping carts have a touch screen mini-computer linked to the network. Integrated scanner allows the customers to scan their own shoppings, and then the data is transmitted to the check-out in advance of the shopper. As a result, the payment and queuing processes are considerably improved and the customer’s shopping experience is better. High costs have so far prohibited the widespread adoption of this kind of technology in stores. Mr Fill still believes in the enormous potential of RFID applications and that the prices of RFID tags will come down in the future. (Fill, C. 2005. 168-170)

Following chapters will present different marketing communication tools in above-the-line and below-the-line media and different cases to demonstrate what is already possible and existing in RFID-enabled marketing communication. There will not be own chapters about Personal Selling and Public Relations because RFID is not that strongly related to them and there were no fitting case studies found. Personal Selling and RFID will be talked about in the Point-of-Purchase Communication chapter.

4.1.1 Direct Marketing

Direct marketing attempts to build a one-to-one relationship with each customer. This can be reached by communicating on a direct and personal basis. Increased use of direct marketing by organizations over the past ten years has been significant and it signals the shift in focus away from mass communications and towards more personalized communications. The use of direct mail, telemarketing and the fast developing area of interactive communications, such as the Internet, are indications of great developments in technology. Direct marketing applications have made it possible for organizations to reach individual consumers, personalize messages and have a high level of control over the delivery of such messages and present real opportunities that can be achieved by this dialogue. (Fill, C. 2005. 158)

Development of the direct marketing has been quite dramatic over the last years; technology has reduced the time necessary to develop direct marketing materials. It has also increased the processing power associated with list management and lowered the costs per contact, also known as the relative costs. Above all, development of technology has improved the commu-



nication devices necessary to the delivery of marketing messages and this way added the number of reached consumers. Accuracy of the marketing messages is also better. This is thanks to both offline and digital aspects of direct mail, telemarketing, e-mail, and word-of-mouth (it is easier to pass the message to a friend via for example Bluetooth). (Fill, C. 2005. 161)

There is strong evidence that people react well to material that is directly relevant to them and that the key to successful direct mail advertising is very close analysis of the target audience. The ability to target customers is dependent on building up-to-date database with sufficient information to identify key customer groups and a good tool for that are loyalty card systems. (O'Connor, J. Glavin, E. & Evans, M. 2005. 143)

The sooner marketers move to using direct mail in response to customers' requests, rather than "cold" prospecting, the better it will be for all concerned. Marketers will be able to target more accurately and more effectively, and consumers will see a phenomenal reduction in unwanted direct mail. This will lead to more true "relationship" between marketer and consumer and will probably significantly alleviate privacy concerns among consumers and legislators, and will clearly be beneficial for the industry.

(O'Connor, J. Glavin, E. & Evans, M. 2005. 143)

Contactless Loyalty Cards

French consumers are now able to receive discounts on purchases via RFID stickers that can be attached to mobile phones. As a transitional bridge towards the adoption of mobile phones with built-in Near Field Communication (NFC) software technology, one French retailer has launched an easy and low-cost introduction to show what everything NFC enabled phones can offer to the consumers. Since April 2009, French children's clothing retailer Tape à l'Oeil has been providing its customers with a loyalty card containing an RFID sticker that they can then attach to their mobile phones, in order to receive discounts at any of the company's 130 stores. The company wanted a system that moved beyond a traditional loyalty card that customers must store in their wallets, the spokesperson explains. With the new loyalty card Tape à l'Oeil wants to create a new type of customer relationship with more interactivity, freedom and impact. (Claire Swedberg 2009)

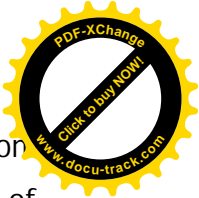


Octopus Card

Octopus Card is a RFID-enabled smart card which has been in use since the year 1997 in Hong Kong, China. Octopus card is used as a form of electronic payment in a wide variety of public transport, shops, restaurants, car parks and more. The Octopus card has become an all-purpose identification system in Hong Kong; it is even used as an access control mechanism at certain offices, apartment buildings and schools. The Octopus card can be used for payment at more than 1,000 stores in Hong Kong, including Starbucks and McDonald's. There are more than 19 million Octopus cards in circulation, over twice Hong Kong's population of 7 million. Over 95% of Hong Kong citizens between the ages of 10 to 65 are using Octopus and there are over 10 million transactions done with the Octopus every day. Also note that Octopus need not necessarily be on a card, a variety of devices can house an anonymous Octopus RFID tag, including watches and mobile phone covers. It is Interesting to note that the Hong Kong government (China) is the biggest shareholder in the company that operates the Octopus card, Octopus Cards Limited. (Octopus Hong Kong 2010)

It is possible to collect customer data with Octopus Card and make it easier to send advertisements and other marketing messages to the consumers. When knowing their purchasing patterns it is easier to send an accurate message to a customer who more likely wants to take advantage on this message (offer).

Privacy is the number one concern of many people when using RFID technology. Accordingly, Octopus Cards Limited has a webpage outlining its Personal Data Policy in detail. The type of personal data collected includes name, contact details, identification type and number, age and date of birth, Card number and "your Card usage data." Also bear in mind that Octopus Cards can be linked to the user's credit card, which adds another organization collecting all of that data. On the other side, Octopus can be used anonymously, so there is not a requirement to link it to your identity, at least for its payment uses. (Octopus Hong Kong 2010)



A local Hong Kong blogger remarked that "Hong Kong residents do not seem overly concerned with Octopus related privacy issues". They most apparently feel that the benefits of Octopus card outweigh the potential privacy issues. One wonders if the same attitude to smart cards will happen any time soon in the USA and UK, where the fear of RFID technology and Big Brother society is bigger. (Fragrant Harbour 2010)



Picture 4. Octopus Card. Fragrant Harbour 2010



4.1.2 Mobile Marketing

Mobile marketing is the use of a mobile medium as a communication channel between a brand and an end-user. It enables spontaneous, direct, interactive and targeted communication, at any time, at any place and has an immediate impact. By these mobile devices is meant: mobile phones, PDAs (personal digital assistant) and laptops. Communication includes short message services (SMS), multimedia messaging services (MMS) combining text with graphics and sound, wireless application protocol (WAP) mobile Internet and full multimedia third-generation (3G) services. (Michael, A. & Salter, B. 2006. 25.)

During the last few years people have become familiar and comfortable with paying online for services through their computers. Consumers also start to be comfortable with Internet-enabled mobile devices to do the similar transactions. Mobile marketing (mobile commerce) refers to the use of wireless devices such as mobile phones for transactional activities, which principally involve monetary exchange for goods and services. Mobile commerce represents a major change in the way technology impacts marketing communications. Because of the wireless facility, transactions can be made at any place and in real time, a feature referred to "ubiquity". Mobile commerce also offers reachability, opportunity to keep in touch, convenience, localization and personalization. When these facilities are connected to GPS it becomes theoretically possible to track people to particular locations and then deliver targeted, personalized information and promotional offers in order to encourage specific purchase behaviour. This far the interest towards mobile marketing has been less than enthusiastic because of the slowness and unreliability of the used technology. New and faster technologies can make the mobile commerce a major medium for delivering marketing messages. Smart Urban Spaces is a project that can make also mobile marketing easier. Smart Urban Spaces-case can be found from the page 21. (Fill, C. 2005. 164-165)



Michael and Salters made the lists under about today`s and tomorrow`s mobile functions after their own research. It shows that consumers would like to receive travel alerts, redeem coupons and pay for car parking, to have time saving, simple, straightforward functionality both now and in the future. Some points from “the tomorrow`s wish list” are already in use, for example flight check in and special offers and it is probably getting more and more popular to do these things with your mobile phone. Michael and Salters found out that for many respondents the most interesting future function would be to use their mobile phones to speed up and simplify various financial transactions. (Michael, A. & Salter, B. 2006. 11)

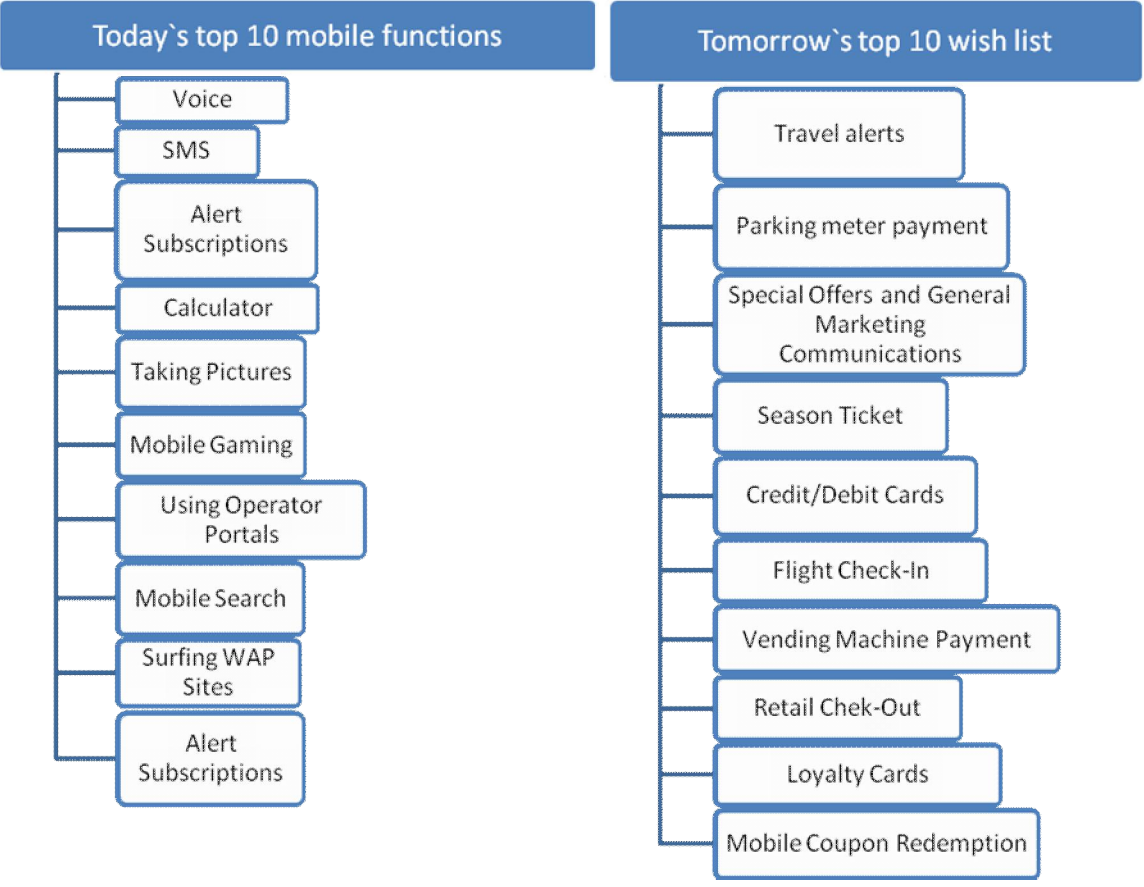


Figure 1. Today`s and Tomorrow`s Mobile Functions. Michael, A. & Salter, B. 2006



Smart Urban Spaces

Smart Urban Spaces is a European-wide effort to introduce e-city services based on latest mobile technologies and ubiquitous mobile computing techniques, which would work in more than only one city. The aim of the public and commercial organizations behind the Smart Urban Spaces is to introduce new European city service network, for example mobile payment, ticketing, services to elderly people, and access to city resources. This project wants to identify and lay out rules for seamless, privacy-aware, secure and ubiquitous access infrastructure. This might be one step further towards the Internet-of-Things which was already spoken earlier. (Smart Urban Spaces 2010)

4.1.3 Sales Promotions

Sales promotions are a category of techniques to increase sales in a short run and therefore mostly used only for a short period of time. Functional differences between brands have become less important and manufacturers find it increasingly difficult to differentiate their brands on the basis of advertising. Promotion is seen as a useful tool to attract the attention of the target groups. It is increasingly difficult to reach the consumers effectively by means of advertising. Advertising messages get lost in communication clutter and are not noticed by the majority of consumers. Advertising avoidance behaviour by consumers is getting more and more important phenomenon, mainly as a result of the irritation caused by advertising. (De Pelsmacker, P. et al. 2007. 354-355)

Sales promotions are often used tactically to provide added value aiming to accelerate customer behaviour. For example the use of price reductions, sampling, coupons, premiums, competitions, bonus packs and refunds are all designed to affect customer behaviour. This may be in form of converting users of competitive brands, creating trial use of newly introduced products, or encouraging existing customers to buy more products. All this can be put into practise via RFID-enabled technology. Sales promotions provide a means of gathering market and individual customer information. Ability to add value and to bring forward expected sales is very important when an organization is oriented to short-term financial performance. (Fill, C. 2005. 157)



Bookmarking Stores in Japan

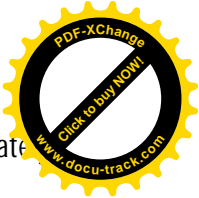
A large wireless operator has designed a system that allows Japanese consumers to use their phones to “bookmark” retail stores they would like to know more about. A customer walks by, sees a store and then wants to record the store’s opening hours, address and telephone number, much like bookmarking a Web page on the Internet. To do this, the consumer waves his RFID-enabled mobile phone near a reader device installed at the store, and the information is transferred and stored on the phone for future reference. In addition, stores can save information on the consumers who participate voluntarily and then send them offers, such as notifications of sales and specials. (Discover RFID 2010e)

4.1.4 Point-of-Purchase Communication

In-store activities involve window displays, posters, signs, information cards and counter and check-out displays. Unplanned purchases are common and consumers can be persuaded to buy at the point of sale by the point-of-purchase communications. Almost 60 percent of household supermarket purchases are unplanned and result of in-store decisions. Technology now allows advertising to be targeted to individual stores on different kinds of screens, an approach that can be very effective. A video advertisement about a certain product seen just before entering the store is much more likely to be followed by a purchase than one seen at the home sofa from television last day. (Fill, C. 2005. 158)

Multimedia messages can deliver personalised marketing information to individual customers who are identified as they pass through check in gates and when customers leave the store RFID may dramatically reduce their check out queuing times. The IBM vision is “selling customers what they want, when they want it, and where they want to buy it”, but there is also a possible down side of this technology, especially for a retailer. If, or as it is more likely when, all mobile phones are equipped with RFID readers then customers will be able to read the tag on a particular product, use a software application to compare prices and thus determine which retailer offers the best value. In a similar vein customers may also be able to check the origins and processing of food products and to check the accuracy of product claims. (Emerald FullText Articles 2005)

At personal selling RFID technology helps the salesperson to serve the customer better. Following cases can be connected also to personal selling. RFID used in inventory means no more out-of-stock situations, the worst nightmare of every salesclerk. RFID-enabled customer



cards can have for example the size of the customer and the salesperson knows immediately what to show and sell to this certain person.

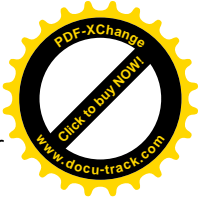
Interactive dressing rooms and mirrors

Naisten Pukutehdas Oy is a Finnish family owned company in the field of women's fashion industry. In 2008 their factory outlet introduced its new RFID technology solutions. They have interactive dressing rooms, where customers can get additional information about products via touch screen. Through this screen customer can order another size or colour of clothing and the request goes electronically to the staff and the salesclerk will bring the wanted item without that the customer has to jump half naked around. Interactive dressing rooms and info points have been taken well in Hollola's outlet (in Finland), service is better and staffs' work easier. (Rosendahl, R. 2009, 27)

Same service is also in use in Tokyo, Japan. People want reasonable prices and excellent quality and sometimes just to enjoy themselves by shopping. In supermarkets and department stores alike, RFID technology is transforming the shopping experience. It is helping shoppers to learn more about products and to find exactly what they want, whether a leather handbag, clothes or a favourite brand of chocolates. You can take a product from a rack and stand in front of a special RFID mirror. The reader behind the mirror reads the unique ID on the product's RFID tag, and information flashes up on the mirror as if it were a computer screen. You can view this product information, including the manufacturer, the fabric of the garment and the instructions for washing. In the dressing room a screen is telling you what would pass with the products you have chosen and what other sizes and colours are available. Stores also never have an out-of-stock situation or have to keep too large inventories, RFID is telling how many items are still left and can be even programmed to make an order when the amount of products goes under a certain limit. (Discover RFID 2010b)

Mobile Shopping Assistant

Nothing can replace a good friend to give you a quick word of advice or an opinion about a shirt you are trying on or the new coat you are interested in when you are shopping. A group of researchers is developing a mobile shopping assistant that may come close to giving the advice a good friend can offer. Called Tip and Tell, it is made up of a personal digital assistant (PDA) that is equipped with an RFID reader. Shoppers can scan RFID tagged items in a store



and are immediately provided with instant information regarding the product. (Discover RFID 2010c)

Tip and Tell will give shoppers suggestions about how to combine different items such as the right necktie for a man's suit. And it may also offer instant customer reviews so shoppers can read what others think, much like they do online in the Internet today. (Discover RFID 2010c)

MyGROCER project for RFID-enabled shopping carts

Stores want to improve the check-out and the overall shopping experience for consumers with RFID-enabled shopping carts. With shorter lines, customers have more time to select the items they want, and employees can more readily advise customers on their purchases. A European group working on the project called MyGROCER is developing so-called intelligent shopping carts that use RFID to keep track of what is in the cart and allow shoppers to wheel their carts right through the check-out line. The amount a shopper spends is then deducted from a shopper's bank account electronically. In addition, by using RFID tags and readers placed throughout the store and on the carts, the carts can help shoppers locate the items they want on the shelves and get out of the shop without going back for something forgot in a certain department. It also interacts with the customer while shopping, influencing purchase decisions with personalized promotions based on the consumer profile and grocery list. In giant hypermarkets, with dozens of aisles of food and non-food items and just as many checkout lanes, consumers will surely welcome both of these RFID-based innovations. (Discover RFID 2010d, ICT Results 2010)

The RFID also allows MyGROCER-carts to behave as an anti-theft mechanism and is in this way reducing losses due to theft, misplacement etc. A prototype already exists which has enjoyed positive feedback from consumers. The weakness of the proposed system is that RFID technology is still very expensive, especially to be used on an item level. The MyGROCER project is a partnership made up from Pouliadis, Nokia, Atmel, Unisys, Helsinki University of Technology, Atlantic, Procter & Gamble and Eltrun - Athens University of Economics and Business. (ICT Results 2010)



4.1.5 E-Marketing

Commerce and marketing are changing, as distribution channels, services and even payments are becoming more technology oriented and virtualized. This growth of new technologies is part of a wider "electronification" of marketing, which is called electronic marketing. This change has occurred in the context of wider social changes such as increasing customer sophistication and individualism, and the increasing globalization of markets. Electronic marketing has a dramatic impact on marketing communications. The most obvious technology is the Internet, but new consumer innovations such as RFID, short message services (SMS) and multimedia message services (MMS) are the future. These technologies provide both opportunities and challenges for marketers. New electronic communication forms provide an opportunity to target marketing messages at a younger generation, who are used to cut off for example their television advertisements with hardware that stores television programmes.

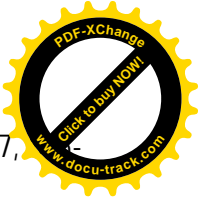
(O`Connor, J. Glavin, E. & Evans, M. 2005. 133-134)

Direct marketing principles have been adopted to allow access to each member of the target group on an individual basis. Next stage in this evolution is the trend towards real interactivity, for example, not only are the marketers able to communicate with their target groups on a one-to-one basis, but also individual members of the target groups are capable of responding to and interacting with the sender of the message. The increasing coming of internet and mobile phones and the rise of new interactive media, such as interactive television are bound to change the nature of marketing communications interactivity. Over 85% of all the Europeans have mobile phones and marketers should follow this trend, better would be to be one step forward. The Internet is fundamentally different from all the existing marketing communication tools, consumers can go all the way from awareness to interest to desire to action, all within the same medium and all that in the same time. (De Pelsmacker, P. 2007. 489)

4.2 Above-the-Line Marketing Communication

"Advertising can be defined as any paid, non-personal communication through various media by business firms, non-profit organizations, and individuals who are in some way identified in the advertising message and who hope to inform and/or persuade members of a particular audience." (De Pelsmacker, P. et al. 2007. 192)

Advertising should always wake up a certain reaction; it can be a purchase of the advertised product, or an increase in usage of a certain product. This reaction can also be a change of an opinion about something (for example: a company or institutions like museums). Institutions



normally want to inform certain target-groups what they are doing. (Kotler, P. et al. 2007, 893)

The following cases will concentrate the most to present RFID-enabled advertising media. You can send different kind of messages, audio or visual. With this kind of technology measuring the impact and consumer behaviour could be easy, when the right software would be deployed for that.

Tagging Tokyo

Just as we built up roads, the next step in civilisation is to build a total information network that will form part of the fabric of things around us."

(Ken Sakamura)

Tokyo is home to an experiment in ubiquitous computing that could transform the city. It is a capital city without road names and the most complex subway system, which causes lots of problems. Tokyo Ubiquitous Network Project is a project where scientists are planning a computer infrastructure to fill the existing information gaps and enable people to find their way and get some needed information. Leader of the project is a Tokyo University professor Ken Sakamura, who is on his way with the aid of the Japanese government, to build the world's first truly public ubiquitous computer network. Japan's government sees enormous benefits from making every object readable this way. Improved guidance for the blind, painless interactive guidance for the tourists and people not used to find their way in Tokyo. Japan's Information Ministry spent ¥1bn (£4.2m) on a month-long field trial that covered several blocks of the famous Ginza shopping district. (The Guardian 2010)

Anyone emerging with a communicator at the Ginza metro station, for example, had a 3D, real-time image of the landscape above them beamed to their reader, making it easy to see which exit you might want to take if you were headed for example to the Mitsukoshi department store. Head towards the store itself and RFID tags in the building sense your presence and there will be a woman's image welcoming you to the store on your reader device. To learn more about some Tokyo landmark's history, you can just touch the screen of your reader. In the future, commercial applications could include pushing you news of sales if you have registered interest, or even digital money-off coupons to tempt you inside. Getting commerce involved is important, as the cost of building such an infrastructure will be enormous. The pilot scheme used a variety of electronic tags that can transmit information; some of which are



tiny and cheap. Active tags, which can beam out signals at longer ranges, are more expensive. Add this to the cost of installation and many trillions of yen will be needed to build, install and maintain a truly ubiquitous network. (The Guardian 2010)

If ubiquitous networks are going to take off, Japan is the place to watch. The nation has already primed itself by accepting RFID tags, tracing the origin of certain products like food and they have "smart shops" that chip their clothes with RFID to ease the inventory and to satisfy customer queries instantly. (The Guardian 2010)

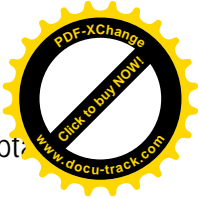
SuiPo Advertising Posters

Colourful posters at the JR Shinjuku station in Japan could be passed by as any normal advertisements. They actually are RFID posters called as SuiPo. SuiPo implies turning normal posters into interactive marketing tools. RFID readers are placed between the posters and interested people can flash their RFID tickets at the posters and relevant ads will be delivered to their mobile phones. People who are new to this concept should link the ID of their RFID tickets with the email address or their mobile phones using kiosk terminal. This action may help in taking RFID technology among the masses and increase their knowledge in positive light to this technology. (The RFID Weblog 2007)

Target Marketing in Seattle

Cafes and retail stores in Seattle have begun individually to market products and services to passers in Seattle using RFID technology. The first target group is visually and hearing-impaired individuals who can benefit from positioning and navigation applications added to the system. (InfoWorld 2005)

Six wireless public areas, called activation fields, are placed in downtown Seattle and at the city's ferry terminal. Users carrying an active tag and entering the activation field are recognized as the tag is read, and then presented with announcements. Users of the personalized marketing system carry an active RFID tag roughly the size of a stack of four credit cards. When the tag comes within 30 metres of a transmitter sending low frequency signals at 126 kilohertz, the tag transmits a unique identification signal to a receiver connected to a monitoring and execution server. Depending on what information the system has filed on the individual carrying the tag, the server selects the correct file to send out. The first message could be



the address and sale information from a nearby retailer. Customers who would like to obtain more information can push a tell-me-more-button. (InfoWorld 2005)

Assistive technology could include safety and navigation information displayed on a personal digital assistant or a smart phone. The information could also be delivered in audio format. Other possible applications might be for tourists who might want guidance in the downtown Seattle area. (InfoWorld 2005)

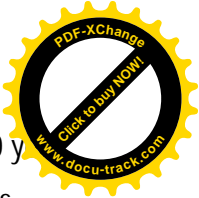
4.3 Summary

As seen in the above text and trials, people are working all over the world, for example in Finland, Germany, Japan, China, USA, and France to make RFID-enabled solutions to work and develop. Cooperation is one of the keys to get RFID technology into more commercial use. Internet-of-Things is on its way and world is turning more and more ubiquitous as you can see from the Smart Urban Spaces- and Tokyo Ubiquitous Network Project cases.

Mass markets are dividing into smaller micro markets and marketers should consider this when defining new marketing methods. More targeted marketing is needed, information clutter makes people to ignore the most of the messages they receive and raise negative feeling towards the sending organization. Increasing interactivity could be an answer to this problem, via RFID technology people could choose what marketing messages they want to receive and maybe as a result to that sale would increase. Figure 2 on the page 30 makes it perhaps more clear what can be done with the help of RFID technology in marketing communication.

There are cases in both below-the-line and above-the-line marketing communication. In the future there might be paid for electronic RFID advertising spaces like SuiPo. Ubiquitous cities like the trial in Tokyo showed us how important it is to get commerce involved to finance this kind of systems. Point-of-purchase applications like interactive dressing rooms and MyGROCER offer consumers better service, satisfied customers, more sold items and the work of the salesclerks is getting easier.

According to the cases situation is half-half what comes to carrying tags and readers. In some cases like the Target Marketing in Seattle, Octopus Card and MyGROCER, people are carrying the tags. On the other hand for example Tokyo Ubiquitous Network Project, Mobile marketing and Tip and Tell are based on people carrying RFID readers. Who knows which gains more popularity in the future, maybe both? The Internet and RFID technology go hand in



hand and both still offer huge opportunities, imagine on which level was the Internet 10 y ago and imagine after that where this technologies can develop in the following ten years.

More important things than commercial applications that RFID technology offers is the improved guidance for blind or deaf and interactive guidance for tourists and people lost in a new city. Ethics of the RFID technology can be doubtful if it is used for wrong purposes just to gather information about people to commercial use or to track them. Benefits of the RFID applications should outweigh the possible bad sides to courage people to use it. Development of global laws and standards concerning RFID would make the ethicality issues less concerning.

In the mobile marketing chapter came obvious that people want to use their mobile phones for variety of things. Figure 2 on the page 20 presents today's and tomorrow's mobile functions and how they might change. From the future mobile functions the financial transactions were the most wanted among the consumers. People want more and more functions from their mobile phone and with the help of RFID technology the variety of possible services grow substantially.

This chapter showed us how RFID technology in marketing communication is still defining itself and technology developing. The issue people carrying RFID readers or tags is still open, maybe both. It will be interesting to see what direction this trend eventually takes.

RFID in Marketing Communication

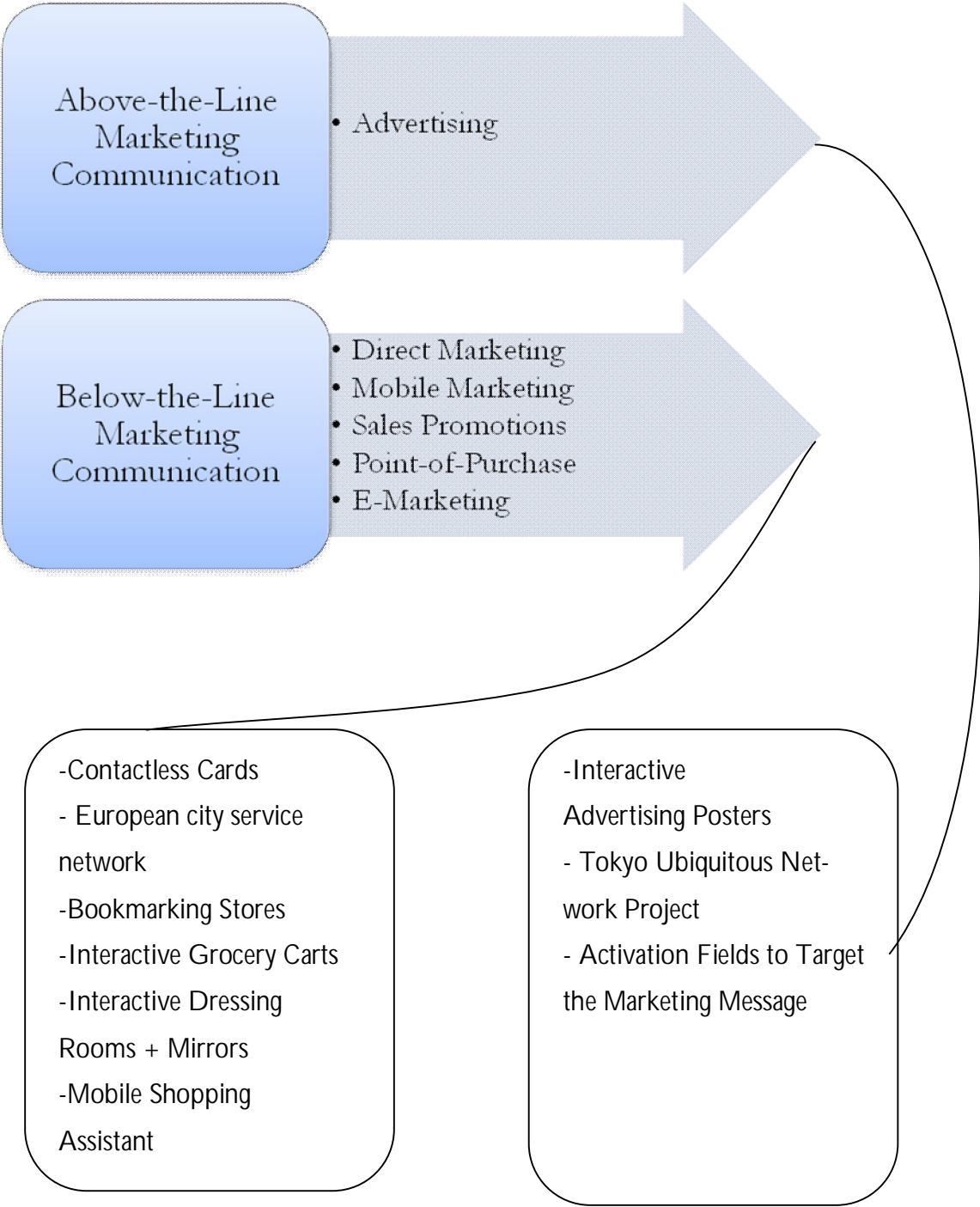


Figure 2. RFID in Marketing Communication



5 Research Method and Procedures

Research method in this thesis is qualitative, which means that this thesis was conducted more by analyzing with words and pictures than numbers. By performing qualitative research, one aims to get a better understanding of the subject at hand. In order to achieve the best possible results it is best to deploy a wide range of tools and practises. Qualitative data consists more of analytical information than quantitative, which is based on numbers. That is why qualitative research can be more time consuming and less able to be generalized. Qualitative method is interested in several different factors simultaneously; the researcher is trying to create patterns to understand the bigger picture better. In this research the variety of different empirical material was the basis for me to create patterns considering RFID technology in marketing communication in my head. All the cases, articles, interviews and opinions mentioned in this thesis helped me to understand the bigger picture better. (Hirsjärvi, S. Hurme, H. 2008, 25)

5.1 Qualitative Approach

Qualitative research involves use and collection of a variety of empirical materials. Empirical material can be personal experience, case study, article, introspective, life story, interview, historical text, observational text, and visual text. It took a long time to gather all the literature and other sources used in this thesis, but it was worth it. I was able to limit my research and get a fix base for my research. This research method was chosen because people do not have the needed knowledge about RFID technology to have a quantitative research and questionnaire. I wanted to have more deep reaching interviews and be able to ask further questions and have the whole interviewing situation free and able to develop quite freely. People chosen to the interview had to be considered carefully, they give my research the extra value and meaning. (Koivusalo, R. 2009.)

I kept in mind that this method might take time, some money and the analysis of the gathered material can be difficult, because there are no ready models, it was up to me how to analyse and read the gathered material and answers. I feel that my research has been proceeding according to features of a successful research from Hirsjärvi & Hurme.



According to Hirsjärvi & Hurme, a successful research builds up from:

- action and contacts, good and regular contacts to the field that is analyzed, and to your own colleagues
- convergence, connecting one or more functions and interests together, for example reconciliation of an idea and a certain method
- intuition, feeling that your research is important, right and up-to-date
- theory, aspiration to theoretical understanding
- worth everyday life, problems, that develop from praxis and lead to clear and useful ideas

Hirsjärvi, S. Hurme, H. 2008, 13

During the research I created good contacts to the analyzed field, I was able to ask further questions if needed and got some support from the professionals. Intuition in this thesis is huge; I feel that this research is important, up-to-date and that it genuinely brings something. In a personal level I am excited about the topic and I have the feeling that the need for more information is only growing during the whole project.

This research had to have aspiration to theoretical understanding, otherwise it would have been impossible to do this thesis. You have to have at least the basic knowledge at how RFID works to obtain wider understanding on what everything is possible to do also on the field of marketing communication. This research is mostly about useful ideas and how to react to the changing markets and needs of the consumers.

5.2 Articles, Cases and Blogs as Empirical Material

This research uses different articles, cases and blogs as empirical material. The material was evaluated carefully before chosen to be part of this thesis. Around this topic are also many other writings but the ones presented in the research were chosen because they offered more input for the certain topics and/or had some diverging point-of-views.

Before making the decision of including any article into the research, its age, who wrote it, where was it published and does it bring something more to this thesis was evaluated. It was also taken into consideration, to whom certain texts were written to and is there any hidden



objectives why were they written. For example the cases from the Internet page of Discover RFID, are presented there to promote and inform people of the benefits of the RFID technology. (Hirsjärvi, S. et al. 101-104)

5.3 Analysis

This thesis has lots of material to analyse; articles, interviews, e-mails, cases and blogs. Analysis will concentrate on the interviews and e-mail, because there is no need to analyse the whole wide material according to Hirsjärvi & Hurme. Interviews were deep reaching theme interviews and in the following chapters, after the analysis method, they will be divided according to the interview questions. Heikki Laaksamo and Pauli Tossavainen were the interviewees in this thesis and Markus Ebeling answered the questions, which were also the basis for the interviews, via e-mail. (Hirsjärvi, S. Hurme, H. 2008, 135)

According to Hirsjärvi & Hurme, there are six different approaches to analyse the qualitative material. This research needed a mix made from three of them:

1. Interviewees describe their lives and world during the interview. They speak spontaneously about their experiences and feelings. Description is not much decoded.
2. Interviewer summarizes and interprets the description of the interviewee already during the interview and shares that with the interviewee. The interviewee can then accept or decline this conclusion or summation. Dialogue continues until the right conclusion is made. This is so called "self-repairing" interview.
3. Transcribed material is analysed by the researcher. Material is organized and unimportant material is deleted.

(Hirsjärvi, S. Hurme, H. 2008, 137)

There was a huge amount of material gathered for this research and in a qualitative research it can be a strength but makes the analysing process naturally more difficult. After both interviews they were transcript immediately to be sure to remember everything and also to link the interviewing situation to the questions and how the interviewees reacted impulsively to my



questions, not only to get the plain answers on the paper. After the transcription there was a memo made about the interview situation and what thoughts the whole interview and answers woke in the researcher. The whole analysing process has been going on throughout the whole project, there has been the need to find opinions and knowledge to support or deny the potential of RFID technology in marketing communication.

There was decided to try to have as many personal interviews as possible as many people have no knowledge of this technology. Some of the people I tried to get an interview denied on the fact that even though they know about RFID technology, they have no experience or knowledge about marketing communication at all and they did not want to start to guess how the future would look like.

Luckily I got to interview some interesting people and their opinions and views gave a lot to this thesis. My interviews were more deep interviews than theme based interviews, I had an interview structure and some questions ready on the paper but I let the conversation proceed free. It gave the situation the freedom to develop into any direction and let all the more innovative ideas to come out.

5.4 Interviews

On 17 December 2009 I went to TIEKE Finnish Information Society Development Centre in Helsinki, to interview Specialist Mr. Heikki Laaksamo about RFID technology in marketing communications. Interview took an hour and was recorded. Heikki Laaksamo is a specialist of RFID technology in Finnish Information Society Development Centre TIEKE. Finnish Standard Association SFS has ordered a RFID-guide from Finnish Information Society Development Centre and Heikki Laaksamo is in charge of the project. Because of the RFID-guide project I found him and asked him to give an interview. He has also worked as a researcher in the field of RFID technology at the University of Oulu.

On 27 January 2010 I was invited to interview the Managing Director Mr. Pauli Tossavainen from Top Tunniste Oy, in Tampere. Top Tunniste Oy is a Finnish company offering a wide range of products and services to do with RFID technology and NFC technology software. This interview took also about an hour and was recorded with the sound recorder. Pauli Tossavainen is a Managing Director at ToP Tunniste Oy in Tampere, Finland. ToP Tunniste Oy is RFID and NFC system integrator with more than ten years of experience in automatic identification and data capture.



Interview situations were really similar; both interviewees agreed me to record the interviews and were relaxed with it. Conversation was free and the certain base questions were asked when the situation felt right to that question. If the interviewee did not understand the question right I explained more precise what I mean with that. In cases when I did not understand correctly what was meant I asked for explanation so that I was sure to get the point.

Markus Ebeling is a Managing Director at Max Technologies Oy in Oulu, Finland. Max Technologies offers different NFC products and systems as well as driver's journals and tracking services. Markus Ebeling answered the questions via email. Max Technologies Oy, which he is managing, is more concentrated on Near Field Communication technology and he gave valuable information concerning especially the development of NFC mobile phones.

The following chapters, Development of RFID Technology, RFID in Marketing Communication and Ethics of RFID in marketing communication will present the interview answers considering RFID in marketing communication. The interviewees gave me many ideas about the cases I should choose for this thesis and where I can find more information related to RFID in marketing communication.

5.5 Development of RFID Technology

Heikki Laaksamo and Pauli Tossavainen both see that RFID technology offers a huge potential in marketing communication. Producers are able to make the tags cheaper and cheaper and that way organizations have better possibilities to invest into RFID technology. Global standards have to be made in order to use the same tags and readers all over the world. (Tossavainen, P. 27.01.2010, Laaksamo, H. 17.12.2009)

Max Technologies Oy is concentrating more on the Near Field Communication technology and according to Mr. Ebeling NFC technology is developing slowly but steady. New NFC mobile phone models are coming to the market but it takes its own time as always when new technology is developing. (Ebeling, M. 14.12.2009)

5.6 RFID in Marketing Communication

Interviewees definitely see that much can be made also in marketing communication with the help of RFID technology. Heikki Laaksamo talked about younger generations growing up and



how their need to obtain information immediately is so different compared for example to big age groups, who start to retire soon. Young children are using mobile phones and computers. Their ability to use technology will force technology to develop and stay one step ahead of them to answer their growing needs. (Laaksamo, H. 17.12.2009)

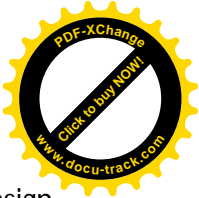
In the run of the interview Mr. Laaksamo told out loud his idea to develop attachable RFID tags to all groceries. You could read this tag with your mobile phone and obtain the product information. Your mobile phone can be programmed to know your allergies or diet and it could inform you immediately, whether the certain product you picked up from the shelf suits you or not. (Laaksamo, H. 17.12.2009)

With Mr. Tossavainen we discussed about the advertising clutter and how RFID technology could help the consumer to find the wanted offers and get advantages from them. For example, if there is an advertisement about a rock concert, you can read the tag, listen what kind of music this band plays, buy tickets immediately with your mobile phone for you and your friend, and share the friend's ticket to his mobile phone via wireless software like Bluetooth. (Tossavainen, P. 27.01.2010)

Mr. Tossavainen stressed the matter of fairing (creating different profiles) in the future development of RFID technology. He sees people carrying RFID everywhere and changing their profiles in the readers according where they are or what they are doing, for example at work or when having free time. (Tossavainen, P. 27.01.2009)

Both interviewees believe that this kind of targeted advertising will hit itself through in the future. Only imagination is the limit with RFID technology. According to Mr. Laaksamo, the problem for many organizations to implement this kind of system is that it is not enough to buy the RFID tags, they have to renew the whole system and that is a big investment. People need studies and cases, when has the system paid itself back and starts to make money. (Laaksamo, H. 17.12.2009, Tossavainen, P. 27.01.2010)

Mr. Tossavainen feels that RFID-enabled marketing communication is already possible and it will definitely be part of the future, it is only matter of time and costs. Standards and networks around the world have to develop before that. He also winked me to check the Smart Urban Spaces- project, about which I have written in Mobile Commerce chapter. (Tossavainen, P. 27.01.2009)



With Mr. Laaksamo we were talking among other things about the importance of the design of the RFID tags. In his opinion tags should catch the eye, give the information what they are for, and look inviting. There could maybe be for example some projects made in co-operation between Design/Art Schools and producers of RFID systems. (Laaksamo, H. 17.12.2009)

None of the interviewees had already seen RFID-enabled advertising. Mr. Ebeling misunderstood the question and thought the question is about advertising RFID technology. He answered to this that it would make more sense to inform people what is possible with this technology and what good new innovations it can bring. (Ebeling, M. 14.12.2009)

5.7 Ethics of RFID in Marketing Communications

Heikki Laaksamo feels that people should be informed about RFID, but he is not afraid of any Big Brother-society. People should be first informed about the potential and good sides of the technology, then concentrate on data protection. He thinks that prisoners and people with dementia should be tagged with RFID chips for others` or their own safety. On the other hand people should carry RFID readers and decide what tags they want to read, not that they are carrying tags and our surroundings would read their tags. The more the technology will come in common, the more people should be informed and laws made against hackers to increase the data security. (Laaksamo, H. 17.12.2009)

Pauli Tossavainen is on the opinion that it is not necessary to inform people more about the technology because it is already in use all around us and for example we Finns are used to high-technology around us and learn quickly to use it. About information security to do with RFID technology, people should be informed and let them know their rights concerning privacy issues. This technology is nevertheless more secure and quick than for example our chip cards at the moment. We have to dial our PIN number in front of everybody, when we could use wireless, RFID-enabled payment (especially in smaller purchases). (Tossavainen, P. 27.01.2010)



6 Future of RFID-enabled Marketing Communication

Conclusions in this thesis were made by using the abductive method, which means that there was some leading ideas behind this thesis, which were tried to show to be possible or not. In this case it was: whether RFID technology has something to offer for marketing communication? (Hirsjärvi, S. Hurme, H. 2008, 136)

Like the consumer, the future is unpredictable. No one knows how long it takes to have RFID-enabled marketing communication as part of our everyday lives. Many things have to happen before that: creation of global laws and standards, informing people of RFID technology and its benefits in private as in business, maybe even creation of companies just to concentrate on RFID-enabled marketing communication.

Although the technology is different, receiving an inappropriately targeted marketing message is annoying no matter which device is used to send it, and that causes bad reputation for the organization. It is important that the new changes are marketing and customer-driven and not only technology-driven. While technology allows us to do different things, its real benefit is to allow us to do the same things better. Successful marketers are not blinded by technology but take the best out of it by using it wisely to get the basic things right, to create good products and services, focus on the customer and naturally generate profit.

The shift from mass-markets to more personalized micro-markets, which Kotler and Fill mentioned forces the marketers to move to more interactive and personalized targeted marketing. RFID technology would answer this need but it is still on its way to grow into this role and in a big scale it might take time.

Economic growth in the following years and the future viability of companies in global competition will hopefully increase the deployment and implementation of RFID-enabled solutions in many branches of business. RFID has been identified as one of the cornerstones of the upcoming "Internet of Things," and the focus is slowly shifting from ordinary RFID towards next-generation interconnected systems where networks are overall. Smart RFID devices are seen as an important part of this development. The overall performance level and functionality of today's RFID technology cannot meet these requirements, and new solutions should be developed. (VTT Technical Research Centre of Finland 2009)



My 7-year old godson uses mobile phone and Bluetooth with his friends to share songs and games on an everyday basis. Imagine these little guys` talent on using technology when they grow up. If they are used to share information in that way when they are seven, I bet their needs on their adult age are something more futuristic than we can even imagine. As also Mr. Laaksamo mentioned in the interview, the needs of the future generation to obtain the wanted information quickly are growing in the same phase as their ability to use new technology. (Laaksamo, H. 17.12.2009)

6.1 Benefits of RFID in Marketing Communication

Marketing communication can in my opinion benefit a lot from RFID technology. Already existing cases are one good sign of that, different trials around the world and the results from the interviews made for this thesis. Technology is developing all the time and marketing communication can benefit from RFID when it is used correctly and the consumer data is not misused.

I think RFID technology will be used in marketing communication in a bigger scale in the future. Especially direct marketing, point-of-purchase marketing and advertising can gain a huge advantage of it as we can already see from the existing cases. Extremely targeted marketing is possible with this technology and answers to the needs of the changing markets.

Thank to RFID stores like the German Metro "Future Store" mentioned on page 15, there could be better just-in-time delivery, no over-stock and no out-of-stock situations. RFID systems can be linked to the whole store from the dressing rooms to inventory and to customer cards.

One possible way to wake up positive feelings about RFID technology in marketing communication could be a "Green advertising"-campaign. When people are able to choose what kind of marketing messages they want to have and have most of them in electronic form, lots of paper and that way forests will be saved. Even producing RFID tags is getting more and more environmentally friendly.

No matter who is taking care of the marketing, that person or department has to wrestle with a marketing budget and decides the best strategy to reach the target-group with possibly little money. Integrated marketing communication combines different marketing communication tools to get the best results. Especially the first trials of RFID-enabled advertising will gain a



lot of attention to an advertising campaign and integrated marketing communication that bring the certain kick to stay in the minds of the consumers. (Kotler, P. et al. 2007. 884-885)

6.2 Obstacles to wider implementation

Behavioural issues could be named as one reason if RFID technology will not hit itself through that quickly. Over the past 2 years, RFID has gained tremendous publicity. The general level of expectations regarding the system held both by top management and users may now be too high. Over-expectations can be dangerous to the success of an RFID system. People may not have confidence in the RFID system because it is relatively new to them. It may take them a long time to understand and trust the technology. Resistance to change is definitely on problem when implementing these systems into wider use. (Laaksamo, H. 17.12.2009)

As is the case with most breakthrough technologies, implementing a RFID system can require some fundamental redesigning of business processes to obtain the best benefits from using it. For example managing the inventory, how different functions are going to change and is there even need for some people in the organization anymore. In marketing communication it needs lots of training, going through all the marketing plans, how to combine RFID technology for example to a ready integrated marketing communication plan.

With RFID readers customers will be able to read the tag on a particular product, use a software application to compare prices between different stores and that way determines which retailer offers the best value and go there. This can make many companies reluctant to implement RFID systems to their stores.

The implementation of information systems is affected by the way people perceive all kind of new technology. RFID technology systems are no exception. Resistance to change is an important issue. It is a major behavioral factor that can have a significant impact on the implementation of RFID systems. New technologies make people afraid, that is why there should be enough information available about RFID technology. Especially the benefits of using it should be stressed.



6.3 Ethicality of RFID

Absence of RFID laws and standards is a big problem on this field of business. Standards should develop so that the systems would work on the same frequencies and readers and tags would be the same around the world. Privacy issues should be solved by safer systems and global laws concerning RFID issues. EU recommendations mentioned on the page 10 are a good start on this road. The security and integrity of information and the privacy of consumers are always primary issues surrounding the adoption of RFID. (Tossavainen, P. 27.01.2010)

Marketers have been collecting and paying fortunes to obtain customer data for ages. It is possible also without RFID technology, loyalty and customer cards for example track consumer behaviour by what and where have they purchased. Transparency in the adoption of RFID technology in marketing communication is absolutely needed to avoid consumer movements like CASPIAN. Different opinions for and against RFID technology made this topic even more interesting to evaluate and research. This conflict may help to develop better and safer technology.

6.4 Follow-up Research Suggestions

In my opinion there is always a need to calculate how much it would cost to deploy this kind of a new system, which can require a big investment, in an organization and estimate the business risks and value of adopting an RFID system to satisfy consumer needs before implementing the system. You should also take to consideration how much time and money you have to invest to train your employees to use the system.

Other things to research could be:

- What kind of products or services would be the best to market with the help of RFID technology?
- What everything would be possible to do with a NFC-enabled mobile phone?
- How the consumers would welcome this kind of marketing communication, especially advertising?



7 Evaluation

This chapter compiles my self-observation during the whole process and the evaluation about the research results. I am genuinely interested on the topic and excited what could be achieved with this technology especially in the field of marketing communication and tried to pay extra attention on staying objective while analyzing the results and possible obstacles for wider implementation of RFID-based systems in marketing communication.

7.1 Process

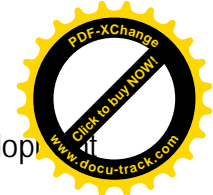
I did not have any major difficulties to do this research. Mentally my weakest moment was when most of the potential interviewees did not answer or did not want to give an interview. I did not have to change my timetable, in the beginning I was stressed and was writing a lot because I thought the time will run out. When I noticed at how good stage my research already is, I took it easy and during the spring I was working on the thesis on the normal phase. The research process was good planned and in this case the saying "well planned, almost done" was correct. Sometimes I spent lots of time just going through things in my head and trying to understand them better. After that it was much easier to sit on a computer and start writing.

Analyzing the results was much more time consuming than I first thought. I first thought to include the interviews to the theoretical framework but in the end it would have been too much when also the cases are there. It was hard to decide the headlines and how to divide the chapters. I had to try many different ways how would it look the best and be the easiest and most logical to read. I completed this thesis as planned on time to graduate on 18 June 2010.

7.2 Interviews

It was harder to get the interviews as I thought. I needed to have the interviews from people who have a solid knowledge about RFID. Some people answered that even though they have knowledge about the technology, they do not know anything about marketing communication and that is why they do not want to answer my questions. Couple of people promised to send their answers via email but they eventually never did.

I enjoyed going to interview Mr. Laaksamo and Mr. Tossavainen. It was interesting and exciting to get to ask all the questions I had been thinking. I am really interested on the topic of



this thesis also on a more personal level and will definitely continue to follow the development of the technology especially in marketing communication.

7.3 Quality of the Research

Thesis` reliability is good as the results of the research are not caused by a coincidence. People interviewed for this research represented exactly the wanted group with needed knowledge about RFID technology. Nevertheless this can also have another point-of-view. All the interviewees are working in this field of business and might want to promote RFID technology in order to get more visibility. On the other hand I would say that they would have better and bigger channels to advance the knowledge about the advantages of RFID. Both personal interviews were recorder and afterwards immediately transcribed. Interviewees were also given the opportunity to read the question framework to have some clue what will be asked. (Koivusalo, Raisa. 2009)

Validity tells whether a research is able to define what was agreed in the beginning of the process. In this thesis validity was accomplished. Research`s objective was to determine where is RFID technology already in use in the field of marketing communication and what potential does it still offer. These questions were answered in the research. (Koivusalo, Raisa. 2009)

Triangulation is the application and combination of more than one research perspectives in the study of the same phenomenon. Triangulation in this research involves using multiple data sources in an investigation to produce understanding. In the research process on which this thesis is based, triangulation was achieved mainly through one way. So-called data triangulation was achieved through many different sources like cases, articles, interviews, e-mails and blogs. Triangulation assisted in making sure that research is holistic. (Koivusalo, Raisa. 2009)

I managed to find many good sources after quite a time consuming search but it was worth it. Especially the Marketing Communication, New Approaches, Technologies and Styles edited by Allan J. Kimmel was a discovery. Most of the sources are without doubt trustworthy but for example a blog as a source might harm the quality of the research because there is no knowledge about the reliability of the writer. All these sources from side to side and other knowledge gathered during the project from for example Xing`s RFID conversation forum helped me to understand the topic better, find its weaknesses and strengths.



My own starting point for this study was excitement, which might not be good for the objectivity. Even though I have tried my best not to be subjective, it might reflect through in some points. I look forward to the future to see what eventually unfolds from this promising, but still disputed combination of RFID technology and marketing communication.



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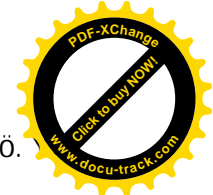
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