Contactless Mobile Payments entering Europe

The contactless mobile payment ecosystem and potential on the European market

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Abstract

Contactless mobile payments are a payment method done with a mobile phone and a contactless technology. Instead of paying with cash, a payment card or a cheque, a user can tap its mobile phone onto a terminal to pay.

Across the globe, several markets have been embracing the need for new payment methods. In Asia, contactless mobile payments have been used since 2004. In some of the African countries, due to an insufficient banking industry, mobile payments have been the only electronic payment method. However, in Europe contactless mobile payments are still in their initial phase.

The benefits of contactless mobile payments are that they are easier to use, faster and more secure. However, there are some implications. Firstly, the lack of standardisations regarding how the technology will work has led to an undefined ecosystem consisting of many stakeholders with different motives. Secondly, in order for contactless mobile payments to break significant ground the users need to change their existing payment methods and habits. This is a time consuming process, which will require consistency and patience.

The research purpose of this thesis has been to define the contactless mobile payment ecosystem with its future potential on the European market. The research paradigm has been of an interpretive nature where the researchers’ interpretations on the information have been in focus. In order to answer the research purpose, an action research has been conducted, including an analysis the of Porter’s Five Forces model applied on the current contactless mobile payment ecosystem with its various stakeholders, the attendance at the annual NFC Congress in Austria as well as an experimental case study on Google.
The findings of the action research have resulted in new definition of the current contactless mobile payment stakeholder ecosystem. In this new definition of the ecosystem, the user has been defined as the strongest force, hence has been placed in the centre encircled by mobile network operators, banks, merchants and transit authorities. In the ecosystem handset manufactures, operating system providers, technology vendors, cash handling organisations, card networks, POS terminal manufactures and governmental bodies have also been represented.

The vision of the case study on Google has been to present a market entry strategy for how Google could enter the European market of contactless mobile payments. The research resulted in a proposition that Google would enter the market in the following order; the UK, France, Turkey, Russia, Germany, Spain and Italy.

The conclusions of the research have been that contactless mobile payments will cut across an entire ecosystem, but that the ecosystem at the moment is not fully defined. To achieve a competitive position, a stakeholder has to deliver an outstanding user experience that is interoperable within the whole European market.

**Key-words:** Contactless mobile payments, near field communication (NFC), mobile payment ecosystem, payment ecosystem, Google, Android
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For the successful completion of this thesis, we would like to thank professor Staffan Laestadius for being a guiding source through personal and group interaction.

Also, we would like to thank Yasmina Brihi, Loraine Habib, Marc Schuler, Andrea Salvati, Dilek Telkes and Konstantin Kuzmin at Google offices around Europe for their helpfulness in our work.

Our final and warmest thanks go out to Matt Simpson for constantly being available for discussions, contributing with useful information and inspiring ideas as well as and bright thoughts.

Hopefully, this research will help Google in achieving a competitive position on the European contactless mobile payment market.

Emelie Andrén Meiton and Marie Lagström
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<tr>
<td>NFC</td>
<td>Near Field Communication</td>
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<td>CMP</td>
<td>Contactless Mobile Payments</td>
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<td>ECP</td>
<td>European Payment Council</td>
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<td>RFID</td>
<td>Radio-frequency identification</td>
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<tr>
<td>TSM</td>
<td>Trusted Service Manager</td>
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<tr>
<td>SE</td>
<td>Secure Element</td>
</tr>
<tr>
<td>UICC</td>
<td>Universal Integrated Circuit Card (SIM card)</td>
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<tr>
<td>Micro SD</td>
<td>Micro Secure Digital</td>
</tr>
<tr>
<td>SMS</td>
<td>Short-message-service</td>
</tr>
<tr>
<td>MNO</td>
<td>Mobile Network Operator</td>
</tr>
<tr>
<td>POS</td>
<td>Point of Sale</td>
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<tr>
<td>Smart phone</td>
<td>A mobile phone that offers more advanced computing ability and connectivity than a traditional mobile phone.</td>
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Payment card definitions

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<th>Contactless Mobile Payment availability</th>
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<tr>
<td><strong>Pay now card</strong></td>
</tr>
<tr>
<td><em>The group of payment cards where the used funds already are owned by the card holder and ready for disposal.</em></td>
</tr>
<tr>
<td><strong>Debit card:</strong></td>
</tr>
<tr>
<td>A debit card, also known as bank card or check card, is a pay now card where money is transferred immediately from the bearer's bank account.</td>
</tr>
<tr>
<td><strong>Deferred debit card:</strong></td>
</tr>
<tr>
<td>A deferred debit card is a pay now card where the card holder money is transferred a few days after the purchase.</td>
</tr>
<tr>
<td><strong>Prepaid card:</strong></td>
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<tr>
<td>A prepaid card is a payment card where money is actively charged onto the card by the card holder.</td>
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<tr>
<td><strong>Pay later card</strong></td>
</tr>
<tr>
<td><em>The group of payment cards where the issuer of the card creates a revolving account and grants a line of credit to the card holder that is required to be paid back at a later occasion.</em></td>
</tr>
<tr>
<td><strong>Credit card:</strong></td>
</tr>
<tr>
<td>A credit card is a pay later card that allows the card holder to spend borrowed money from the card issuer and pay back later.</td>
</tr>
<tr>
<td><strong>Charge card:</strong></td>
</tr>
<tr>
<td>A charge card is a pay later card where the card holder repays the debt regularly, at e.g. every 30 days.</td>
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1. Introduction
This section deals with a general introduction of the thesis. It starts with a brief background, and then explains the research problem, purpose and vision. After that, a few limitations of the research are discussed. In order to help the reader to follow the structure and navigate through the rest of the paper, an outline is presented in the end of the chapter.

1.1 Background
Contactless mobile payment (CMP) is a payment method through a mobile phone and contactless technology. Instead of paying with cash, a payment card or a cheque, a user can tap its mobile phone onto a terminal to pay.

CMP is based on near field communication technology (NFC). NFC is a two-way communication technology based on radio-frequency identification (RFID) that operates at the radio frequency ISM band of 13.56 MHz (Chang, 2010) (Wouters, 2009). The main difference between RFID and NFC is the operating distance, which for NFC is set to approximately 10 centimetres (Wouters, 2009). During the last couple of years, RFID technology has transformed from primarily being used in contactless identification cards to more advanced applications. By many researchers, the RFID environment is argued to hold huge potential by enabling “the Internet of things”. This expression refers to an environment where everyday items are connected, readable and easy to control (Ranasinghe, 2010).

The NFC technology enables the user to make transactions, exchange digital content, and connect electronic devices. Today, the technology is mostly used by transit authorities around the world (NFC Forum, 2011). However, it is expected that NFC may hold huge potential when integrated and used in CMP services, since it is a much faster and safer way to initiate payments than other mobile network based technologies (Loftesness, 2011) (Ensor, 2008).

In order for CMP services to work in practice, the NFC chip needs to communicate in a secure way through the mobile phone (Wouters, 2009). How this communication specifically will work is the determining factor of its success, since the player or players that will control the information channel will also control the revenue streams from the payment (Jefferson, 2010).

Up to date, there is no standardisation on where to place the NFC chip or how it will communicate with the mobile phone (Jeffersson, 2009). Identified are a few possible solutions (European Payments Council, 2010):

- Firstly, the NFC chip could be externally attached to the phone. An example of this could be the case if the NFC chip would be integrated in a payment card and then externally attached to the phone.
- Secondly, the NFC chip could be externally attached, but in a more integrated way. Examples of this could be where the NFC chip either is a micro SD card or a universal integrated circuit card (UICC, or commonly known as a SIM-card).
- Finally, the NFC chip could be embedded within the hardware of the phone.
From a user perspective, the benefits of CMP are that it is easier and faster to use, more secure and has a higher level of control than existing payment methods (Ensor, 2008). Apart from this, other important stakeholders all have different motives. In this ecosystem the included stakeholders are mobile network operators (MNOs), handset manufacturers, operating system providers, technology vendors (as in producers of the NFC chip), card networks, cash handling organisations, banks, transit authorities, merchants and governmental bodies (Ensor, 2008) (Kountz, 2010) (Husson, 2009).

Across the globe, several markets have for the past years embraced the need for new payment methods. Due to an insufficient banking industry in some parts of the developing world, mobile payments have been the only electronic payment method. This has been particularly true in Africa where the MNOs have been offering banking type services to their users through what is commonly known as remote mobile payments, with M-Pesa being an example (The UK Cards Association, 2010).

Apart from Africa, the mobile and financial industries in Europe have jealously been glancing at Asia. In Japan and South Korea, CMP services have been implemented and used since 2004 (Ensor, 2008) (Ondrus, et al., 2008). One of the reasons for the Japanese success has been the united ecosystem of stakeholders. For instance, the Japanese MNOs have a culture of working much closer with handset manufacturers in comparison to the case in Europe. Another success factor has been the focus on heavy subsidies to make sure that merchants have had the technology needed (Husson, 2009).

In Europe, several CMP trials have been made. What has varied the most between each trial has been the size of the trial and what stakeholders that have been involved (Balaban, 2011). The two most frequently seen are the card networks Visa and MasterCard. This is due to the fact that they already issue contactless payment cards built on NFC technology. Consequently they have had an advantage on the market (Visa, 2011) (MasterCard, 2011). Among the rest, the MNOs in particular have shown great interest in CMP trials. They often regard themselves as gatekeepers in this new evolving value chain and show, through their anticipation in the trials, that they are committed to this new technology. The joint venture between France Telecom and Deutsche Telekom in the UK, called Everything Everywhere, is a good example of this commitment (Balaban, 2011). However, in comparison to the developments in Japan and Africa, the CMP readiness in Europe is still in its initial phase.

1.2 Problem
This being said, one can argue that CMP poses huge opportunities in Europe. In its most natural way, CMP is a step towards the convergence of many industries. Companies from the payment, ticketing, loyalty and access control sectors are joining the telecommunication market to deliver CMP services. However, there are some implications. Firstly, the lack of standardisation regarding the placement of the NFC chip has led to an undefined ecosystem consisting of many stakeholders with different motives. Secondly, in order for CMP services to succeed and reach full market potential, the users need to change their existing payment methods and habits, which is a time consuming process.

1.3 Purpose
The purpose of this research has been to define the CMP stakeholder ecosystem with its future potential on the European market, using a case study design on Google.
1.4 Vision
The vision of this research has been to contribute to the growing field of research within CMP. Another vision has been to assist Google in formulating a market entry strategy in order to achieve a competitive position within the European market of CMP.

1.5 Limitations
As mentioned, when considering CMP services in Europe, in comparison to other parts of the world, the developments are still in their initial phases. In Africa for example, the market for remote mobile payments has been accelerating for some time. However, since these payments are not based on NFC technology, they are therefore not regarded as contactless mobile payments. In addition to Africa, there may be other more or less recognized mobile payment methods that are evolving simultaneously in other parts of the world. Though in order to present a research that provides a result which fully scope the phenomena of CMP in Europe, this research has been limited to only focus on CMP services based on NFC technology. Hence, it will not include remote mobile payment services or other evolving payment solutions.

Furthermore, a geographical limitation has been set to investigate the following European countries only:

- The United Kingdom
- France
- Germany
- Italy
- Spain
- Turkey
- Russia

These countries has been chosen out of the criteria; estimated scale opportunity, smart phone adoption and NFC readiness.

1.6 Outline
Initially, this research is structured with a presentation of the methodology used with the applied motivation for the researchers’ choices in particular matters throughout the report. Followed by this are chapters which aim to define the theoretical framework that explains the research problem, as well as the equivalent empirical framework. These frameworks are summarized in the findings followed by a detailed discussion. The entire report ends with the researchers’ conclusions of the CMP stakeholder ecosystem, its potential on the European market and a market entry strategy plan for Google.
2. Methodology

This chapter deals with the research methodologies that have been used. The chapter also provides the reader with an understanding of the reasons and rational behind the choices that have been made by the researchers. Additionally, a literature and empiric review is presented. Finally, the reliability and validity of the research are discussed.

2.1 Research paradigm and methodology

The research paradigm and methodology used in this research has been based on the book Business Research; a practical guide for undergraduate and postgraduate students (Collins, 2009).

The research paradigm has been of an interpretive nature, where the researchers’ interpretations of the information have been in focus. Due to the fact that the research purpose did not aim to convert information to numbers the research process has been qualitative, rather than quantitative.

Since the research subject is an ecosystem, which status is debated to be under constant change, an action research methodology has been considered as an appropriate choice. The philosophical assumption that underpins an action research is that the subject is part of a constantly changing social world, and that the research and researcher are part of that change (Collins, 2009). With this type of research, the aim is to map the ecosystem on a general level so that any stakeholder may use it to build a decent knowledge base before structuring a strategy of their own.

2.2 Literature review

The purpose of the literature review has been to critically evaluate the existing body of knowledge presented in the theoretical framework. The literature refers to all sources of secondary data that have been relevant to the research. The secondary data has primarily been collected from books, articles, conference papers, reports, government and commercially produced statistics, industry data as well as e-resources.

Since the purpose of this research has been to define the current CMP stakeholder ecosystem and potential in the European market, parts of the theoretical framework have been based on literature from the research areas of strategic management. The following two textbooks have given the researchers a full understanding of Michael Porter’s Five Forces model; Strategy: Process, Content, Context by Bob de Wit and Ron Meyer and Managing and Using Information Systems by Keri E. Pearlson and Carol S. Saunders (Wit, et al., 2003) (Pearlsson, et al., 2004). The articles How Competitive Forces Shape Strategy by Michael Porter and Competitive Advantage Revisited by George Stonehouse and Brian Snowdon have also been used for the same purpose (Iyer, et al., 2008) (Stonehouse, et al., 2007). In strategic management, the work of Porter is well recognised and puts him in the centre of this recognizable field of academic study and management practice (Stonehouse, et al., 2007). Therefore his work has been regarded as valid sources of information for this research.

The publication Mobile Payments by the European Payment Council has been used to formulate a general overview of the European market of CMP (European Payments Council, 2010). The publication has also been used when defining the CMP stakeholder ecosystem. The European Payment Council is a pan-European governmental initiative by
the European banking sector (Swedish Bankers’ Association, 2009). It has therefore been regarded as a reliable source of information.

The publications 2010: A Crossroads for NFC Mobile Payments, NFC Technology Is Revitalising Mobile Payments and Mobile Contactless Payments in Europe: the Reality beyond the NFC Hype by the research company Forrester Research have been used to understand the current stakeholder ecosystem in Europe as well as the developments of CMP in Asia (Ensor, 2008) (Husson, 2009) (Kountz, 2010). Forrester Research is an independent market research firm focused on Internet and information technology (The New York Times, 2011). It has for that reason been regarded as a valid source of information. However, since the publication NFC Technology Is Revitalising Mobile Payments was published in 2008, some of the facts and statements have been incorrect or not up to date. In these cases, the empirical framework has been used as verifications or the facts have not been used at all.

The publications Making Mobile Wallets a Success and Alternative NFC Form Factors by the consultancy firm The Human Chain have been used to understand the problems behind the CMP progress in Europe. Together with the publication Mobile Payments by the European Payment Council the Making mobile wallets a success publication has been used to define the CMP stakeholder ecosystem. The Alternative NFC Form Factors publication was used to understand the problem of where to place the NFC chip (Jefferson, 2010) (Jeffersson, 2009). The Human Chain is a British telecom management consultancy firm that focuses on the mobile and wireless sector providing management and technology consultancy along with thought leadership (NFC Insight, 2011). Tim Jefferson is the firm’s Managing Director and has over 25 years experience of working within the mobile, fixed telecoms, IT, hospitality and retail vertical markets (Wima, 2011). Jefferson and the Human Chain have therefore been regarded as valid sources of information.

The publication Mobile Year in Review 2010 by ComScore has been used to make comparisons of smart phone adoption and mobile trends in Europe (Radwanick, 2010). The research company ComScore is one of the largest commercial bodies that investigate mobile trends (The New York Times, 2011). It has consequently been regarded as a valid source of information.

Several publications from Datamonitor have been used to give the researchers an in-depth knowledge about the card market and banking industry in Europe (Datamonitor, 2008-2010). With its recorded knowledge in market research Datamonitor has been regarded as a valid source of information (Vault.com Inc., 2011). However, some of the reports have been published before the financial crisis in 2008 (Datamonitor, 2008). This means that some of the facts and statements have been incorrect or not up to date. In these cases, the empirical framework has been used as verifications or the facts have not been used at all.

Additionally, two e-newspapers have been used to get updated information regarding the current CMP stakeholder ecosystem and market potential in Europe. Firstly, the NFC Times has been used to get an overview of the CMP trials that have been made in Europe (Balaban, 2011). NFC Times’ editor Dan Balaban has more than 11 years of experience in the payment industry (NFC Research, 2011). Therefore, the NFC Times has been
regarded as a valid source of information. Secondly, the *NFC World* e-newspaper has been used to get updated information about the different stakeholders’ motives (Clark, 2011). *NFC World*’s editor, Sarah Clark has more than 20 years of experience in the payment industry (PYMNTS.com, 2011). Therefore, *NFC World* has also been regarded as a valid source of information.

### 2.2 Empiric review

The purpose of the empiric framework has been to compare the theoretical framework with reality in order to define the CMP stakeholder ecosystem with its potential on the European market. This has been accomplished through the researchers’ participation at the NFC Congress 2011 in Austria, as well as through an experimental case study on Google.

#### 2.2.1 The 2011 NFC Congress in Hagenberg, Austria

In February 2011, the researchers attended the annual NFC Congress in Hagenberg, Austria. The congress provided a forum for academic researchers and industry bodies to exchange views, experiences and share knowledge about NFC. The purpose of attending the event was to gather relevant industry knowledge through interviews and discussions with participants at the congress.

The interviews were made during the congress and the interviewees were approached through a semi-structured, explorative, qualitative method. The purpose of the interviews was to gather insights on their view of the CMP stakeholder ecosystem with its potential on the European market. Therefore, the questions focused on the evolving ecosystem, the placement of the NFC chip and the respective motives of each stakeholder.

Additionally, useful information was gathered from seminars by the following speakers at the congress:

- “*Introduction to the congress*” by Tim Jefferson, Managing Director at The Human Chain in the UK
- “*Smart Urban Spaces Oulu, Helsinki*” by Tuomo Tuikka, Senior Research Scientist at VTT Technical Research Center in Finland
- “*NFC mobiquitous information service prototyping and multi-mode NFC application framework*” by Professor Serge Miranda at the University Nice Sophia Antipolis in France
- “*NFC on iPhone and Android – Status Quo and Outlook*” by Kurt Schmid, CEO at NEXPERTS GmbH in Austria
- “*From smart cards to smart devices, the mobile transactions (r)evolution*” by Charles Dachs, Marketing Director at NXP Semiconductors in France
- “*NFC Technology for Smartphones (Android, iPhone)*” by Andreas Oyrer, Head of Mobile & NFC at RIM in Austria
- “*Mobile Wallet turns Convergent*” by Dr. Zhiyun Ren, Senior Product Manager at Deutsche Telekom Laboratories in Germany
- “*Privacy and Near Field Communications in a Converging Mobile Telecoms Market – A Socio-Economic Perspective*” by Dr. Jonathan Liebenau, Head of Technology Innovation: Management, Economics & Policies team of LSE Enterprise, at the London School of Economics in the UK
2.2.1 A case study on how Google could enter the European market of CMP

The vision of the case study has been to strengthen the knowledge of the research purpose using a real case scenario. An experimental case study has been done on Google, with the purpose to understand how Google, as an operating system provider in collaboration with handset manufacturers, could enter the European market of CMP.

Google has been chosen as case study object due to several reasons. First and foremost, Google is an appropriate choice due to its diversification strategy of CMP services in Europe (Balaban, 2011). Google is also relevant as an Internet-based corporation for both its high level of innovation as well as success in its role as mobile operating system provider through Android (Iyer, et al., 2008). An indication that CMP in general is on the verge of being seriously exploited is the increasing number of NFC enabled mobile phones in the market. Recently, Google and Samsung launched the Nexus S, an NFC enabled smart phone with Android as operating system (Balaban, 2011).

The case study has been exercised through written documents, oral presentations and discussions on a regular basis with Matt Simpson, Head of Strategy and Operations at Google in London. Due to confidential restrictions Simpson has not provided the researchers with any guidance or written documentation regarding either Google’s corporate strategy of CMP, or any CMP product developments from Google. Hence, the case study approach has come to be from an experimental out-side-in perspective.

In collaboration with Simpson, interviews have also been made with employees at Google in France, Germany, Italy, Turkey and Russia.

The following Google employees have been interviewed:
- Loraine Habib, Industry Analyst in France
- Marc Schuler, Industry Analyst in Germany
- Andrea Salvati, Industry Analyst in Italy
- Dilek Telkes, Industry Analyst in Turkey
- Konstantin Kuzmin, Marketing Director in Russia

Since an interview with an equivalent Spanish employee has not been possible to conduct, there is no empirical Spanish section in the report. Furthermore, the interviews with Turkey and Russia have not generated much relevant information about the mobile market, and therefore, these sections are limited. This fact is also applicable on the section on transit authorities in Turkey, Germany and Italy.

The interviews were made through virtual conferences where the interviewees were approached through a semi-structured, explorative, qualitative method. A purpose of the interviews was to fill the gaps of the theoretical framework. Therefore, all interviewees were asked different questions based on the theoretical findings in each of the investigated countries.

2.3 Reliability and Validity

For a research result to be reliable, a repetition of the study should produce the same result. For an interpretive paradigm, such as this research, reliability is often low or of little importance (Collins, 2009). This is true in this case, since the research has been
made from an experimental outside in perspective on Google. To perform an exact replicable study would be close to impossible.

For a research result to be valid, the findings should reflect the phenomena of which is being researched, meaning that the initial stated problem should be answered. For an interpretive paradigm, the focus is to capture the essence of the phenomena and extract data that provides rich, detailed explanations (Collins, 2009). Since the methodology has been of an interpretive paradigm, the produced findings in this research may have low reliability but instead high validity. This is because the used literature has been collected from the latest existing body of knowledge as well as continuously reviewed on its relevance and legitimacy.
3. Theory
This chapter aims to define the theoretical framework that explains the research problems identified in the introductory chapter. Firstly, it gives a general overview of the competitive forces that affect any industry through Porter’s Five Forces model. In order to apply the model on the CMP stakeholder ecosystem, the current CMP stakeholder ecosystem in Europe is presented. Additionally, an overview is given including the current NFC context and recent developments in the market, the mobile and card market, the banking industry, transit authorities and finally the merchant market.

3.1 Introducing Porter’s Five Forces model
Porter’s Five Forces model presents a classic view of the major forces that shape the competitive environment of a business. This view is a reminder that competitive forces do not derive only from the actions of direct competitors but also from the surrounding environment (Pearlsson, et al., 2004). According to Porter, these forces are; new entrants, buyers, suppliers, substitutes and industry competitors (Wit, et al., 2003).

New entrants
Existing firms within an industry often try to build up entry barriers to reduce the threat of new competitors (Wit, et al., 2003). Generally, there are six major sources of barriers to entry; economies of scale, product differentiation, capital requirements, cost disadvantages independent of size, access to distribution channels and government policies (Porter, 1997). As a consequence, the threat of new entrants often tends to have an improving effect on what already exist on market (Wit, et al., 2003).

The entrants’ expectations about the reaction of existing competitors will influence the decision on whether to enter or not. The new entrant will likely have second thoughts if; the competitors have substantial power to fight back, are likely to cut the prices because of a desire to keep market shares, or if the industry growth is slow (Porter, 1997).

Buyers
The users often have a substantial power to affect the competitive environment of an industry (Pearlsson, et al., 2004). Users tend to be more price sensitive if they are purchasing products that are undifferentiated, expensive relative to their incomes or of a sort where the quality is not important. If the users are price sensitive, the bargaining power will be high (Porter, 1997).

In other words, a buyer group is powerful if it is concentrated or purchases in large volumes, if the purchased product is standard or undifferentiated, has a favourable price for the buyer or if the quality is unimportant or does not save the buyer money (Porter, 1997).

Suppliers
The suppliers’ bargaining power within an industry can determine a business’ profitability. If there are few suppliers, if the quality of the supplier’s input is crucial or if the volume of the purchases is insignificant to the supplier, this role will have a powerful position (Pearlsson, et al., 2004).

In other words, a supplier group is powerful if it is dominated by a few companies and more concentrated than the industry it sells to, the product is unique or at least
differentiated, it is not obliged to challenge with other products for sale to the industry, it poses a threat of integrating forward into the industry’s business or that the industry is not an important user of the supplier group (Porter, 1997).

**Substitutes**
The potential of a substitute within a market depends on the buyers’ willingness to substitute, the switching cost and the relative price-to-performance of the substitute (Pearlsson, et al., 2004). Substitutes often come rapidly into play if some development increases competition in their industries and causes price reduction or performance improvement (Porter, 1997).

**Industry competitors**
A player within an industry itself must be aware of the competitive actions of the rivals in order to protect its market share. This is especially relevant when it is; expensive to exit the industry, the growth rate of the industry is declining or when the products are loosing their differentiation (Pearlsson, et al., 2004). It is important to remember that these rivals are diverse in their strategies, origins and cultures. These players will have different ideas on how to compete and continuously run head-on into each other in the process (Porter, 1997).

![Figure 1 The Porters 5 Forces Model (Wit, et al., 2003)](image)

### 3.2 The CMP stakeholder ecosystem in the European market

Seen from a technological point of view, NFC is the fusion of the contactless payment card and the mobile phone (Ondrus, et al., 2008). This means that the CMP stakeholder ecosystem will involve players from both the information technology as well as the financial industry (Prabhu, 2010). At this point in the CMP evolution, the following stakeholders and their motives within each market have been identified (Ensor, 2008) (European Payments Council, 2010) (Husson, 2009) (Jefferson, 2010) (Kountz, 2010) (Prabhu, 2010) (Payments Council, 2010):
• **Mobile Network Operators** (MNOs)
  o The MNOs (e.g. Deutsche Telekom) have wanted to increase data revenues and have been willing to charge for the management of NFC applications on the SIM card.
  o The MNOs have also seen CMP services as a chance to threaten the monopoly of banks on financial services, something that has been seen in emerging markets in Africa.

• **Handset manufacturers**
  o The handset manufacturers (e.g. Nokia) have wanted to reach more users and have seen CMP as product line extensions for some of its devices.
  o Moreover, the handset manufacturers have seen CMP services as an entry approach to threaten the existing monopoly of MNO's and financial institutions.

• **Operating system providers**
  o The operating system providers (e.g. Google's Android) have wanted to increase their revenue streams by connecting CMP services to their application stores (e.g. Android Market).
  o In combination with the handset manufacturers, the operating system providers have also seen CMP services as an entry approach to threaten the existing monopoly of MNO’s and financial institutions.

• **Technology vendors**
  o The technology vendors (e.g. NXP Semiconductors and Gemalto) have been producing the technology needed for CMP systems, and have seen CMP systems as new ways to create revenue streams.

• **Card networks**
  o The card networks (e.g. Visa and MasterCard) have wanted to promote CMP in order to expand their business model. They have seen CMP services primarily as a replacement of cash.

• **Cash handling organizations and independent ATM providers**
  o The cash handling organizations (e.g. G4S) and independent ATM providers (e.g. LINK) have not seen a clear business value in CMP. This is since CMP may be used as a replacement for cash, which is in direct conflict with their business models.

• **Banks**
  o The larger banks (e.g. HSBC and Société Generale) have had very diverse mobile strategies, but the majority has not been rushing to launch CMP services.
  o The smaller banks (e.g. Citibank) have seen CMP services as an attractive way of reaching the un-banked target group and to offer alternative banking services to them.
  o In general, CMP could replace cash, which has been regarded positively by banks since that adds to a higher level of control.

• **Transit authorities**
  o The transit authorities (e.g. Transport for London) have wanted to increase efficiency at the entry gates and have been positive towards the implementation of NFC based services.

• **Merchants**
  o The large merchants where speed matters (e.g. Tesco, Carrefour and the Metro Group) have wanted to obtain increased operational efficiency and
improve their user services. This merchant category has been positive towards the implementation of CMP systems.

- For smaller merchants (e.g. independent corner stores, newspaper stand and coffee shops) CMP services has primarily meant two things. Firstly, CMP services are likely to be cheaper and have lower transaction fees than payment cards. Secondly, the replacement of cash would be positive to smaller merchants since cash transactions have been regarded as expensive and security risks.
- Additionally, CMP services will enable smarter loyalty cards, which have been regarded as positive by many merchants.
- However, requirements for all merchants will be to install contactless point of sales (POS) terminals, which have been associated with an extra cost and therefore negative.

- **Governmental bodies**
  - The governmental bodies (e.g. the European Payment Council) have wanted to develop areas within Europe where citizens, companies and other economic participants can make and receive payments between and within national boundaries under the same basic conditions. Therefore the governmental bodies within the European market have had a positive mindset towards the implementation of CMP services.

### 3.3. The trusted service manager, TSM

In this CMP stakeholder ecosystem a new player is emerging. This player is called the Trusted Service Manager (TSM) and has been initiated by the non-governmental association GSM Association (GSMA), an association consisting of nineteen of the world’s largest MNOs (GSM Association, 2007) (Cox, 2009).

The role of the TSM in the ecosystem is to be an infrastructure enabler with the purpose to facilitate three aspects (Kountz, 2010):

1. The development of an ecosystem built on trust and confidence
2. The access to a critical mass of mobile users and application providers as well as over the air provisioning
3. The management of life-cycle NFC applications

The business model of the TSM is to charge for the management of CMP services while acting as an infrastructure enabler. This would be fulfilled through testing, supporting and security offerings to primarily the NFC service provider and the MNOs (Kountz, 2010) (Jefferson, 2010) (Cox, 2009).

By showing two future scenarios, Figure 2 explains the intended role of the TSM. The left side of the figure shows the scenario when the TSM is missing in the ecosystem. The right scenario shows when a TSM acts as the infrastructure enabler and the value chain relationship between the MNOs and financial services (Kountz, 2010).
Figure 2 The CMP stakeholder ecosystem without and with the role of a TSM (Kountz, 2010).

Figure 3 explains how the TSM bridges the gap between the mobile and payment environments. In this figure, the TSM connects the mobile application or chip manufacturer, the MNO and the card issuer (Kountz, 2010).

Figure 3 The role of the TSM in the CMP stakeholder ecosystem (Kountz, 2010).
3.5. The European market of contactless mobile payments
In order for CMP services to succeed and reach full market potential, the users need to change their existing payment methods and habits. This is a time consuming process that will require consistency and patience. In order to break significant ground, the CMP services will need to be better than the existing payment methods that the users face today (Ensor, 2008). A key word that has been discussed here is interoperability. In terms of CMP, interoperability means that the different systems that emerge will need to be compatible with each other or several problems are likely to occur (Jefferson, 2010). This being said, a full understanding on the European market with its various user habits is a prerequisite. The next section will therefore give a theoretical overview of the European market of CMP.

3.5.1 Current NFC context and recent developments in the market
As mentioned, CMP trials have been made in most of the European countries (Balaban, 2011) (Ondrus, et al., 2008). However, the size and scope of the different trials have varied, especially in terms of the number of users and type of stakeholders. Two frequently involved players have been Visa and MasterCard with their contactless cards Visa PayWave and MasterCard Paypass (Visa, 2011) (MasterCard, 2011).

In UK, apart from contactless transit card Oyster, the most interesting NFC initiative has been the joint venture between the MNOs France Telecom and Deutsche Telekom, called Everything Everywhere. In 2011, Everything Everywhere made a prediction that 40,000 stores will be ready to accept contactless payments by the end of that year. Due to that figure, Everything Everywhere announced that they would provide CMP to their users by this date (Everything Everywhere, 2011).

Among the investigated countries, France has been leading the way of large scale NFC trials, with several CMP trials made since 2007. The most advanced one has been the Cityzi trial in Nice. In fact, the trial has been so successful that the minister of Industry, Energy and the Digital Economy, Eric Besson, has been announcing that he would like to see additional trials and rollouts in the cities of Bordeaux, Caen, Marseille, Paris, Lille, Rennes, Strasbourg and Toulouse in the near future (L’AFSCM, 2011). In May 2010, a similar CMP trial to the Cityzi project in Nice was done in the city of Sitges in Spain (NFC Times, 2010).

In Germany, transit authorities Rhein-Main-Verkehrsverbund and Deutsche Bahn have announced that they will combine their ticketing services and deliver a NFC solution by 2011 (Brown, 2011). In Italy, the ‘Store logistics and payment with NFC project’, StoLpan, have completed a trial for ski-resort visitors, offering weather reports and loyalty rewards (Clark, 2008).

In Turkey, the major banks Garanti Bank and Akbank together with MNOs Avea and Turkcell have taken the lead in CMP trials through various collaborations (NFC Times, 2010). One of the most innovative ones has been the contactless Bonus Trink credit card watch, conducted as a part of Garanti Bank’s Bonus Trink loyalty card (Garanti Bank, 2011).

In Russia, several CMP trials have been made. In 2009, the most successful attempt so far was formed in collaboration between the largest MNOs; Vimpelcom, MegaFon, MTS
and SkyLink Moscow, called NFC Test Zone. The ambition of the NFC Test Zone has been to investigate the opportunities within CMP in Russia (Clark, 2010).

One of the key drivers behind the move towards CMP technology in Europe is the upcoming 2012 Olympic Games in London. The Olympics is driving changes in the payment market that affects everyone from MNOs and financial players to merchants and politicians, which makes the NFC entrance in the UK particularly interesting. The stated vision of the Olympic sponsors is that the Olympic Games’ area will be completely contactless (NFC News, 2010).

Apart from the Olympics in London, it has also been argued that the 2012 UEFA European Football Championship in Poland and Ukraine could drive CMP in Europe. During the World Mobile Congress 2011 in Barcelona, Deutsche Telekom, Vodafone and O2 announced that they are working on a joint payment system called m-pass that will be used for ticketing during the championship (Albanesius, 2011).

3.4.2. Mobile market
In the investigated countries, major milestones in the mobile market were made during 2010. By the end of 2010, the UK, France, Germany, Spain and Italy had more than 72.6 million smart phone subscribers. At that time, this number was 15% higher than the same figure in the US. Spain led the smart phone adoption with 37.6% of the total market using smart phones. The UK also had a strong growth rate, with a smart phone adoption of 34.3%, up from 21% in 2009 (Radwanick, 2010). As Figure 4 shows, the smart phone shipments between Q1 and Q4 2010 increased significantly in most of the investigated countries (Canalys, 2010).

![Figure 4 Comparisons of the smart phone shipments to the investigated countries between Q1 and Q4 2010 (Canalys, 2010).](image)

During the same year, three of the top five acquired handset devices in these countries were smart phones. By user preference, the most wanted handset was the Apple iPhone 3GS, followed by iPhone 4. However, by installed base, Nokia and Samsung were the most commonly used ones. Nokia’s Symbian was also the most used operating system. However, the Symbian’s grip on these regions’ smart phone market loosened in 2010 as other platforms gained traction. During 2010, Google’s Android consumed the largest proportion of Symbian’s market share, growing by more than 10% units to 11.9%. Apple
also saw its market shares grow considerably, from 13.8% to 20.0% of the market share, while RIM grew marginally to an 8.6% market share (Radwanick, 2010).

In Turkey and Russia, limited studies have shown the smart phone adoption among all age groups. However, research shows that the smart phone adoption market share, of people in the ages of 15-24, in Russia is 25% (European Travel Commission, 2011). In Russia, Android increased from having 6% to 20% share of all smart phone shipments to the country during 2010 (Canalys, 2010). In Turkey, Android increased from having 2% to 9% share of all smart phone shipments the same year (Canalys, 2010).

3.4.3. Card market
Within the investigated countries, the research has shown a large difference in the acceptance and usage of payment cards. The share of card payments as a proportion of general user expenditure has shown to be highest in the UK at 53% and lowest in Italy, at 13.3% only. The UK has also the most mature market in terms of card penetration, while France has the least mature. However, the French users have been the most sophisticated card users, meaning that the French users use their cards often for low value purchases. The least sophisticated users have been the Italians. An Italian user uses its card seldom and only for high value purchases (Datamonitor, 2010).

In 2007, the pay later card market had a growth rate of 7.7% (Datamonitor, 2010). During the financial crisis in 2008, the payment card market in Europe went through significant changes (The UK Cards Association, 2010). In 2009 the card market stagnated (Datamonitor, 2010). The UK even experienced the first decrease in the total number of cards in issue since 1993 (The UK Cards Association, 2010).

During the last couple of years, innovative developments have been made in the card market, such as contactless payment cards from Visa and MasterCard (The UK Cards Association, 2010). The most mature contactless card market has been the UK, with 11.6 million contactless payment cards in issue, followed by Turkey with 150,000 Visa PayWave cards in issue (Contactless Cards, 2010) (NFC Times, 2010). In addition to this, new product developments has been seen in prepaid cards that primarily have been used as replacements for cash. The UK, Turkey and Italy have seen examples of these prepaid cards through sQuid, Paro and PostePay (sQuid, 2011) (Divan, 2011) (Postepay, 2010).

3.4.4. Banking industry
In each of the investigated countries, a few larger banks are dominating the national banking industry. In the UK, these are formally known as the Main High Street Banks (MBBG). They include Santander UK, Barclays, HSBC Bank, Lloyds Banking Group, Northern Rock and Royal Bank of Scotland Group (BBA, 2011). In France, four major banks dominate the industry. These are BNP Paribas, Crédit Agricole, HSBC and Société Générale (Datamonitor, 2010). In Germany, there are three major banking groups; Commerzbank, Deutsche Bank and Santander (Datamonitor, 2010). In Italy, Unicredit and Intesa Sanpaolo are the largest banking groups (Datamonitor, 2010). The Spanish banking industry argued to be one of the most comprehensive in Europe. Here, BBVA and Santander dominate the market (Datamonitor, 2008). In Turkey, Garanti Bank, Akbank, Türkiye İş Bankası and Yapı Kredi Bank are the major banks (Erda, 2001). Finally, in terms of market consolidation in 2007, the major banks in Russia were Sberbank, Gazprombank and VTB (Kommersant, 2007).
3.4.5. Transit authorities
Both the UK and France have sophisticated contactless technology adopted by transit authorities. In London and Paris, Oyster and Navigo cards are used for public transportation. In the UK, since the start of Oyster in 2003, 34 million cards have been issued. In France, since 2004, more than 4.5 million contactless Navigo cards have been issued (Transport for London, 2010) (STIF, 2010).

Additionally, Turkey and Russia have also adopted NFC services in their public transportation systems. In Istanbul, the public transportation has an integrated electronic ticket system, based on RFID, called Akbil (IETT, 2008). In Russia, all the larger cities have extensive metro networks. In 2010, the Moscow Metro partnered with the mobile operator MTS with the ambition to introduce a CMP service by the end of 2011 (Clark, 2010).

In Germany, all NFC trials have been within transit ticketing, and in Italy the transit has also been much involved in NFC trials (Balaban, 2011). One of the largest transit authorities in Italy is Azienda Trasporti Milanesi. Azienda Trasporti Milanesi is a public transportation system in Milan, with over 328 million passengers carried in 2009. Even though Azienda Trasporti Milanesi has made NFC trials, no contactless cards have been available so far (Azienda Trasporti Milanesi, 2011). In Spain, the transport infrastructure has been well developed and characterized by an extensive network of roads, rapid transport, air routes and ports. All the larger cities such as Madrid, Barcelona, Valencia and Seville have metro networks, however like in Italy no NFC services have been implemented at this point of time (Barcelona Tourist Guide, 2011) (Madrid Tourist Guide, 2011).

3.4.6. Merchant market
In the European supermarket sector, three players stand out from the rest in terms of market share and turnover. These are Tesco in the UK, Carrefour in especially France and the Metro Group in Germany (Verdict, 2008). Apart from supermarkets and large retailing groups, another identified important merchant sector are service stations and fuel retailers. In this segment, there has been a shift towards the entrance of supermarket service stations. This is due to the fact that supermarkets attract users with offers of cheaper fuel prices together with attractive loyalty rewards. In the UK and France, supermarkets have increased their focus on new innovative fuel retailers. However in central and eastern European countries, the supermarket penetration at fuel retailers is relatively low (Datamonitor, 2010).

By 2010, most of the merchants that have been accepting contactless technology fall into the ‘low-value high-volume’ category. In the UK, Prêt a Manger, Caffé Nero and Subway have been accepting contactless payments for some time. In France, the same is true for large supermarket Carrefour. However in addition to these chains, a large number of independent merchants have also been accepting contactless payments. For the ones that have been accepting contactless payments by Visa and MasterCard, a transaction limit of approximately €20 has been set (Visa, 2011) (MasterCard, 2011).
4. Empirics

This chapter aims to present the empirical findings from the NFC Congress 2011 in Hagenberg as well as with the interviews performed with Google employees at offices around Europe.

4.1 NFC Congress 2011

Several attendants at the NFC Congress 2011 in Hagenberg have been interviewed regarding the CMP stakeholder ecosystem and potential on the European market. The interviewed participants at the congress were approached with primarily the following three questions:

1. Is the NFC value chain set or still evolving?

2. Who are the main players, what are their key new developments and what potential disruptors are there?

3. Who will be able to extract the most value? How powerful will TSMs become?

In the following section, these questions are answered. The first section answers the question about the NFC value chain, while the second part includes answers to the questions about the players and their respective roles.

4.1.1 The NFC value chain is still evolving

Tim Jefferson, Managing Director at the Human Chain and chairman at the congress, introduced the event by presenting NFC as a disruptive innovation that is going to cut across an entire ecosystem of financial services, retail, ticketing and advertising. Moreover, new players within the payment ecosystem may rise. Due to new payment methods, new service providers with different business models are going to look at the mobile world differently. Jefferson argued that this to a large extent will define the CMP stakeholder ecosystem (Jefferson, 2011). Tuomo Tuikka, the Senior Research Scientist at VTT Technical Research Centre, also confirmed that the NFC ecosystem has evolved much, especially in the past few years (Tuikka, 2011).

Marketing Director at NXP Semiconductors in France, Charles Dachs, declared that even though there are more than one million NFC touch points in the world, the CMP stakeholder ecosystem is still in its initial phase. The value chain is therefore far from fully evolved. Furthermore, Dachs explained, a transition is being made from smart cards with NFC to smart devices with NFC. However, it is likely that both offline and online mobile transactions will continue to co-exist. When given the question of how many NFC enabled handsets there will be on the market within the future, Dachs estimated a number of 50 million by the end of 2011 and more than the double by 2012 (Dachs, 2011).

4.1.2 The user will be met by many different approaches and players

According to Jefferson, in a short period of time several new handsets with CMP technology will enter the market. However, these handsets may enter with different CMP technology approaches, such as handsets with embedded NFC chips or with externally integrated SIM cards. Furthermore, Jefferson argued that other alternative form factors such as stickers or secure micro SD cards might be attractive solutions.
(Jefferson, 2011). Upon the argument that the user will be approached through various CMP solutions, Dachs agreed with Jefferson. However, Dachs emphasized that an embedded NFC chip will likely bring the best user experience. Moreover, Dachs discussed the potential threat this would mean to the MNOs. The direct response to this act would be to integrate the NFC chip within the SIM card. Based on these arguments, Dachs alleged that financial institutions, TSMs and handset manufacturers will become the key players as the ecosystem evolves (Dachs, 2011). In addition to these players, Jefferson argued that information technology and management consultancy firms will play an important role, since they most likely will be the ones presenting the market analysis for the involved stakeholders (Jefferson, 2011).

According to many of the participants at the congress, the placement of the secure element will determine whether NFC commercialization will become a success or not (Jefferson, 2011) (Dachs, 2011) (Ren, 2011) (Schmid, 2011). From a tech point of view, Dr Zhiyun Ren from Deutsche Telekom Laboratories in Germany explained how the NFC business ecosystem will be dependent on the user purpose. According to Ren, the ecosystem could be described in one category called open elements and one called secure elements. Figure 4 explains Dr. Ren's ecosystem, where the open elements category includes the exchange of non-confidential data such as services, ads and peer-to-peer data sharing. On the other hand, the secure elements category handles confidential information and personal data related to payment procedures, and therefore requires a higher level of security (Ren, 2011).

![Figure 5 The NFC business ecosystem (Ren, 2011)](image)

According to Jefferson, it is important to highlight that payment is not everything. However, it will most likely be a driver in the anticipated development (Jefferson, 2011). Dr. Ren agreed with Jefferson by alleging how NFC will bring better end-user experience, e.g. when linking a virtual mobile application shop to a real shop experience. In addition to this, Ren also stated that NFC will bring another security level to the purchase since it offers an end-to-end user solution (Ren, 2011).
In order to commercialize NFC, all participants agreed that a compelling user experience is required. Collaborative working and interoperability, as in experienced functionality by the user, is essential for a NFC success (Jahnich, 2011) (Jefferson, 2011). Kurt Schmid, the CEO of Nexperts, stated that as of today Apple has been leading the competition of providing the best user experience (Schmid, 2011). Jefferson also emphasized the importance of educating the users in order to reach full market potential (Jefferson, 2011).

4.2 Case study on Google
Several employees in each of the investigated countries at Google have been interviewed regarding the CMP stakeholder ecosystem with its potential on the European market. It also included questions regarding the current NFC context and recent developments on the market, mobile market, card market, banking industry, transit authorities and merchant market.

4.2.1 Current NFC context and recent developments in the market
There are currently a lot of buzz going on regarding CMP services in the European market. Therefore, a common interpretation among the interviewees has been that it is difficult to derive facts from speculations and public relations statements. This has been true in the UK where Head of Strategy and Operations, Matt Simpson, describes the prerequisite to primarily focus on the achievements that actually have been made in the European market, rather than speculations or assumptions on what possibly will be made (Simpson, 2011).

According to both Industry Analyst in France, Loraine Habib and Simpson in the UK, the Cityzi project in Nice has been one of the most advanced CMP trials (Habib, 2011) (Simpson, 2011). However when Habib was asked about which city she would launch a CMP service in first, Paris was the given answer. This was partly due to the fact that well-developed transit authorities with existing NFC services generally hold a huge potential for CMP services (Habib, 2011).

The influence of a well-developed NFC transit authority has been mentioned by nearly all interviewees as a success factor (Kuzmin, 2011) (Simpson, 2011) (Habib, 2011) (Telkes, 2011). In the UK, Simpson, has been explaining how the NFC transit card Oyster previously has been integrated with Barclay’s payment card, and used as an integrated payment and transit card, a system that with ease could open up the opportunities for CMP services. Simpson has also emphasized the developments done by Transport for London for the upcoming Olympic Games in 2012 (Simpson, 2011).

In contradiction to this, Industry Analyst Marc Schuler in Germany has been highlighting the lack of infrastructure needed to implement and use CMP services. Even if CMP trials have been made by the transit authorities in Germany, Schuler has emphasized the German late adopter approach. With this, Schuler means that Germans often observe how the technology progresses in other countries first, before an adoption is considered in the domestic market. According to Schuler, the transit authorities have not been putting a lot of effort into the developments themselves. Most transit authorities are run by the governments, are bureaucratic and show low level of innovation. However, Schuler believes that once there have been a few successful implementations of NFC services, the transit authorities will give this research area a lot more attention (Schuler, 2011).
Apart from the transit authorities, the MNOs have been seen by most interviewees as successful initiators (Simpson, 2011) (Telkes, 2011) (Habib, 2011). Historically, European users have been forced to be loyal to their respective MNO. An example of this has been seen in France, where until recently, it was impossible for a user to change MNO while keeping the same telephone number (Habib, 2011).

In order for CMP services to work in the European market, it has been argued that there is a need for interoperability between all involved stakeholders (Simpson, 2011) (Habib, 2011) (Schuler, 2011). When discussing this need, a common pattern has been discussed by the interviewees. That is the different costs associated with the use of a mobile phone when travelling within Europe. Among the investigated countries, using short-message-services (SMS) have been regarded as cheap. However, calling and or answering phone calls have been regarded as more expensive, not to mention using Internet or related 3G services, which have been described as particularly expensive (Habib, 2011) (Kuzmin, 2011) (Schuler, 2011).

4.2.2. Mobile market
The most common pattern among the investigated countries regarding the mobile market has been the anticipation of the increased growth in smart phone adoption (Habib, 2011) (Simpson, 2011) (Schuler, 2011) (Salvati, 2011) (Kuzmin, 2011) (Telkes, 2011).

In the UK, Simpson argues that the mobile market undergoes a “washing machine effect”. With this, Simpson means that the mobile market is currently being highly competitive with a slippery user group that with ease have been moving from one MNO to another. As an example, Simpson mentions a case with the MNO Orange. Orange has had a constant total number of subscribers during the last couple of years, but within this amount every third subscriber has been a new one. This expresses a disloyalty within the user group that has led to an environment where MNOs constantly are offering new competitive deals to attract new users, such as smart phones, hence the growth. In addition to this, Simpson speculates that the reasonably high levels of Internet adoption in the UK have been another reason to the rapid smart phone adoption (Simpson, 2011).

In France, Habib describes the growth of smart phone adoption as being contagious. Historically, French people started to use Blackberries in order to chat with each other. Then followed a period when software applications became a huge success. Today, Habib is experiencing an environment where it has become close to impossible to live without smart phone applications. Furthermore, Habib explains that the MNOs in France have played an important role in this growth. In France, almost everyone has a mobile phone subscription of a specific MNO. As an example, Habib describes a specific user case. The user has a subscription with a MNO with a monthly cost of €50. The money is withdrawn each month from the user’s bank account. In exchange, the user gets loyalty points which can be used to purchase a new mobile phone every year. In this way the MNOs accelerates the growth of smart phone adoption (Habib, 2011).

In Germany, the smart phone adoption is also argued to be growing rapidly. Schuler estimates that every German will use a smart phone within three years time (Schuler, 2011). In Italy, the Industry Analyst Andrea Salvati explained, the high importance of appearance and early adoption among users has been a key driver for their rapid smart phone adoption (Salvati, 2011).
4.2.3. Card market

According to Simpson, the card market in the UK is slowly recovering from the recession in 2008 with a consequence in an increase of debit card usage. This is, according to Simpson, due to the fact that debit cards are widely more accepted than credit cards. In general, the merchant fees for debit cards are lower than for credit cards. In addition to this, Simpson emphasises the growth of prepaid cards that are entering the market (Simpson, 2011).

According to Habib, the preference of pay later cards in France is simply because that is what the banks suggest. When asked why the credit card penetration is low, Habib explains that this is because credit cards has a cost, and only well off of people can afford to have several of them (Habib, 2011).

However, looking at the rest of Europe, card usage in France is regarded as sophisticated and relatively high (Habib, 2011). This is especially true in comparison to Italy, Turkey and Russia, where the users prefer to pay with cash for a number of reasons. Salvati explains that “cash is untraceable” which is of importance to some people (Salvati, 2011). In other words, it enables anonymity that is valuable in countries who for example are suffering from corruption (Kuzmin, 2011) (Telkes, 2011) (Salvati, 2011).

According to Schuler, the preferred card payment method in Germany is debit cards. Credit cards are primarily used for Internet transactions. Prepaid cards are not commonly used at all (Schuler, 2011). In Turkey, the majority of cards being used are debit cards. However, after the recession in 2001 the credit card market has seen a strong growth rate. Since that point in time, credit card issuers have given the Turkish users benefits related to their credit cards, which has been appreciated by many users (Telkes, 2011).

After the UK, Turkey has the highest number of issued contactless cards. The reason behind this is the strong growth in contactless payment technologies in Turkey during the last years by the Interbank Credit Card Authority of Turkey. According to Telkes, this organisation is a highly important stakeholder that will play an important role during the next couple of years (Telkes, 2011).

According to Kuzmin in Russia, online purchasing is widely adopted by Russians. Surprisingly the payment method for this is still cash. This is due to the generally low labour costs combined with the poor standard of postal services, which makes home delivery and payment at the door the most convenient method (Kuzmin, 2011).

4.2.4. Banking industry

In the UK, the banking industry is still recovering after the recession in 2008. According to Simpson, this has led to some contradictory pressures in the banking industry. On one hand, the government has been arguing that the banks need to improve their share prices. This is since the government want positive returns on their investments. On the other hand, when the banks pay good bonuses in order to retain their best staff, the government argues that this is wrong in a time of austerity when the banks are state owned (Simpson, 2011).
According to Simpson, this has led to an environment where the UK user is having a hard time getting credit or new mortgages. Interest rates may be low for existing borrowers but the banks are reluctant to lend as they are repairing their balance sheets. In the UK home ownership is high so mortgage accessibility in combination with the number of new buyers and level of prices in the housing market will likely continue to be a topic for discussion (Simpson, 2011).

Regarding the banking industry in France, Habib describes an environment where the user is loyal to its bank and reluctant to change personal banking partner. Even if Internet banking is becoming more popular, the French user still values the possibility to speak with an advisor at the counter (Habib, 2011). This is also true for the users in Germany (Schuler, 2011).

In Italy, Turkey and Russia the security aspects around personal data storing has been regarded as a key factor for the general lack of trust towards the banking industry. This has led to a preference for cash rather than cards (Kuzmin, 2011) (Telkes, 2011) (Salvati, 2011).

### 4.2.5. Transit authorities

Apart from the already mentioned Oyster card in London and Navigo card in Paris, the most advanced markets in terms of NFC transit systems are the ones in Turkey and Russia (Simpson, 2011) (Telkes, 2011) (Kuzmin, 2011). According to Kuzmin, a large scale CMP introduction would be beneficial through the transit authorities in the larger cities of Russia (Kuzmin, 2011).

### 4.2.6. Merchant market

Due to several reasons, in both the UK and Germany a few larger merchants have been dominating the ‘low-value high-volume’ merchant market (Simpson, 2011) (Schuler, 2011). Apart from the UK and Germany, the European merchant market is dominated by smaller independent players (Habib, 2011) (Salvati, 2011).

According to Simpson, the merchant market in the UK is highly competitive and mature with a few large chains dominating the merchant market. Simpson identifies a difference between the UK and other European countries. This is that the UK has a relatively free market approach which allows large businesses to move in and out of the scene. According to Simpson, this has led to a diminishing market of independent stores. However, during the last couple of years people have started to complain about this issue, which in some occasions has led to riots. Simpson argues that this is unusual, but illustrates that there is a minority of people in the UK that would like to see a more independent merchant market (Simpson, 2011).

According to Habib and Schuler, the merchant market in France and Germany is very wide (Habib, 2011) (Schuler, 2011). There are some larger, less expensive merchants that are more visited than others. However, according to Habib, the law limits the opening hours for the larger merchants which has led to an environment where, unlike in the UK, smaller independent merchants have better chances to survive (Habib, 2011).

Furthermore, in both France and Germany, newspaper stands, tobacco resellers and bakeries are all run by independent owners (Habib, 2011) (Schuler, 2011). At these independent stores, cash is still the preferred payment method. At most independent...
merchants, there is an invented card transaction limit of around €20. However, in the supermarket sector there has been a shift towards more and larger chains that all accept payments through payment cards with no transaction limit (Habib, 2011).

In Turkey, cinemas and fuel stations have been the ones that first implemented contactless payment technologies (Telkes, 2011). In Russia, Kuzmin has also been emphasizing the estimated potential of fuel stations in particular, where he confirmed that TNK-BP and Lukoil are the largest chains. For fuel retailers in general, CMP would be a good strategy to increase operational efficiency since the service stations are usually busy with long lines (Kuzmin, 2011).
5. Findings
This chapter aims to present the findings from the theory and empirics in a structured way using the Porter’s Five Forces model. These findings will be discussed and analysed followed by a chapter with the concretised conclusions.

5.1 Porter’s Five Forces model applied on CMP
Porter’s Five Forces model presents a classic view of the major forces that shape the competitive environment of a business. As previously mentioned, the CMP stakeholder ecosystem includes players from information technology as well as the financial industry. Figure 5 shows the researchers’ interpretation of the stakeholders and their positions in the Five Forces model.

Figure 6 The Porter’s 5 Forces model applied on the CMP stakeholder ecosystem in the European market

5.1.2 List of actual stakeholders per country
The following lists summarise the most relevant specific stakeholders in each of the investigated countries:

<table>
<thead>
<tr>
<th><strong>Table 1 Stakeholders in the United Kingdom</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mobile Network Operators</strong></td>
</tr>
<tr>
<td>O2, Vodafone, Everything Everywhere (T-Mobile and Orange), 3</td>
</tr>
<tr>
<td><strong>Handset manufacturers</strong></td>
</tr>
<tr>
<td>Nokia, Samsung, Sony Ericsson</td>
</tr>
<tr>
<td><strong>Operating system providers</strong></td>
</tr>
<tr>
<td>iOS, Android, Symbian, Windows, Palm, RIM</td>
</tr>
<tr>
<td><strong>Technology vendors</strong></td>
</tr>
<tr>
<td>NXP Semiconductors, Gemalto, CASSIS International, ViVotech, Venyon</td>
</tr>
<tr>
<td><strong>Card networks</strong></td>
</tr>
<tr>
<td>Visa, Mastercard, American Express, sQuid (prepaid)</td>
</tr>
<tr>
<td><strong>Banks</strong></td>
</tr>
<tr>
<td>Santander, Barclays, HSBC, Lloyds, RBS, Northern Rock</td>
</tr>
<tr>
<td><strong>Transit authorities</strong></td>
</tr>
<tr>
<td>Transport for London (Oyster)</td>
</tr>
<tr>
<td>Merchants</td>
</tr>
<tr>
<td>---------------------------------</td>
</tr>
<tr>
<td>Other stakeholders</td>
</tr>
</tbody>
</table>

**Table 2 Stakeholders in France**

<table>
<thead>
<tr>
<th>Mobile Network Operators</th>
<th>Orange, SFR, Bouygues Télécom, NRJ Mobile</th>
</tr>
</thead>
<tbody>
<tr>
<td>Handset manufacturers</td>
<td>Samsung, Nokia, Sony Ericsson</td>
</tr>
<tr>
<td>Operating system providers</td>
<td>Symbian, iOS, Android, Windows, RIM</td>
</tr>
<tr>
<td>Technology vendors</td>
<td>NXP Semiconductors, Gemalto, CASSIS International, ViVotech, Venyon</td>
</tr>
<tr>
<td>Card networks</td>
<td>Visa, Mastercard</td>
</tr>
<tr>
<td>Banks</td>
<td>BNP Paribas, Crédit Agricole, HSBC, Société Générale</td>
</tr>
<tr>
<td>Transit authorities</td>
<td>RATP (Navigo)</td>
</tr>
<tr>
<td>Merchants</td>
<td>La Poste, Carrefour, McDonalds, Relay, Flunch</td>
</tr>
<tr>
<td>Other stakeholders</td>
<td>Association Européenne Payez Mobile, Association Francaise du Sans Contacte Mobile</td>
</tr>
</tbody>
</table>

**Table 3 Stakeholders in Germany**

<table>
<thead>
<tr>
<th>Mobile Network Operators</th>
<th>T-Mobile, Vodafone, E-Plus, O2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Handset manufacturers</td>
<td>Nokia, Sony Ericsson, Samsung</td>
</tr>
<tr>
<td>Operating system providers</td>
<td>Symbian, iOS, Windows</td>
</tr>
<tr>
<td>Technology vendors</td>
<td>NXP Semiconductors, Gemalto, CASSIS International, ViVotech, Venyon</td>
</tr>
<tr>
<td>Card networks</td>
<td>Visa, Mastercard, Payback (loyalty)</td>
</tr>
<tr>
<td>Banks</td>
<td>Commerzbank, Deutsche Bank and Santander</td>
</tr>
<tr>
<td>Transit authorities</td>
<td>Deutsche Bahn (BahnCard)</td>
</tr>
<tr>
<td>Merchants</td>
<td>The Metro Group</td>
</tr>
<tr>
<td>Other stakeholders</td>
<td>N/A</td>
</tr>
</tbody>
</table>

**Table 4 Stakeholders in Italy**

<table>
<thead>
<tr>
<th>Mobile Network Operators</th>
<th>Telekom Italia Mobile, Vodafone, Wind, 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Handset manufacturers</td>
<td>Nokia, Samsung, LG</td>
</tr>
<tr>
<td>Operating system providers</td>
<td>Symbian, iOS, Android</td>
</tr>
<tr>
<td>Technology vendors</td>
<td>NXP Semiconductors, Gemalto, CASSIS International, ViVotech, Venyon</td>
</tr>
<tr>
<td>Card networks</td>
<td>Visa, Mastercard, Postepay Card (Poste Italiane)</td>
</tr>
<tr>
<td>Banks</td>
<td>Agos, Intesa Sanpaolo,</td>
</tr>
<tr>
<td>Transit authorities</td>
<td>Azienda Trasporti Milanesi (Milan), ATAC (Rome)</td>
</tr>
<tr>
<td>Merchants</td>
<td>Carrefour, Coop Italia, Conad, Auchan Group</td>
</tr>
<tr>
<td>Other stakeholders</td>
<td>N/A</td>
</tr>
</tbody>
</table>

**Table 5 Stakeholders in Spain**

<table>
<thead>
<tr>
<th>Mobile Network Operators</th>
<th>Movistar, Vodafone, Orange, Yoigo</th>
</tr>
</thead>
<tbody>
<tr>
<td>Handset manufacturers</td>
<td>Nokia, Samsung, LG</td>
</tr>
</tbody>
</table>
Table 6 Stakeholders in Turkey

<table>
<thead>
<tr>
<th>Stakeholders</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobile Network Operators</td>
<td>Turkcell, Vodafone, Avea</td>
</tr>
<tr>
<td>Handset manufacturers</td>
<td>N/A</td>
</tr>
<tr>
<td>Operating system providers</td>
<td>N/A</td>
</tr>
<tr>
<td>Technology vendors</td>
<td>NXP Semiconductors, Gemalto, CASSIS International, ViVotech, Venyon</td>
</tr>
<tr>
<td>Card networks</td>
<td>Visa, Mastercard, ServiRed (payment scheme)</td>
</tr>
<tr>
<td>Banks</td>
<td>BBVA, Santander, La Caixa, Crédit Valencia Caja Rural</td>
</tr>
<tr>
<td>Transit authorities</td>
<td>RENFE (national), EMT (Madrid),</td>
</tr>
<tr>
<td>Merchants</td>
<td>Mercadona, Eroski, Inditex, El Corte Inglés</td>
</tr>
<tr>
<td>Other stakeholders</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Table 7 Stakeholders in Russia

<table>
<thead>
<tr>
<th>Stakeholders</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobile Network Operators</td>
<td>MTS, Beeline, MegaFon, Tele2</td>
</tr>
<tr>
<td>Handset manufacturers</td>
<td>N/A</td>
</tr>
<tr>
<td>Operating system providers</td>
<td>N/A</td>
</tr>
<tr>
<td>Technology vendors</td>
<td>NXP Semiconductors, Gemalto, CASSIS International, ViVotech, Venyon</td>
</tr>
<tr>
<td>Card networks</td>
<td>Visa, Mastercard</td>
</tr>
<tr>
<td>Banks</td>
<td>Sberbank, VTB, HCF, Rosbank</td>
</tr>
<tr>
<td>Transit authorities</td>
<td>Moscow Metro, St Petersburg Metropolitan, RZD</td>
</tr>
<tr>
<td>Merchants</td>
<td>Lukoil, X5, Eldorado, Auchan</td>
</tr>
<tr>
<td>Other stakeholders</td>
<td>Infocommunication Union</td>
</tr>
</tbody>
</table>
6. Discussion
This chapter aims to discuss and analyse the findings from all the previous chapters in order to answer the research purpose to define the CMP stakeholder ecosystem with its potential on the European market.

The bargaining powers of buyers (including users and merchants)
Identified in both theory and empirics are that the users have significant cultural aspects of importance in their relation to payments, which is affecting their behavior. It has been argued that consumers generally tend to be conservative and reluctant in changing their payment behavior. An example of this has been the case in the UK in 2009, where the card market experienced the first decrease of the total number of cards in issue since 1993. The decrease was said to be a consequence of the economic downturn in the previous year which clearly shows that changing consumer behavior requires extremely strong forces. However this being said, these forces do not have to be negative. The upcoming Olympic Games in London and the 2012 UEFA European Football Championship are suspected to be good catalysts to succeed changing the user behavior in order to implement CMP services on the market.

One factor that likely will affect the strength in the buyer force is the price sensitivity. In terms of CMP, both theory and empirics have proved the users’ reluctance to pay extra for using the service. This has led to the fact that CMP services will need to be either extremely attractive or of no extra cost to the user. The quality of the service has also been found to be of significant importance and will play a major role. Any unreliable service, or even with the reputation of being unreliable, will undoubtedly end the deployment of CMP.

Another factor that has been proved to affect the user’s price sensitivity has been the relationship between the user and the MNO. In the UK, it has been argued that the mobile market undergoes a washing machine effect, where in order to get the best deals users often shift from one MNO to another. In France and Germany, the MNOs are accelerating the smart phone adoption by pushing new handsets to the market through attractive loyalty programs. Although, it is still unclear to what extent this will affect the CMP stakeholder ecosystem.

Apart from users, merchants have also been identified as a buyer force. In Europe, the merchant market is divided between large retailing groups, such as Tesco, Carrefour and Metro Group, which could implement CMP on a large scale, and smaller independent merchants. For both merchant groups a common pattern has been identified. That is, in order for the merchants to embrace CMP service, the cost for implementing the service will have to be low or equal to the substitutes. Otherwise, it will merely be an unwanted switching cost and therefore not attractive enough to consider.

Transit authorities also fall into the category of buyers. In fact, CMP services have been shown to suite especially well in these environments where aspects such as increased efficiency and user-friendliness are essential. An example of an initiative that has emphasized this is the case in the UK, where Barclay's for a period rolled out a payment card that was integrated within the transit card Oyster. Additionally, in some larger scale regions the chances to reach mass adoption rises dramatically through transit
authorities. From the CMP industry’s perspective, this would be an efficient way to affect the behavior related issues and to educate the user how to use NFC technology.

Other identified categories that fall into the buyer force are service stations and fuel retailers. The theory stated that this merchant sector has been highly influenced and affected by the entrance of joint-ventures with supermarkets during the last couple of years. In Turkey examples of implemented contactless technology has already been found. In Russia the anticipation for implementations of contactless technology at service stations and fuel retailers is high, simply because they would bring a better end-user experience through an increase in operational efficiency and shorter lines.

The buyer force may for these mentioned reasons be argued to be the strongest force of all Porter's Five Forces model. Though in the longer term, if the industry becomes united or strong enough, it might force the users and merchants to change their behavior and preferences involuntarily. In Europe today, the industry is far from united which implies that a change of this kind would theoretically require a significant amount of time.

The intensity of rivalry between industry competitors (including MNOs, handset manufacturers and operating system providers)

Another finding regarding the mobile market has been the growth of smart phone adoption, which has been argued to be a consequence of the rivalry between the industry competitors. Even if handset manufactures and operating system providers have been the underlying forces that primarily have been affecting this growth, especially through the introduction of new handsets, in the end it is the MNOs who holds the closest end user contact through subscriptions.

The trials have shown that the MNOs are keen to increase the profit from their core business model. Because of this, a new structure of the mobile market has come to emerge where MNOs have been forming joint ventures and alliances. In the UK, Deutsche Telekom and France Telecom have formed a joint venture called Everything Everywhere and in Russia the largest MNOs have united in the NFC Test Zone. Another example of the willingness from the MNOs to create a new structure is GSMA’s introduction of the TSM.

Since the MNOs have a dependency on handset manufacturers and operating system providers they have wanted to control the value chain by integrating the NFC chip within the SIM card. On the other hand, the handset manufactures and operating system providers have had their own way of attacking the problem of the placement of the NFC chip. For these players, the best way has been to embed the NFC chip within the mobile phone, a solution that provides them with the ability to control the entire value chain.

In theory, the forces of the industry competitors are likely to be strong if the exit barriers are high and costly. This research has found that every player has different prerequisites and motives, which has led to an environment where the industry competitors have developed different strategies that might have appeared disruptive to the other players. This has in turn led to a slow progress of the CMP deployment.

In other parts of the world, as in Asia and especially Japan, this progress has been much faster mainly because the industry competitors have united themselves through
standardizations regarding the value chain. The opposite has been true for Europe, where the industry competitors actively have been seeking ways to destroy competitive advantage for each other. Again, interoperability has been found to be the challenging key factor for a European success.

**The threat of substitutes (including card networks and cash handling organizations)**

In theory, the potential threat of a substitute within a market depends on the buyer’s willingness to substitute, the switching cost and the relative price-to-performance of the substitute. In this research it has been found that the buyers have a low willingness to substitute, hence substitutes to the CMP method, such as cash, hold a strong position on the market.

However, within the investigated countries, the research has shown a fragmented card market with a large difference in the acceptance and usage of payment cards between the countries. This difference has been particularly obvious when comparing card usage in the UK with Italy. In the UK, every second user is using a payment card to pay. In Italy, this figure is only 13%. The empirics stated that the Italians have a preference for paying with cash, since it is untraceable. This being said, it has been important to remember that the CMP value chain has still not been set. In other words, whether CMP will be a replacement for cash or cards or not is still unclear to most involved stakeholders.

The strong buyer force, with its lack of willingness to substitute their payment methods, has led to a slow industry growth rate. Several attempts have been made by the industry to speed up the pace. Visa and MasterCard have been involved in almost every CMP trial in Europe. Through their anticipation in these trials they have stated that they will not tolerate to be ignored in the value chain. Furthermore, in terms of contactless payments, security has been an issue for the users. To address this issue the card networks Visa and MasterCard have approached the users with new product developments such as contactless cards with transaction limits that ensure the user a level of security and control.

In a sense, the substitutive role of the card networks might seem contradictory since they are in the process of creating their own CMP services. However at this point in time, payment cards have still been seen as substitutes towards the use of a mobile phone to pay. The same is true for the cash handling organizations. In contrast with the card networks, the cash handling organizations have not been emphasizing the need for CMP services at all. This is due to the simple fact that CMP services are in direct conflict with their business models.

**The bargaining power of suppliers (including banks, technology vendors and payment system providers)**

In theory, the power of the suppliers is in inverse proportion to the number of suppliers. When regarding Europe as one market, the banking industry is highly fragmented between the countries. However, when regarding each individual market, it is defined by a few larger banks that dominate the industry.

In general, the banking industry in Europe has been claimed to be conservative in its structure. A uniting force has been the European Payment Council with its ambition to develop areas within Europe where citizens, companies and other economic participants
can make and receive payments between and within national boundaries under the same basic conditions.

The NFC chip is provided by the technology vendors. These manufacturers have shown to consist of quite few, large players; hence their power as suppliers is strong in this sense. However, they are facing decreasing selling prices in the extent to which larger selling volumes cannot compensate. Therefore, they end up with little incentives to start mass production while consumer demand and business models remain unclear.

In addition to banks and technology vendors, it has been discussed that a supplementary stakeholder might take part in the ecosystem. This stakeholder has been defined by the researchers as a mobile payment system provider (e.g. Ericsson). Due to the fact that CMP services will increase the use of data sharing, the mobile payment system provider will need to make sure that this data sharing is easy to use, fast and secure.

**The threat of new entrants (including TSMs)**

In theory, existing firms within an industry often try to build up entry barriers to reduce the threat of new entrants. This has been found to be true in this research, where the MNOs and card networks in particular have shown, through their eagerness in CMP trials and placement of the NFC chip, that they are keen to protect their market shares. Furthermore, since they are in control of the distribution channels, the maintenance of the high entry barriers have been easy to control. In addition to these players, it can be argued that payment system providers might step in to the ecosystem and act as a new entrant. This would be the case if the payment system providers, with their in-depth knowledge of the payment transaction value chain, would act as a TSM.

The findings from the empiric research proved that NFC is a disruptive innovation that is going to cut across an entire ecosystem. Moreover, the fact that there is no standard on where the secure element will be placed or up to date any interoperability of mobile services between the European countries, it has been argued that there is a possibility for new disruptive entrants on the market.

In general, in order for CMP to become a payment method to completely rely on, there is a need for a player that to some level is independent within the European market. This role might be in the form of a TSM. However, it is still unclear who will take on the role or whether it will be the actual case or not at all.
7. Conclusion

This chapter aims to present the conclusions of the research. Since the vision of the research has been to assist Google in formulating a market entry strategy, this chapter also aims to present a relevant and reliable forecast for Google when entering the European market of CMP. The chapter ends with recommendations for further research.

The identified forces of the CMP stakeholder ecosystem

The buyer force has been identified to include the users, merchants and transit authorities. Due to the fact that the user in the end makes the ecosystem profitable, this force has been identified as the strongest. The industry competitor force has been identified to include the MNOs, handset manufacturers, operating system providers and card networks. Since these players are in direct contact with the buyer force, this force has been identified as the second strongest force. The substituting force has been identified to include the card networks and cash handling organizations. Given that that the buyer force has been found to have a strong desire of not wanting to change its behavior, the force the substitutes have been identified as the third strongest force. The supplying force has been identified to include banks, technology vendors and mobile network providers. Since the supplying force have limited user contact when it comes to choosing payment method, this force has been regarded as the second weakest force. Finally, due to the anticipated lack of new entrants on the market, the new entrant force has been identified as the weakest one and has come to only include the TSM.

Figur 7 The Porter’s 5 Forces model applied on the CMP stakeholder ecosystem in the European market
The CMP stakeholder ecosystem and its potential on the European market

The following figure presents the researchers’ view of the CMP stakeholder ecosystem. Here, the user has been put in the centre since being the strongest force. Differently to Porter’s Five Forces analysis, where both the user and merchant were put into the ‘buyer’ category, the user is now regarded as a stakeholder itself. The user here is the actual purchaser in the CMP system. In order for the CMP to reach a significant success this stakeholder needs to be in focus at all times.

![Figure 8: The CMP stakeholder ecosystem defined by the researchers](image)

The ‘what’s in it for me?’ perspective is the most critical aspect of the entire CMP evolution, but the reasoning may be applied differently on each stakeholders. For all stakeholders except the user, competitive advantage and long term stable business models are the driving forces. The players in direct contact with the user; MNOs, banks, merchants and transit authorities, encircles the user as their motives are to satisfy the needs of the user. These stakeholders are also in direct contact with each other, as well as dependent on each other.

Furthermore, the TSM has been put in between the MNOs and the banks as its purpose is to link these two together. Which stakeholder that will take on this role is however not set and may theoretically be anyone within the ecosystem. Due to their competence within system providence, technology vendors such as Gemalto or mobile payment system providers such as Ericsson will regard themselves as the natural TSMs. Google, as being highly innovative and with a tendency to provide disruptive and diverse
services, may also seize the opportunity to elaborate within the TSM role. On the other hand, an entirely new entrant may see its chance to enter the system and capture a piece of the revenue stream.

In the surrounding, identified stakeholders with limited contact with the user have been placed. These include handset manufacturers, operating system providers, card networks, cash handling organisations, governmental bodies and POS terminals. Finally, due to non actual contact with the user, the technology vendors have been placed in the periphery of the ecosystem.

**Market entry strategy approach for Google**

In terms of recommendations for how Google could enter the European market of CMP, the researchers have categorized the time horizon into three levels; immediate opportunities, medium term possibilities and longer term possibilities. Figure 7 shows the three entry levels. Chapter 5.1.2, Table 1-7, identifies which stakeholders that Google should observe in each country.

![Figure 9 The market entry approach for Google](image)

On the immediate level, firstly the UK and secondly France are the most relevant approaches. This is mostly due to their respective developed markets in regards to committed stakeholders, great metrics and city wide trials.

In comparison with the rest of Europe, the UK has seen an aggressive approach of contactless technology as well as a rapid smart phone adoption. For example, the commitments shown by the MNO Everything Everywhere can be regarded as an
ambitious move and a definitive step towards embracing CMP services. Moreover, the UK has an obvious incentive in the fact that the Olympic Games 2012 is approaching, offering plenty of opportunities for user adoption.

Regarding France, the underlying reason why Google should enter this market has been the quantitative experience from the several CMP trials that have been made. The Cityzi trial in Nice has been especially significant since it has shown that it is possible to unite the substantial driving forces to create committed stakeholders. In addition to this, France has seen a contagious smart phone adoption rate and the transit authorities have proven to be ambitious in their ways of expanding NFC services to include CMP.

The influence of a well-developed NFC transit authority has been mentioned by nearly all interviewees as a success factor, since it is an effective way to reach mass adoption and overpower cultural issues. For the medium term possibilities, this is an asset for Europe that can help accelerate the deployment, especially on the large scale markets such as Turkey and Russia.

In both of these countries, contactless technologies have been implemented by the transit authorities. In addition, Turkey has also seen successful implementations made by banks and card networks. However, what have been of utmost importance regarding these markets are their respective scale opportunity and their speed towards implementing new technologies. The researchers’ view of these countries are that they hold a surprising potential and might be more CMP ready than what some may expect.

On the longer term possibility level, Germany steps up, followed by Spain and Italy. Germany has the scale opportunity needed for a major roll out, however suffers from a late adopter attitude related to payments which could jeopardize the entrance. Spain and Italy faces other challenges before reaching complete CMP readiness, such as determining whether CMP should replace the usage of cash or simply become an alternative.

The conclusions of the research have been that contactless mobile payments will cut across an entire CMP stakeholder ecosystem, but that this ecosystem at the moment is not fully defined. To achieve a competitive position, a stakeholder has to deliver an outstanding user experience that is interoperable within the entire European market.
8. Further research

It has been argued that contactless mobile payments are a disruptive innovation that will cut across an entire ecosystem of stakeholders. The act of each of the involved stakeholders will likely transform the industry and might, as discussed, open up for new windows of opportunities. For further research, it is therefore recommended to look at research areas such as industry transformation and innovation management to seek answers to who will become the most successful and what dominant design that will lead. Most likely, the lack of standardization on where to place the NFC chip will lead to several potential scenarios with several stakeholders, each one striving to become the market leader introducing a dominant design.

This being said, it is also recommended to have a closer look at the recent work by Google. On the 26th of May 2011, Google announced their new service called Google Wallet. It is an Android app that makes your phone your wallet and combines payments with Google's already existing service Google Offers. It enables the user to, through a CMP method, sync purchases with its different merchant loyalties and offers. In an initial state, the service will geographically be accessible in the US only and compatible with the hardware Nexus S 4G.
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