Network constellations for mobile payments - Influence of the leading partner on NFC-based mobile digital wallets

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Stockholm 2011
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Abstract

The mobile payments industry, which is currently at an early stage of development, is taking the direction to be established mainly as an NFC-based industry, and, moreover, led by the mobile digital wallets setting. A mobile digital wallet is a complete payment app for your NFC-enabled mobile phone that enables consumers to pay at stores at the point of sale with a mobile phone. The digital wallet, which is associated with a credit card, integrates all payment-related services like the management and storage of receipts, coupons and offers, and loyalty cards. Currently, there are three big partnerships going ahead of the NFC mPayments stream: Google Wallet, VISA’s Digital Wallet and ISIS Mobile Wallet.

Each one of these three mobile digital wallets is led by an actor coming from a different industry of origin. Google Wallet is led by Google, an internet and technology actor. VISA’s Digital Wallet is managed by Visa, a traditional payment processor. And ISIS Mobile Wallet is led by three of the largest US telecom operators: AT&T, T-Mobile and Verizon. Thus, applying a business network theory to analyse how the industry of origin of the mobile digital wallet affects the interaction within the partnership formed is a unique and perfectly fitted opportunity.

The aim of this Master Thesis was to analyse the influence, regarding interaction, of the origin industry of the leading partners on the NFC-based mobile digital wallet partnerships of the mobile payments developing industry.

A literature review on business network theory was conducted, in order to identify key features of the business landscape affecting interaction on business networks, as well as an industry analysis of the mobile payments developing industry. Then, the business network theory approach was applied to the study of the mobile payments digital wallet setting, conducting a discussion based both on the industry analysis performed and a set of interviews with experts on the mobile payments industry.
Network constellations for mobile payments - Influence of the leading partner on NFC-based mobile digital wallets
Executive Summary

This Master Thesis studies interaction between actors in business networks. The thesis argumentation is performed from the perspective of a business network theory, which is based on the research conducted within the IMP Group setting and driven by the theoretical approach proposed in “Business in Networks” (Håkansson et al. 2009).

The analysis of interrelationships between different counterparts in the business landscape is performed on the currently developing Mobile Payments (mPayments) Industry. In this thesis, I apply a business network theory approach to study how interaction takes place within the current development of Mobile Digital Wallets, which are becoming the base of the mPayments industry.

The theoretical background of this thesis (Håkansson et al. 2009) studies the configuration of the business landscape. In the traditional economic thinking, a conceptualization of the business picture based on competition has dominated, oriented into actors and mainly establishing a fierce competition as the base of the relationships between one another. What is proposed within the IMP Group, and reinforced in this thesis, is to approach the study of the business landscape focusing on the interactions between actors, and not the actors themselves. Learning that what actually drives the business landscape is the interaction between actors and the features that affect the development and evolution of these relationships. The three main features of the business landscape that motivate and influence the interrelationships between actors are: relatedness, variety and motion.

Today, there are four different models of mobile payments (mPayments): premium-SMS, direct mobile billing, mobile-web-based (by an app or by an internet mobile browser) and contactless Near Field Communication (NFC). In this thesis, when referring to a mobile payment process, it means a payment made by a customer to a merchant in a store at the POS (Point Of Sale) with a mobile phone, instead of paying with cash, a check or a plastic card. Thus, for the purpose of this thesis, only the two last models of mPayments mentioned are of our interest. However, the mPayments industry, which is currently exploding at an early stage of development, is taking the direction to be established mainly as an NFC-based industry, and, moreover, led by Mobile Digital Wallets. A mobile digital wallet is a complete payment app that integrates an actual mean of paying as well as other payment-related services like the management of receipts, coupons and offers, and loyalty cards. Consequently, the scope of this thesis focuses on the development of the mPayments NFC-based mobile digital wallets industry.

The digital wallet partnerships are formed by different actors along the business network that make possible the development of the actual digital wallet. Mainly, there are 8 major actors involved, who belong to different industries. Currently, there are three big parties going ahead of the NFC stream: Google Wallet, VISA’s Digital Wallet and ISIS Mobile Wallet. These three parallel partnerships, which are formed by the joint venture of different actors in the business network of the mPayments setting, are leading the race of the NFC mPayments.
Therefore, an industry where actors from different industries have to join and interact within a partnership is an ideal setting to be analysed from a business network theory approach, as the network theory perspective focuses on the interaction that takes place on the digital wallet partnerships.

Each one of the three mobile digital wallets has been launched and led by an actor that originally belongs to a different industry. Google Wallet is led by Google, an internet and technology actor. VISA’s Digital Wallet is managed by Visa, a traditional payment processor. And ISIS Mobile Wallet is led by three of the largest US telecom operators: AT&T, T-Mobile and Verizon. Currently, the development of a new industry is taking place, in which the three main players ahead in the market are three players coming from a completely different origin industry. Hence, applying the business network theory to analyse how the industry of origin of the mobile digital wallet affects the interaction within the partnership formed is a perfectly fitted and unique opportunity.

The hypothesis formulated supporting this Master Thesis dissertation consists in that the interaction that takes place within the digital wallet partnerships is actually influenced by the origin industry of its leading partners.

Accordingly, the research question of this Master Thesis is the following: How does the industry of origin of the leading partner affect the interaction that takes place on the Mobile Digital Wallet partnerships?

The scope of the Master Thesis is limited to the business network theory mentioned, which defines the influence of the business landscape on the interaction that takes place between actors by three features: relatedness, variety and motion. The thesis scope is limited within the application of the theoretical approach noted to the analysis of the influence of the origin industry of the leading partners on the interaction on the mPayments mobile digital wallets.

The procedure to test and validate the hypothesis is presented in two sections focused on the influence of the origin industry of the leading partner of the mobile digital wallet partnerships: a comparative analysis and the thesis discussion. At the comparative analysis of the three digital wallets a two-line-based structure is followed: by the industry features and by the actors involved within the wallet parties. The discussion section analyses the interaction with the origin industry actor from the perspective of the three features of the business landscape noted by the network theory. This discussion is based both on the industry comparative analysis conducted and on the data collected by an interview process with experts on the mobile payments area. The interview process consisted in twelve interviews. The interview process resulted highly constructive and enriching to review and validate the observations performed based on the industry analysis. Once the interviews were performed, a discussion based on the data collected was conducted.
The influence of the industry of origin of the leading partners drives how these digital wallet partnerships approach their goal and scope, as well as how interaction takes place among the actors involved. Exploring the structural and organizational features of the three wallet parties, I learned the existence of differences at core levels. Google Wallet is characterised by its managing partner Google, who comes from the internet and technology business, and it is a new player within the payments setting. Google drives Google Wallet objective is to expand to a new market, following a global scope. Meanwhile, Visa is driving the VISA’s Digital Wallet party, where its goal is to maintain its position as one of the leading payment processors worldwide, thus, its scope is also global. On the contrary, the scope of ISIS Mobile Wallet is local. ISIS scope is driven by its goal, which follows the objectives of the three leading partners of the wallet party: AT&T, T-Mobile and Verizon. These three US telecom operators seek to increase their corresponding market share, thus, the enterprise scope is local, being limited to the US market.

Regarding the effects of relatedness on the interaction that takes place between the digital wallets and the leading partners, the discussion on the interviews has been focused on how the leading partners are actually benefitting from the wallet partnership. In the interviews context 6 out of 12 were with experts of the payments area, this respondents observed that within the benefits of the payment processor actor, the number of uses per consumer have a greater weight than the total number of consumers of the digital wallet. The unit profit per transaction performed with the digital wallet is higher than the benefits associated to the total number of wallet users. On the other hand, analysing the effects of relatedness on the interaction with the OS provider and with the telecom network operator, these two actors benefit from the wallet mainly by the total number of wallet consumers, rather than by the number of uses per consumer. Regarding these two interactions, between the wallet and the OS provider and between the wallet and the telecom operator, most of the interviewees, 10 out of 12, noted an implication on the actors approach towards openness. They commented the influence of the profit model based on increasing the number of customers on how these leading actors may approach the wallet compatibility, being more open. This argument reinforces the observation made by the analysis of the variety perspective, in which the OS provider as well as the telecom operator adopted an active attitude towards openness.

When analysing the influence of the origin industry of the wallet leading partner from variety standpoint, the interviews discussion with the experts on networks economics, as well as with the other interviewees, were focused around the implications of the strategy line of the leading partners towards compatibility. At the interviewees, we discussed Google Wallet and ISIS Mobile Wallet approach of being compatible with other players within their actor position, which implies an increase of the general awareness of the digital wallets, as well as a boost to the development and growth of the industry. On the other hand, VISA’s Digital Wallet presented an exclusive position towards Visa, which does not promote the general awareness of the wallets setting. This conclusion is reinforced by the observation discussed before at the relatedness perspective, as the unit profit per transaction performed with the digital wallet is higher than the benefits associated to the total number of wallet users the general adoption of the wallet is not promoted as the increase of use per wallet.
Regarding the influence of motion on the interaction between the wallet and its leading partner presented by the influence of change, all of the twelve interviewees observed change as a critical feature in the mobile digital wallet setting. In addition, the respondents agreed that the influence of change is presented differently in the interaction with each wallet leading partner coming from different industries. The influence of change varies from the interaction with the OS provider and the interaction with the payment processor and with the telecom network operator. As it has been analysed, on the one hand, the influence of change regarding the interaction with the OS providers is a critical feature of the actual interrelationship, being explicit for consumers; while, on the other hand, on the interaction with the payment processor or with the telecom network operator is non-explicit for consumers.

This Master Thesis concludes arguing that the business network theory developed within the IMP Group and proposed in “Business in Networks” (Håkansson et al. 2009) applies to the mPayments NFC-based Mobile Digital Wallets industry. The analysis based on the mentioned business network theory gives a new perspective on the study of the interaction that takes places within the mPayments industry.

This new perspective gained by applying the business network theory proposed to the new developing industry of the mPayments digital wallets, can be really advantageous when analysing how the growth and progression of the industry is going to take part. This analysis can be approached from two points of view, internal and external to the industry. Internally, the perspective the business network theory approach brings to the study of the interaction within the mPayments setting enlightens the analysis of how the digital wallets position themselves within the market, influenced by the origin industry of the leading partners. Externally, from an industry analysis angle, the business network theory perspective embraced illuminates the understanding of how the NFC-based mobile wallet mPayments setting will progress regarding the industry of origin of the leading partners of the digital wallets.

Based on the analysis performed on this thesis discussion based on a business network theory approach, the following observations are concluded as conclusions regarding the origin industry of the digital wallets leading partner.

From Google Wallet perspective, which has Google as leading partner, playing the OS provider role, the observations of this thesis analysis are the following. Regarding relatedness, the team effect represented by how Google benefits from the wallet is based mainly on the number of consumers of the digital wallet app, which implies an active attitude towards openness resulting in an increase of the general wallets awareness. From variety perspective, Google’s approach to openness by advocating wallet compatibility with other OS providers also promotes the general awareness of the mobile wallet setting, as well as the development and growth of the industry. From the standpoint of the influence of the motion of the business landscape on the interaction between the wallet and the OS provider, the influence of change is a critical feature of the actual interrelationship, being explicit for consumers.
Regarding VISA’s Digital Wallet partnership, which is led by a payment processor actor, the following observations performed from the standpoint of the three features of the business landscape noted by the business network theory approach adopted in this thesis can be concluded. From the relatedness perspective, we can conclude that Visa’s benefits coming from the number of uses per consumer has a greater weight than the benefits from the total number of wallet users. Meanwhile, from variety point of view, VISA’s Digital Wallet is exclusive to Visa as the only payment network processor supported by the wallet, which does not promote the general awareness of the wallets setting. This conclusion is reinforced by the observation at the relatedness perspective, as the unit profit per transaction performed with the digital wallet is higher than the benefits associated to the total number of wallet users the general adoption of the wallet is not promoted as the increase of use per wallet. Regarding the effects of motion on the interaction with the payment processor presented by the influence of change, this last one is non-explicit for consumers.

ISIS Mobile Wallet, the joint venture formed by AT&T, T-Mobile and Verizon, has a telecom network operator actor as the leading partner of the digital wallet partnership. Regarding relatedness standpoint, it can be concluded that the telecom operators benefit from the number of customers of the wallet, and not from the uses per customer, which makes ISIS enterprise also to promote the general awareness of the mobile wallet setting. This strategy line towards the promotion of the general adoption of the mobile digital wallets is supported by ISIS approach to openness, being compatible within the telecom network operator actor position. The three mobile carriers that form ISIS party has around 75% of joint market share, which makes ISIS compatible to three quarters of the whole industry, which implies an increase of the general awareness of the digital wallets, as well as a boost to the development and growth of the industry. From motion perspective, the influence of change is non-explicit for consumers.

Therefore, analysing the origin industry of the leading partners of the digital wallet parties is key to approach the industry analysis of the mPayments setting. This relevancy is based on the effect studied on the interaction within the wallet partnerships. Hence, when performing the industry analysis of the digital wallets mPayments setting, it is not only relevant to explore the capabilities and resources of the industry, but to analyse the interaction within the actors involved regarding a leading partner’s origin industry perspective.

Result of the analysis conducted in this study, the research question proposed can be answered, confirming the hypothesis stated at the beginning of the thesis project, that the origin industry of the leading partners influences the interaction that takes place on the digital wallet partnerships.
Acknowledgements

First of all, I would like to thank my supervisor, Niklas Arvidsson, for his guidance during this thesis. I am very grateful to him for all the instructions he gave me during these months of research, his willingness to help and his insightful comments, which have made my research a truly pleasant experience.

My greatest gratitude goes to my family; especially to my parents, Fidel and Charo, for their great effort and dedication during my university studies, which end up with this thesis. Without their help I would have not had the opportunity to study at KTH.

I would also like to thank all the people who have accompanied me in this great experience in Sweden, with whom I have spent an unforgettable time.

In addition, I would like to extend my thanks to Roberto, as well as to Rosanna, Carmen, Mariano and Lourdes, who have always been there for me, guiding my steps, giving me their support and always having a word of encouragement.

Thank you all.

Stockholm 2011-11-25
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Introduction

1.1. Background to the research

Currently, in fall of 2011, the mobile payments industry is finally starting to take off, and it is doing so by the NFC-based mobile digital wallet setting. The opportunity to study the mobile payments setting results of most interest for the following reasons that motivate this thesis: Firstly, performing the thesis research and analysis on an industry that is currently starting to see the first lights of the market is incredibly challenging, as well as demanding, which makes it highly interesting. Moreover the intellectual challenge, working on a project that is based on innovation is an exciting experience. In addition, several reasons regarding the mobile payments industry motivates this thesis. Studying a payment method based on a mobile platform results of interest because of the potential implications of reducing the use of cash. Furthermore, it is also of interest working on a smartphone setting, which are revolutionising the conventional use of the mobile phone.

The theoretical background adopted in this thesis (Håkansson et al. 2009) studies the configuration of the business landscape. In the traditional economic thinking, an aggressive-based conceptualization of the business picture has dominated. This thinking is oriented into the actors of the business landscape, and mainly establishing fierce competition as the base of the relationships between one another. What is proposed within the Industrial Marketing and Purchasing (IMP) Group, and reinforced in this thesis, is to approach the study of the business landscape focusing on the interactions between actors, and not the actors themselves. Learning that what actually drives the business landscape is the interaction between actors and the features that affect the development and evolution of these relationships. The three main features of the business landscape that motivate and influence the interrelationships between actors are: relatedness, variety and motion.

The NFC-based digital wallet partnerships are formed by different actors along the business network that make possible the development of the actual digital wallet. Mainly, there are 8 major actors involved, who belong to different industries. Currently, there are three big parties going ahead of the NFC stream: Google Wallet, VISA’s Digital Wallet and ISIS Mobile Wallet. These three partnerships, which are formed by the joint venture of different actors of the business network of the mPayments setting, are the players who are leading the race of the NFC mPayments.

Therefore, an industry where actors from different industries have to join and interact within a partnership is an ideal setting to be analysed from a business network theory approach, as the network theory perspective focuses on interaction. In this thesis, we apply a business network theory approach to study how interaction takes place within the current development of mobile digital wallets, which are becoming the base of the mPayments industry.

Each one of the three mobile digital wallets has been launched and led by an actor that originally belongs to a different industry. Google Wallet is led by Google, an internet and
technology actor. VISA’s Digital Wallet is managed by Visa, a traditional payment processor. And ISIS Mobile Wallet is led by three of the largest US telecom operators: AT&T, T-Mobile and Verizon. Currently, is taking place the development of a new industry in which the three main players ahead on the market has leading actors coming from a completely different origin industry. Hence, applying a business network theory to analyse how the leading partner industry affects the interaction within the origin of the mobile digital wallet partnership is a unique and perfectly fitted opportunity.

1.2. **Aim and objectives**

The aim of this Master Thesis is:

*Analyse the influence, regarding interaction, of the origin industry of the leading partners on the NFC-based mobile digital wallet partnerships of the mobile payments developing industry.*

In order to fully achieve the thesis aim, a set of objectives along with the methodology were established as follows:

- Conduct a literature review on business network theory.
  - Identify key features of the business landscape affecting interaction on business networks.
- Conduct an industry analysis of the mobile payments developing industry.
  - Identify the key players and actors on the industry and conduct a comparative analysis.
- Apply the business network theory approach to the study of the mobile payments digital wallet setting.
  - Conduct a discussion based on the industry analysis performed.
  - Conduct a comparative discussion based on interviews with experts on the mobile payments industry.

1.3. **Research question**

The research question of this Master Thesis is the following:

*How does the industry of origin of the leading partner affect the interaction that takes place on the Mobile Digital Wallet partnerships?*
1.4. **Scope and limitations**

The scope of this Master Thesis is limited by the following propositions:

- The business network theory presented in “Business in Networks” (Håkansson et al. 2009), which defines the influence of the business landscape on the interaction that takes place between actors by three features: relatedness, variety and motion.

- The mPayments NFC-based mobile digital wallets US industry.

- The application of the theoretical approach noted to the analysis of the influence of the origin industry of the leading partners on the interaction that takes place within the mobile digital wallet partnerships.
2. Theoretical framework

2.1. Literature review on business network theory

The dissertation of this thesis is based on the theoretical approach of a business network theory. For the last four decades, researchers from different European countries at first, and then worldwide, have been working around a network setting, called the Industrial Marketing and Purchasing (IMP) Group, studying interactions between actors in business relationships (The IMP Group 2011). Along all the observations, the researchers have focused on the study of the business network and the interactions within it. The network theory approach from a business perspective that supports this thesis is based on the book “Business in Networks” (Håkansson et al. 2009), which gathers the empirical research of its authors, collected in the IMP Group environment, and their idea of what characterize the business landscape.

The theoretical background of this thesis (Håkansson et al. 2009) studies the configuration of the business landscape. In the traditional economic thinking, a conceptualization of the business picture based on competition has dominated, oriented into actors and mainly establishing a fierce competition as the base of the relationships between one another. What it is proposed within the IMP Group, and reinforces in this thesis, is to approach the study of the business landscape focusing on the interactions between actors and not the actors themselves. Finding, that what actually drives the business landscape is the interaction between actors, and the features that affect the development and evolution of these interactions.

There are three main features of the business landscape that motivate and influence the development and use of the interrelationships between actors. These three main features are: relatedness, variety and motion (Håkansson et al. 2009).

2.1.1. Relatedness

2.1.1.1. Concept of relatedness

One of the main characteristics of the business landscape that concerns how relationships between different actors are built and affect each actor’s organization is the actual connection between them, i.e., the relatedness that has been established. The relatedness of the business landscape means establishing a complex and long-term based relationship between counterparts.

The ultimate goal of two companies that initiate a business relationship is to benefit from it. Companies need to interact with each other in order to be able to exercise their resources and activities. This interaction could be both vertical and horizontal along the business network, but in both cases the objective of a company that connects with others is to advantage from this relatedness. Thus, in this way, by friction and interaction between actors, is how the business landscape is built.
Studying how relatedness lead to the development of business relationships is essential, because being related implicates that the organizations of the actors involved are affected from the interaction with each other. Relatedness has different consequences in the interrelationships between actors. Relatedness may lead to an increased efficiency based on the relationship stability, as well as can enhance innovation by the development of the interaction. Within this relationship development, actors need to adapt accordingly, which emphasize how relatedness influence the progress of interaction. Moreover, relatedness implies growing a great level of shared understanding between actors who interact.

The influence of relatedness on the interaction can be determined by analysing the level of dependence between the two counterparts involved in the interaction. Thus, it can be studied how relatedness is affecting the interrelationship. Dependence leads to a team effect within the counterparts involved in the interaction; understanding by team effect the establishment of a win-win or lose-lose situation between the two counterparts. Thus, I analyse how relatedness influences the interaction by studying the bottom line interrelationship between the two actors participating in the mentioned interaction.

At “Business in Networks” (Håkansson et al. 2009), the authors present us an example of two companies that even being at the same point of the business network, competing in the same market within the same niche and targeting the same consumers, they benefit from relatedness. They introduce a business landscape formed by two Swedish companies that provide day-tours by horse in the mountain. The main point is that when one of these two companies has too many customers and cannot meet the demand, contacts the other one to provide the tour service to the tourists. By following this action line, these two companies prioritise the actual development and growth of the tourist area by providing a satisfactory service to consumers over gaining profit that could lead in the actual detriment of the future business.

Håkansson et al. show us a situation where two companies benefit from coping with the influence on interaction of the relatedness of their business landscape. It is illustrated that a team effect is established within the interaction between these two Swedish horse-day-tours companies. The influence of relatedness is shown as a win-win situation, where this team effect leads the two counterparts involved to interact with each other and benefit from this interaction by dealing with their relatedness. (Håkansson et al. 2009)

In the next subsection, in order to deepen the understanding of the concept of the relatedness of the business landscape, brief analysis in form of a case study of the interaction between eBay and PayPal is introduced.

2.1.1.2. Case study: eBay & PayPal

This case study analyses the interaction between eBay, the e-commerce website for online auctions and shopping, and PayPal, the online payments processor. In this review of the interaction that took place between the two companies, we explore how they dealt with the effect of relatedness on the interaction and how they managed the team effect involved in
their interrelationship, which is consequence of the mentioned relatedness of the business landscape.

eBay is one of the world’s largest online marketplaces, which in the second quarter of 2011 reported 97 million active users worldwide (eBay News Room 2011). Being the leading actor in the e-commerce industry implies the need to manage a great deal of payments, ensuring their safety. In addition, eBay business model is not based on being an online store, but connecting every day hundreds of millions of sellers and buyers. eBay works as a platform where sellers and buyers can interact and execute purchases. Thus, providing their users a convenient and secure mean of payment is a critical task of eBay’s business.

On the other hand, PayPal is currently the leading global online payment company. PayPal, founded on December 1998, provides to its customers an easy and secure online payment method. PayPal mean of payment consists on creating a personal PayPal account where PayPal users can save their preferred payment information (credit or debit card, as well as their bank account number), and then use their PayPal account to pay at online merchants where PayPal is accepted, without entering again their payment information. PayPal guarantees its clients not sharing their payment information with the online merchants. PayPal also provides the service of making money transactions between PayPal accounts. In turn, PayPal charges a commission and a fee to its customers in every transaction and payment. (PayPal Fact Sheets, 2011)

Back in early 2000, the payment method was still an issue for eBay. An online platform where non-professional online sellers and buyers are connected has to sort out a system to provide them with a mean of payment to complete the purchase. eBay’s setting is characterised by a great number of sellers who are unable to process payments by credit or debit card. Thus, eBay found in PayPal mean of payment a solution to its payment issue. Jointly, eBay and PayPal reached an agreement to add PayPal to the means of payment of eBay’s marketplace.

In the agreement reached between these two companies, eBay and PayPal, we can see how they benefit from relatedness. On one hand, eBay solved an issue that was critical to its business model, being able to keep providing non-professional sellers a platform to connect with buyers. On the other hand, PayPal also benefited out of the agreement by getting to more customers. A team effect, understood as a win-win situation, was established between eBay and PayPal, as consequence of the influence of relatedness on the interaction. In this case study, we can see how the two counterparts dealt with the effect of the relatedness of their business landscape.

As a result of the successful outcome of the agreement reached between the two companies, in 2002, eBay acquired PayPal and add it to eBay Inc. Currently, eBay Inc. is the worldwide leader in shopping and payments on the web.
2.1.2. Variety

2.1.2.1. Concept of variety

The variety of the business landscape consists in the multidimensional factor always involved in an interaction between two actors. When trying to understand interaction between actors in the business landscape, it is essential not to forget that the nature of the interrelationships between these actors is multidimensional. In most cases, interaction reaches not only one area of the organizations involved in the interrelationship, but many (Håkansson et al. 2009). The influence of variety as a feature of the business network is based on the consequences of this multidimensional factor.

In this context, organizations need to adapt to deal with variety. In order to cope with variety, companies can follow two possible directions; on the one hand, to try to decrease variety, or on the other hand, to increase it. By developing standards and routines in the interrelationships with other actors, variety can be reduced. The reduction of variety may lead to an improvement in efficiency and to smoother and cleaner procedures. In contrast, seeking the aim of innovation, variety can be increased through technological and organizational development (Håkansson and Waluszewski 2002).

Actors need to adapt to benefit from variety. Analysing how variety affects the interaction process, we can differentiate between variety in products and variety in counterparts. Thus, in the case of variety in products, an opportunity to enhance usefulness is presented by combining a solution with more resources. Variety in products implicates adapting the same solution to different processes, which enhances in each process different features of the same solution. From a perspective of variety in counterparts, by adapting a solution in more ways, comes an opportunity of a wider range of application and to address different problems. The same solution applied by different actors ends up providing different results (Håkansson et al. 2009). In this thesis, as it will be explain further in following sections, variety is analysed from the perspective of variety in counterparts. In order to study how variety affects interactions, I analyse how actors approach openness with the other players of the same position of the business network.

In Håkansson et al. (2009), we find an example of a business landscape where the counterparts involved benefit from the influence of variety. The authors introduce how a biotechnology-tool producer company deals with the effect of variety on the interaction with its customers. The company’s clients are research laboratories in universities as well as in pharmaceutical companies and other private-funded organizations with strong research and development (R&D) centres.

The case study presents how the tool producer company promotes the use of its tools in some of its customers R&D laboratories by pricing very low, and sometimes even for free. The tool company decided to adopt this business strategy in order to benefit from variety by learning.
how to use and improve its tools in different applications and investigations (Håkansson et al. 2009).

The influence of the variety of the business landscape on an interaction is shown in how the counterparts involved in the interaction approach openness, which is presented in how the approach compatibility towards other actors.

In the next subsection an analysis of the interaction between Amazon and Apple, regarding Amazon’s Kindle app and Apple’s iPad tablet PC, is presented in the form of a case study. With this case study I intend to get a better understanding of how the variety of the business network influences interaction.

2.1.2.2. Case study: Amazon Kindle & Apple iPad

In this case study, I explore the interaction between the two mentioned companies and how is this interaction affected by the variety of the business setting. The case study deepens on Amazon’s approach to openness with its most successful reader application, Kindle, and how both Amazon and Apple benefit from the influence of variety on their interrelationship.

Amazon is the leading player in the e-commerce industry and the world largest online retailer. Amazon, which was launched in 1995, started as an online bookstore and then has become the largest e-commerce site for all kind of purchases. Still, Amazon focus on books is quite strong being one of Amazon’s core businesses, as well as on e-books. In 2007, Amazon launched Kindle, an e-books reader device. Kindle device has evolved into new different versions of the e-books reader device and even into a tablet PC with a Kindle reader app. Kindle is one of the most successful Amazon’s products. With Kindle, Amazon accounted for the 48% of the worldwide sales of e-reader devices by March 2011 (Framingham 2011). Within the Kindle reader context, Amazon benefits from both the Kindle device, by selling the actual devices, and the Kindle app, by selling e-books.

Apple, the electronics and computer company, launched in 2010 a tablet PC, the iPad. With the iPad revolution, the media tablet market was strongly boosted, as well as the awareness of the e-book readers increased. At the end of 2010, iPad’s sales represented the 75% of the worldwide market share of tablets PC (BBC News Technology 2011). In 2011, iPad’s market share is expected to be of 83% within the US (Saminather and Bourke 2011).

In this case study, we focus on the interaction between Amazon and Apple, regarding how Amazon approaches openness by making the Kindle app compatible with the iPad. The e-readers market is framed within the media tablets industry. In 2010, Amazon was the leading player at the e-readers market with its Kindle reader device. On the other hand, with the launch of iPad, Apple became the leading player at the tablets PC market as a whole, but Kindle was leading the e-readers branch. Thus, Apple and Amazon were direct competitors. However, Amazon’s strategy was to develop a Kindle app for the iPad, enabling iPad users to benefit from all the features of Kindle reader, but in an iPad instead of in a Kindle device. In turn, Apple allowed the Kindle app to be installed on iPads.
At this two-sided strategy followed by both Amazon and Apple, we can see how these two direct competitor companies benefit from the effect of variety. Amazon got to a broader number of customers by enabling the Kindle app to iPad, reaching iPad users. Meanwhile, Apple increased iPad’s awareness to new potential customers by being promoted by Kindle app, as well as increased the actual use of iPad’s users.

Amazon developed Kindle app for all the major operating systems, both PC and mobile based. Kindle app version for PCs was released on October 2009, while Mac’s version was out on March 2010. As to the mobile and tablet OS, during 2010 Kindle app was available for the mobile devices.

2.1.3. Motion

2.1.3.1. Concept of motion

Interaction within the business landscape is inevitably affected by change. Thus, another greatly important feature of the business landscape to take into account is motion, as well as analyse its influence on the interaction process. The effects of motion on the interrelationships between the actors of the business network have uncertainty as common denominator. And uncertainty may end up leading to conflict and threats in the interaction between actors.

Dealing with the effects of motion can be approach effectively from two angles (Håkansson et al. 2009). One point of view is coping with motion by development of trust. Assuming a trust-based strategy lays the foundations for long-term relationships. The other possible standpoint is managing the exchange of dependence and power balance between the counterparts involved in order to be prepared for potential changes that could affect the interaction. By containing the interaction scene, companies with interdependences may drive positively their relationship in a constructive way (Tuli et al. 2007). Both approaches to deal with the effects of the motion of the business landscape are driven by managing uncertainty within the interaction between the counterparts. Hence, the influence of the motion of the business landscape on the interaction between different actors is determined by the influence of change. In this thesis, as it will be detailed in further sections, the influence of motion is analysed by studying how change affects interaction, which is presented by updating and upgrading processes.

Håkansson et al. (2009) illustrate the influence of motion on interaction by a business case study where the interaction between two companies is analysed. These two organizations operate in similar business approaching the same potential customers and sharing the same suppliers. The two multinational companies, one based in Sweden and the other one in Finland, benefit from the influence of change that is caused by the effect of the motion of their business landscape.
The authors present in a case study form a discussion on how the two Scandinavian-based companies, although being direct competitors, work together in a new technology development investment and how they benefit from coping with the influence of motion on that interaction by maintaining a close collaboration. In the same direction, the authors detail the interrelationship between the companies and their suppliers and how they deal with the influence of change by deepen on feedback procedures and being up to date with potential changes. Hence, at both interrelationships, between competitors working together in a R&D joint project and with suppliers, the counterparts involved benefit from managing the influence of the motion of the business landscape, which is determined by the influence of change.

2.1.3.2. Case study: Facebook & Zynga

In this case study, we analyse the interaction that takes place between Facebook and Zynga. This interrelationship is explored in order to deepen the understanding of the influence on interaction of the motion of the business landscape.

Facebook, founded in 2004, is the internet social network most used worldwide (Kazeniac 2009). In July 2011, Facebook counted with more than 800 million active users (Olivarez-Giles 2011). Zynga, founded in 2007, is a social network game developer company. Zynga’s games are supported on social networking sites as well as are located independently in the games websites. One of the social network platforms where Zynga’s games are located is Facebook, being the platform that provides Zynga with more players. In 2011, Zynga’s games had more than 200 million monthly active users (Woo and Shayndi 2011). The interaction between Facebook and Zynga is highly beneficial for both counterparts involved. On the one hand, by enabling Zynga’s games on its social network site, Facebook customers increase their use of the social network and spend more time connected. On the other hand, by using Facebook platform, Zynga gets to a great number of potential players.

Regarding this interaction, it is notable the continuous and constant communication between the developers of Zynga and the developers of Facebook to keep up to date and synchronised the versions of both services. This interrelationship needs to be very close so they can deal with the influence of the motion of their business landscape. Facebook and Zynga maintain a close collaboration, Zynga continuously developing updated versions of its games to be compatible to the upgrading procedure of Facebook. By coping with the influence of change both organizations benefit. Facebook keep having games and applications running, that are available to be used by its customers, which implicates Facebook users spending more time connected in the social network. And Zynga gets a great advantage to get to more players by being able to provide its games.

This case study introduces an example of two companies who benefit by dealing with the influence on motion on their interaction. Analysing this example provided by the interrelationship between Facebook and Zynga, we can observe the importance for the
counterparts involved in an interaction to manage the influence of change, consequence of the effect of the motion of the business landscape.
3. Industry analysis

3.1. Introduction to mPayments

In this thesis, we study how interaction takes place between counterparts in a business network, and how the actual business landscape affects the development of the interaction. The analysis of this interaction is addressed on the mobile payments industry.

Foremost, the study of this thesis is focused on the payments made in a store with a mobile phone. Hence, when referring to mobile payments, it is addressed a type of payment in which a consumer goes into a store and pays for a product or a service to a merchant at the Point of Sale (POS), and do so, with her mobile phone, instead of using cash, a check or a plastic card. Therefore, when referring to mobile payments, virtual payments (e-payments) made from a mobile phone are not within the scope of this thesis.

Currently, the industry of mobile payments is starting to be developed at an initial stage. Thus, it is at this moment, as the industry is exploding and the business network is getting structured and organised, when is needed to analyse the interaction between the actors involved.

Today, there are four main models of mobile payments:

- **Premium SMS-based payments**
  The premium SMS-based mobile payments consist in paying with your mobile phone by sending a premium SMS. Premium SMS refers to SMS that cost a different fee than the regular one; thus, these SMS are extra charged. Premium SMS-based mobile payments are already in use. For instance, in some European countries like Sweden premium SMS are quite extended for payments at vending machines.

- **Direct mobile billing payments**
  Direct mobile billing payments consist in a mean of paying with the mobile phone by the actual bill linked to the mobile telecom operator. This mobile payment method is limited to expenses of small amount of money because of the actual nature of the telecom network operator actor, not being able to play a supporting credit financial role.

- **Mobile web payments (by an app or by an internet browser from the mobile device)**
  The mobile web payments model consists on paying through a payment platform established within an internet website, or an app, but both supported by internet. Therefore these mobile web payments are more an internet-based mean of payment, that an actual mobile payment. Within this mobile payments stream are highlighted enterprises like: PayPal, Square, and other relevant players.
Contactless Near Field Communication (NFC) payments

Firstly, and as a brief introduction, Near Field Communication (NFC) technology consists in a two-way, short-distance, low-power communication protocol between two devices (Nosowitz 2011).

NFC-based mobile payments consist in paying at merchant’s store POS, by tapping with a NFC-enabled smartphone to the POS NFC-enabled receiver. There are different mobile payment applications models developed to work within a NFC setting.

Thus, for the purpose of this thesis, only the two last models of mPayments mentioned are of our interest. However, the mPayments industry, which is currently exploding at an early stage of development, is taking the direction to be established mainly as an NFC-based industry, and, moreover, led by Mobile Digital Wallets. The contactless NFC movement is going ahead; being developed quickly and strongly by several digital wallet partnerships, prevailing over the web-based model. Actually, even the strongest players of the web-based model of mobile payments have already started developing their NFC apps and technology (Warren 2011). As being the contactless NFC model becoming the heart of the mobile payments industry, this thesis study is focused on the mobile payments performed by a NFC-based technology. Therefore, from now on along this thesis, when talking about mobile payments (mPayments), we are referring to NFC-based mPayments. A NFC-based mobile digital wallet is a complete payment app that integrates an actual mean of paying as well as other payment-related services like the management of receipts, coupons and offers, and loyalty cards. Consequently, the scope of this thesis focuses on the development of the mPayments NFC-based mobile digital wallets industry.

3.2. NFC-based mPayments

3.2.1. NFC technology

As briefly described and quoted in the previous section of this thesis, Near Field Communication (NFC) technology consists in a two-way, short-distance, low-power communication protocol between two devices (Nosowitz 2011).

NFC is an evolution of radio-frequency identification (RFID) technology, which consists in a magnetic transfer of data between a RFID tag or label and a RFID reader. Basically, and according to how the RFID Journal describes the technology: “RFID transmits the identity (in the form of a unique serial number) of an object or person wirelessly, using radio waves” (RFID Journal 2011). The main difference between NFC and RFID is that this last one consists in one-way data transfer, but with an NFC-enabled device the data can be transferred in both ways.

The NFC technology, by enabling data transfer with a single tap of two NFC-enabled devices against each other within less than 4 inches (or about 10 centimetres), has a wide range of potential applications, among which NFC-based mPayments are included.
3.2.2. NFC-based mPayments

As commented in a previous section, the mPayments stream based on NFC technology seems to be taking the lead on the market. Reasons that highlight this dominant position at the mPayments setting are the simplicity of the mean of payment and its intuitiveness.

NFC-based mPayments are bringing in a great deal of interest to smartphone manufacturers, mobile telecom carriers, payment network processors as well as merchants. Proof of this interest and the relevancy that NFC is taking within the mPayments setting is that among the more than a hundred members of the NFC Forum are found numerous players of the industries quoted (NFC Forum 2011). And this interest is created by the great potential mPayments has, not only because the new mean of payment introduced, which is likely to enhance consumption, but because of the opportunity for direct advertising and real-time customer data.

3.3. Mobile digital wallets

3.3.1. Introduction to mobile digital wallets

The NFC-based mobile payments stream provide opportunities to a wide range of different mobile payment applications, based on very diverse business models such as direct payment apps to integrated complete payment solutions. These last ones are the ones leading this NFC stream. The complete payment apps integrate an actual mean of paying as well as other payment-related services like the management of receipts, coupons and offers, and loyalty cards. This integrated complete payment solutions have become a reality in the mobile digital wallets.

Mobile digital wallets make possible to execute payments at merchants POS by just tapping your mobile phone on the card reader. The action of paying, based on the NFC technology, is similar to pay with a plastic card that carries a NFC chip, reducing the payment process to a single tap of the card instead of swiping it. But, unlike with a plastic card, using these digital wallets to pay, introduces the consumer to a whole new payment setting by managing from one single mobile app all the payment-related services. As we analyse in a following section, mobile digital wallets open a great series of opportunities to mobile marketing, as well as to a deeply improved and broader customer relationship management.

Currently, the US market is led by three big partnerships, which are developing their corresponding mobile digital wallet; Google Wallet, VISA’s Digital Wallet and ISIS Mobile Wallet. These joint ventures are formed by actors from different positions along the business network of the mPayments setting. They all share a common view of the product, based on the development of a digital wallet that goes far beyond being a simple new mean to pay, but which expects to replace the current physical wallet consumers have. These digital wallets include, as well as a mean of paying, services such as receipt management, record keeping of consumer’s expenses, and a great platform with endless opportunities for new ways of mobile marketing and improvements of customer relationship management.
The digital wallet partnerships are formed by different actors along the business network that make possible the development of the actual digital wallet. Mainly, there are 8 major actors involved, which below we introduce briefly, and in a following section their functions will be analysed in deep, as well as the interaction with the three main digital wallets of the NFC-based mPayments stream.

- **Operating System (OS) Provider**
  The OS provider develops the mobile OS and handles the interaction between the OS and the mobile digital wallet, as well as between the OS and the mobile handset.

- **Smartphone Manufacturer**
  The smartphone manufacturer provides the actual handset, which supports the OS and the NFC technology.

- **Mobile Network Operator**
  The mobile network operator manages the telecom network of the mobile device, as well as the connection between the smartphone manufacturers and consumers as a mobile telecom carrier.

- **Payment Network Processor**
  The payment network processor is the actor who handles the transaction. This position in the mPayments business network is carried out by financial services organizations.

- **Card Issuer**
  The card issuer provides consumers with physical or virtual cards to perform payments. This actor is formed by banks and other financial institutions.

- **Trusted Service Manager**
  The TSM is the actor responsible for establishing a secure connection between the financial institution with the consumer’s account or card information, and the mobile network operator and other mPayments-related service providers supporting the transaction (VeriFone: The NFC Ecosystem 2011).

- **Point Of Sale (POS) Provider**
  The POS provider is the actor who handles the NFC-enabled POS at merchant’s stores.

- **NFC Technology Provider**
  The NFC technology provider is the actor in charge to develop the NFC chip and secure element for the mobile phones.
All these eight actors form the digital wallet, where interaction exists between one another. The interaction within the wallet is distributed and oriented according to which actor takes the leading role ahead the other actors in the wallet partnership.

**Google Wallet** is the party led and launched by Google, with a strong partnership with MasterCard, Citigroup, First Data and Sprint. Meanwhile, **VISA's Digital Wallet** is the mobile digital wallet led by VISA. And **ISIS Mobile Wallet** is a joint-venture of three of the biggest mobile network operators in the US, AT&T, T-Mobile and Verizon. ISIS Mobile Wallet is also supported by the four major US payment operators: VISA, MasterCard, Discover and American Express.

### 3.3.2. Google Wallet

Google Wallet is the first mobile digital wallet launched in the US market, in September of 2011 (Block 2011). As other digital wallet projects on-going, Google Wallet seeks to displace the current and traditional idea of physical wallet that consumers use for payments, where they carry plastic cards, cash, receipts, offer coupons, or loyalty cards. Actually, Google, within a party of actors from different positions along the business network of the mPayments
setting, have developed a mobile app that enables consumers to purchase and perform payments, as well as the other payment-related services.

Google Wallet has been launched within the partnership led by Google, where Google plays both roles of manager of the digital wallet app and provider of the OS with Android. Google Wallet launch partners are MasterCard as the payment network processor, Citi as the issuing bank, First Data being the trusted service manager (TSM), and Sprint is the US initial mobile network operator. In order to handle the NFC-POS-related and merchant processing issues, in addition to First Data that plays a role within these functions too, Google has also partnered with VeriFone, ViVOtech, Hypercom and Ingenico. The NFC technology provider is NXP, dealing out with the NFC chip and the embedded Secure Element. (Google Wallet [1] 2011)

Google Wallet includes all the payment-related services typical of a digital wallet, as it has been described in a previous section in this thesis. Payments are executed by a virtual plastic card stored at Google Wallet app. Initially, there are two card allowed for payments through Google Wallet, a credit MasterCard issued by Citi and the Google Prepaid Card. This last one, the Google Prepaid Card is a virtual card that can be funded from any other card; no need for a MasterCard, nor for a Citi issued one. (Google Wallet [2] 2011)

3.3.3. VISA’s Digital Wallet

VISA’s Digital Wallet is the mobile wallet party led by VISA, which is planned to be launched, first at the US and Canada, in fall of 2011 (VISA’s Digital Wallet 2011). Also an NFC-based technology mPayment solution, VISA’s Digital Wallet aims to displace current physical wallets and become the reference mean of mPayment among consumers.

In order to develop and make possible the mobile digital wallet, VISA has partnered with actors of different positions along the business network of the mPayments. It is notable that in the last months VISA has acquire Fundamo Enterprise Mobile Financial Services platform, one of the world largest specialist mobile financial services provider, and VISA has also reinforced a commercial agreement with Monitise, a global leader in mobile money solutions (Visa Press Releases 2011). As Visa Inc. announced in its press release about the acquisition of Fundamo and the new agreement with Monitise, these two investments are part of Visa global strategy to launch VISA’s Digital Wallet.

Along with partners in the mobile setting, VISA has also established interrelationships with a great set of players within the financial world. Among these financial institutions, there are retail banks as well as other financial services organizations. Visa published the launch financial partners supporting VISA’s Digital Wallet (Visa Press Releases [2] 2011):

- Barclaycard US
- BB&T Corporation
- Card Services for Credit Unions (CSCU)
- ICBA Bancard
- First Financial Bank of Ohio
- Nordstrom fsb
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- Pentagon Federal Credit Union
- PNC Bank
- PSCU Financial Services
- Regions Bank
- Royal Bank of Canada
- Scotiabank
- TD Bank Group (US and Canada)
- US Bank

VISA’s Digital Wallet focuses its strategy towards consumers on the idea that Visa represents a solid and trusted payment mean to consumers. Visa approach consumers by the slogan “Pay with confidence” and based its marketing campaign on four main points conveying that using VISA’s Digital Wallet at your payments is “simple, secure, smart and convenient” (VISA’s Digital Wallet [2] 2011). Visa has a highly important connection with consumers already established by Visa plastic cards; which is a factor that in a following section in this thesis will be deeply analysed.

As well as the link with the consumers, Visa has a great network of connection with merchants, where has gained merchants trust and custom usage. Visa approach the merchants group by conveying the idea of a greater level of professionalism by accepting mPayments by the VISA’s Digital Wallet: “Sell like a pro”. The four main points in which Visa based its marketing line to merchants are “simple, secure, powerful and convenient”. (VISA’s Digital Wallet [3] 2011)

3.3.4. ISIS Mobile Wallet

ISIS Mobile Wallet, based in New York City (Isis Press Releases 2011), is the partnership led by three of the largest telecom network operators within the US market: AT&T Mobility, T-Mobile USA, and Verizon Wireless. There are plans to have ISIS Mobile Wallet introduced in the market by 2012 (Dolcourt 2011; Greene 2011). As the other parties launching mobile digital wallets, the mPayment solution ISIS aims to replace consumers’ current wallet with a mobile solution that will enable consumers to perform all payment-related activities through a smartphone.

This party is led by the three telecom network operators mentioned, but they also have partnered with different actors along the mPayments setting to make the ISIS Mobile Wallet a reality. These actors, such as payment processors, as well as smartphone brand manufacturers and technological partners, play an essential role in the development of the ISIS network. AT&T, T-Mobile and Verizon, within their leading and management role on the mobile wallet party, have reached an agreement with the four US major payment processors: Visa, MasterCard, Discover and American Express (Visa Press Releases [3] 2011). With this agreement, ISIS will support mPayments through the four major payment network processors, enabling mPayments to consumers with ISIS by cards from any of these four companies.
ISIS has started partnering with several smartphone manufacturers to ensure mobile devices that will support ISIS technological standards. Among these brand manufacturers are found the following firms: HTC, LG, Motorola Mobility, RIM, Samsung Mobile and Sony Ericsson (Isis Press Releases [2] 2011). Within the technological partners in the ISIS Mobile Wallet party, it is noteworthy the presence of DeviceFidelity, playing an important role to penetrate in the market by bringing the opportunity of mPayments by ISIS Mobile Wallet to those consumers who do not have an NFC-adapted cell phone; as in an actual ISIS press release said: “ensuring a wide range of consumer choice” (Isis Press Releases [2] 2011).
4. Methodology

4.1. Choice of method

The method chosen to conduct this Master Thesis is structured as follows. Firstly, a goal and a set of objectives were established in order to answer a research question to a problem identified. In the previous sections, a background analysis has been conducted regarding the theory to apply and the target industry. In this section a hypothesis is formulated. Then, the procedure to test and validate the hypothesis is presented in two sections: a comparative analysis of the wallets setting and the thesis discussion based both on the industry analysis and on research interviews with experts on the mobile payment area. Finally, a section summing up the conclusions of the Master Thesis is presented, in which the research question is answered.

According to the mentioned structure, the purpose of this Master Thesis was stated, along with the problem to analyse, in the Introduction section. Specifically, the Introduction section presented a first subsection devoted to introduce the thesis topic as well as explaining the motivation behind this Master Thesis. The thesis goal and the problem were introduced in their corresponding subsections: “1.2 Aim and objectives” and “1.3 Research question”. To complete the Introduction section, the scope of the thesis analysis was detailed.

The hypothesis formulated on this Master Thesis dissertation is:

\[\text{The interaction that takes place within the digital wallet partnerships is actually influenced by the origin industry of its leading partners.}\]

The second section of the thesis has been dedicated to deepen the understanding on the literature review of the business network theory approach chosen on this Master Thesis. As well, in the third section, an industry analysis of the Mobile Payments industry has been conducted.

4.2. Data and design

In this subsection of methodology, the procedure of data collecting and the discussion design to validate the hypothesis stated above is detailed.

In order to validate the hypothesis and answer the research question of this Master Thesis, a comparative analysis as well as a discussion has been conducted. The data collecting process in this thesis is based on both the extended comparative industry analysis of the wallet setting and the interviews performed with researchers who are working on the mPayments field. Both lines of research, the comparative industry analysis and the interviews, were necessary to support the thesis discussion. The industry analysis was conducted in order to get an internal perspective of the wallet setting, by analysing the corporate information of the organizations.
involved in the development of the wallet partnerships, as well as reviewing interviews and other documentation published by the people who are working within these organizations leading the different digital wallets. As having interviews with those people in charge of the wallets was highly difficult, due to availability to-be-interviewed, an extended industry analysis was needed, as well as it was greatly relevant to support the discussion process of the thesis. In order to complement the information collected and the analysis done, a set of interviews with people who were also researching the mPayments setting was conducted. Then, the discussion of this thesis was done based on both the observations made through the comparative industry analysis of the wallets setting and the observations of the interview process.

Thus, first, I conducted the comparative analysis on the three main digital wallets ahead on the mPayments industry. The analysis is performed from perspective of the different origin industries of the leading partners, in order to analyse how this difference affects the structure of the wallet, as well as to deepen the understanding of the different actors involved within the wallet parties. This comparative analysis of the wallets setting is necessary to support the observations made in the following discussion section.

The interview process consisted in a set of twelve interviews with experts on the mPayments setting. The persons interviewed were researchers studying the wallets setting who have been analysing the development of this industry or are currently working on it. As well, the interviewees had expertise in other areas; regarding the ones of interest to this thesis, six out of the twelve were working on the payments field, two on networks economics area and the other four on the mobile business and commerce setting. The interviewees were researchers within universities and research faculties as KTH - Royal Institute of Technology in Sweden, Aalto University School of Economics in Finland, ESSEC Business School in France, Penn - University of Pennsylvania in USA, Boston University in USA and IDRBT in India. Due to geographical factors the mean of conducting the interviews has been the following: two in person, eight by phone and two by email.

Regarding the content of the interviews, all of them followed the same outline. In the interviews, we discussed the influence of the origin industry of the leading partner of the digital wallets on the goal and scope of the wallet partnership, as well as on the interaction with the wallet regarding the three features of the business landscape analysed.

The outline of the interviews was based in the following questions:

- Which is the goal of the leading partner launching each digital wallet?
- Which is the target scope of the leading partner launching each digital wallet?
- How does the leading partner benefit from the digital wallet?
- How does the leading partner approach openness with the digital wallet regarding the other players within the same actor position at the business network?
• How is the interaction between the wallet and its leading partner influenced by change?

As well, other interesting ideas and comments out of the scope and the aim of this thesis were discussed, which some of them are detailed in the section: “7.2 Future Research”.

The interview process resulted highly constructive and enriching to review the observations performed based on the industry analysis. Once the interviews were performed, the discussion based on the data collected was conducted, which is presented in the corresponding section: “6.2 Discussion based on research interviews”. Then, a final section is included with the conclusions of the thesis based on the discussion and the research conducted.
5. Mobile Digital Wallets Comparative Analysis

Studying the three major players within the NFC-based mobile digital wallet mPayments stream, we have found certain major structural and organizational differences that make a comparison analysis extremely interesting. Thus, in this section an analysis comparing the three mobile digital wallets and their corresponding partnerships is performed.

This comparative analysis between the three major parties launching mobile digital wallets is structured in two study lines. Firstly, we analyse relevant features of the three partnerships, exploring the origin industry of the leading partner of the digital wallet, as well as the goal and the scope of the wallet. Then, a second analysis line follows, where we compare the three wallets by the different actor positions of the business network involved in the mPayments setting.

The relevance of this comparative analysis of the three wallet partnerships and their interaction with the different actors involved resides in that this industry study will be of use at the discussion section, supporting the observations made.

5.1. From Industry Features Perspective

As it has been just introduced, in order to explore the differences between the three mobile digital wallet partnerships and to understand the interaction that is taking place within these partnerships, we analyse three features of the digital wallets structure. These three factors are: the industry of origin of the main partner, who leads and manages the wallet party; the goal and objectives of the wallet partnership; and the scope of each wallet enterprise.

5.1.1. Origin Industry of the Leading Partner

The origin industry from where the main partner leading each mobile digital wallet comes is a key factor to understand how each wallet party is structured and oriented. Therefore, one of the main points that is analysed in this thesis is the fact that the three major digital wallets leading these NFC-based mPayments stream have leading partners coming from different origin industries. This fact makes this discussion greatly relevant, plus especially interesting as it brings in the attention to this study of numerous researchers of the mPayments, as well as scholars of the business network theory setting; as will be presented on interviews in a following section along the thesis.

As mentioned, the three mobile digital wallets have a leading partner coming from a different origin industry. Google Wallet main partner is Google, an internet and new technologies-related actor. On the other hand, VISA’s Digital Wallet is led by VISA, a traditional payment network processor. And the joint venture formed around ISIS Mobile Wallet is driven by three of the largest telecom mobile operators in the US market: AT&T Mobility, T-Mobile USA, and Verizon Wireless.

This distinction between the three digital wallets goes beyond the actual fact of having a leading partner coming from a different origin industry, but affects the whole mobile wallet
organization. The origin industry behind the main partner influences the goal and the scope of the party, as we analyse in the following sections, as well as how interaction between the actors involved takes places within the digital wallet partnership.

5.1.2. Goal

In this section we explore the aim and objectives the three mobile digital wallets seek by developing and launching their own mPayment solution. While analysing the different origin industries of the leading partners of each digital wallet partnership in the previous section, has been advanced that the party main partner, hence its origin, affects in a great way how the digital wallet is oriented and organised. Therefore, the origin industry of the main partner influences the goal the partnership follows.

Thus, in order to determine the goal pursued by the three digital wallet parties, we have performed a parallel analysis of each wallet based on the mentioned origin industry of the leading partner, as the objectives of the wallet partnership is going to be driven by the goal of its managing partner. Following this reasoning line, we may conclude the goal is ultimately fixed by the digital wallet leading partner.

Google Wallet aims to become the mPayments mean of reference for consumers. Google Wallet objectives go along with and are driven by its leading partner, Google, which seeks to entry into the payments industry by this new market created by the mPayments setting. The mPayments new industry is an opportunity for Google to increase its presence in the day-to-day activity of consumers. Google goal with Google Wallet is not based on direct billing, but on develop a successful payment platform to be present at, ideally, every smartphone user. In order to monetise Google Wallet enterprise, the mobile marketing-related services provide an opportunity to Google, not only through third parties mobile marketing actors, but also by its own mobile marketing enterprise, Google Offers. (Bedier 2011)

VISA’s Digital Wallet aim is oriented along with the objectives of Visa, who is the driving actor behind this enterprise. Visa, as a current global payments leader, by launching its own mPayments app seeks to maintain this leading position within the payments overall market. Visa comes from the payments industry, and that influences its strategy upon this new mPayments market. The ultimate goal of Visa seems to be to maintain its current position being one of the leaders of the payments world. Thus, in order to achieve its objective, Visa has developed its own NFC-based mPayments solution: VISA’s Digital Wallet. However, Visa has also partnered with the other major digital wallets being launched in the market: Google Wallet and ISIS Mobile Wallet. Thereby, Visa wants to ensure its involvement in any potentially most-successful digital wallet, and at the same time, Visa gives consumers the opportunity of paying through Visa’s network at the wallet of their choice.

The objective sought by the US telecom operators’ joint venture ISIS Mobile Wallet goes together with their scope. In the following section of this thesis, ISIS scope will be further
analysed; still, we can advance at this point the US market-based scope of the partnership led by the three US telecom mobile operators: AT&T, T-Mobile and Verizon. As the ISIS Mobile Wallet enterprise is managed and launched by the three US telecom operators mentioned, the aim of this enterprise seeks to support a common objective these three telecom operator share. Thus, the main goal of the ISIS Mobile Wallet joint venture seems to be to get more mobile telecom consumers and increase market share for the three telecom operators involved, by providing a new service, in form of this mPayment solution. The idea lies on developing an attractive and convenient digital wallet for consumers, which is exclusive only to AT&T, T-Mobile and Verizon clients. Therefore, AT&T, T-Mobile and Verizon ultimate goal is to attract new consumers, and strengthen current ones, by providing to its clients a mPayments platform, ISIS Mobile Wallet. That is why, in the case of ISIS, goal and scope go hand by hand, being not global, but localized instead to the market where these three telecom companies operate.

5.1.3. Scope

The scope of the mobile digital wallets is another essential feature to study and analyse in order to understand how they are oriented and the driving forces behind their objectives. As it has been mentioned in the previous section, scope and goal are closely related within the digital wallet setting.

Google Wallet scope is global. As the other two major digital wallet partnerships, Google Wallet is being launched in US first, but its scope goes worldwide. (Bedier 2011)

VISA’s Digital Wallet, which not only was launched initially in the US, but in Canada too, is also seeking to overpass the North American market and have a global impact.

On the other hand, ISIS Mobile Wallet, as explored analysing its goal, has a local scope on the US market. Because of the objective of getting to new consumers and increasing the telecom mobile network market share of the three operators involved in the joint venture by giving an extra mobile service, the scope of ISIS is limited to the market penetration of these telecom companies.

5.2. From Actors Perspective

5.2.1. Operating System Provider

An operating system provider is the actor that deals with the mobile operating system where the digital wallet app runs. By supporting the digital wallet app, the provider of the mobile operating system enables the wallet app actual performance.

Currently, there are 4 major mobile operating systems: Android, Symbian, iOS and BlackBerry OS (Gartner Press Releases 2011). In addition to the four main OS in terms of worldwide market share, Windows Phone, the mobile OS from Microsoft, is expected to gain
a relevant role too in the mobile OS picture, because of a recent partnership agreement with Nokia (Microsoft News Press Release 2011), the third largest smartphone manufacturer by sales market share (Framingham 2011).

Following Gartner market analysis of the mobile OS picture, it is outstanding how Android has become in one year the leader of the market with a 43.4% in the second quarter of 2011, coming from the same quarter of 2010 with a market share of 17.2%. The OS owned by Google, Android, by partnering with most of the largest smartphone manufacturers of the market (Acer, HTC, LG, Motorola, Samsung, Sony Ericsson, etc.) has multiplied in more than 4 times its presence in number of devices worldwide, from 10.7 million to 46.8 (Gartner Press Releases 2011). In the following chart, Gartner market share analysis is presented:

![Operating Systems 2nd-Q 2011 Market Share (%)](image)

**Figure 5.1 Operating Systems 2nd-Q 2011 Market Share (%).** Source: Gartner Press Releases 2011.

Along with the presence increased in the market of Android, Symbian has reduced its market share almost by half from a 40.9% to a 22.1% (Gartner Press Releases 2011). Symbian, which was one of the traditional mobile OS, during the last recent years, has been losing its strength within the industry. In 2006 reached a 73% of the market share (ABI Research Press 2007), by 2008 its market share had decreased to 52.4% (Gartner Press Releases 2009), until not to be anymore, in the second quarter of 2011, the mobile OS market leader, overtaken by Android. This decrease in Symbian market share is that the major smartphone manufacturers working with Symbian have dropped their agreements with the OS moving to another one. For instance, Motorola left Symbian for Android and Microsoft Phone OS in 2008 (Meyer 2008), as well as Samsung and Sony Ericsson did later in 2010 (Woods 2010, Mello Jr. 2010). The last major smartphone manufacturer that was working with Symbian was Nokia, which by an agreement with Accenture had left them the Symbian maintenance. Still, for the next five years the support of Symbian will be supported (Nokia Press Releases 2011).
Nokia leaving Symbian to join Microsoft Windows Phone notes that the market share of Windows Phone among the other main OS will be increased significantly in the up-coming years. As it will be explored in a following section dedicated to the smartphone manufacturers’ market current picture, Nokia is the worldwide leading smartphone manufacturer (Gartner Press Releases 2011), thus, the partnership between Windows Phone and Nokia is likely to boost greatly the market share of Microsoft OS.

Regarding the digital wallets setting, Google Wallet has been launched initially based on Android OS, while ISIS and VISA’s wallets have not published yet which OS will support its launching wallet app.

5.2.2. Payment Network Processor

The payment network processor handles the execution of the transaction in which the payment is based. This actor role is played by financial services organizations that process payments between the banks of merchants and the card issuing banks of its customers. The main payment processors of the US market are MasterCard, Visa, Discover and American Express (Woolsey and Schulz 2011).

MasterCard has positioned itself in two branches of the mobile digital wallet stream of mPayments. On one hand, MasterCard is one of the most relevant launching partners within the Google Wallet party, led by Google. While, on the other hand, MasterCard has reached an agreement with the three US telecom operators managing the ISIS Mobile Wallet enterprise to be supported at their wallet. At ISIS Mobile Wallet, all four major payment network processors have partnered to be supported and enable mPayments to consumers through their payment networks.

VISA is trying to be supported by every mobile digital wallet in order to be present at any mPayment solution, regardless the mPayment tool consumers use, VISA seeks to be the alternative of reference to execute mPayments. VISA bets on its own mobile wallet, VISA’s Digital Wallet, but still, as mentioned, VISA has partnered with the ISIS party, as well as VISA has partnered with Google and will be an alternative to MasterCard at Google Wallet.

We can see one quite relevant difference between the two approaches taken to deal with this new era of mPayments from MasterCard and VISA. MasterCard decided to partner strongly with Google in the innovation mPayment solution Google Wallet, trying to get an advantage ahead the other payment network processors by establishing its name along with Google name, as one potential strong actor in this new industry. As launching partner of Google Wallet, MasterCard gets a leading position within this digital wallet led by Google and the opportunity to be the first payment network processor to get to the market.

On the other hand, VISA, by developing its own mobile wallet, gets a chance to provide to its own consumers an exclusive mPayment solution, while VISA payment network is also available with the others mobile digital wallets. Owning its own digital wallet, gives VISA the
opportunity to arrange in exclusive agreements with the other actors involved within the business network of the mPayment setting.

As MasterCard and VISA have positioned themselves in this race for the mPayments market conquest, Discover and American Express do not want either to be left out of the mPayments stream of mobile digital wallets. Thus, in order to keep being a payment network of reference to consumers, Discover and American Express have partnered with the ISIS Mobile Wallet party.

5.2.3. Telecom Network Operator

The telecom network operator is the actor who supports the mobile telecom network. This role, performed by a mobile telephone company, provides services to mobile phones users, being the mobile network carrier actor.

Currently, in the US market there are four main players that occupy more than 90% of the mobile carrier subscription market share. The first two competitors ahead on the market, with a similar market share around 32%, are Verizon Wireless and AT&T Mobile. The other two major mobile carriers in the US industry are Sprint (17%) and T-Mobile USA (11%). Recently, in March 2011, it was published the agreement of acquisition of T-Mobile USA by AT&T Mobile, which will make AT&T the largest mobile telecom operator in the US market (T-Mobile Media Relations 2011).

![US Market: Carrier Subscription Share Q1 2011](image)

Figure 5.2 *US Market: Carrier Subscription Share Q1 2011*. Source: Chetan Sharma Consulting 2011.
Regarding the mobile wallet setting, the wallet parties are partnering with the different actors of the mobile network operator setting. Google Wallet is initially being launched by Sprint. Visa has not published yet with which mobile carrier is going to launch its mPayment digital wallet solution. And in the case of ISIS Mobile Wallet, this party is being led by three mobile carriers: Verizon, AT&T and T-Mobile. Thus, in this analysis highlights that ISIS enterprise is being led by 3 telecom operators with more than 3 quarters of the US mobile market share. Verizon, AT&T and T-Mobile together has the 76% of the market share.

One feature of interest to stand out the telecom network operator actor is its local scope. Regarding the nature of the business model in which they are involved, most of the players in the mobile operators industry are local, even when they have branches in other countries; the business strategy line is local. In particular, in the section where we analyse the scope of the wallet partnership, we observed that the scope of the ISIS party, led by three US telecom operators, was local in the US market.

5.2.4. Handset Manufacturer

The smartphone market is day by day becoming more relevant within the global mobile phone industry. Currently, the smartphone niche represents worldwide a 25% of the whole market of cell phones, in the number of units sold (Gartner Press Releases 2011, Framingham 2011, Chetan Sharma Consulting 2011). Last year, between 2010 and 2011 second quarters, the global industry of mobile phones increased in number of units sold by a 16%, while the smartphone one did it by a 73% (Gartner Press Releases 2011, Framingham 2011). In the US market, the increase of the smartphone penetration is even greater. In the first quarter of 2011, the number of smartphones sold within the US exceeded for the first time half the market (Chetan Sharma Consulting 2011). Meaning this that, currently, more than 50% of the mobile devices sold in the US are smartphones. In the next chart, developed by Chetan Sharma Consulting, a comparative evolution of the smartphone penetration on the general mobile phone market between the US and the global market is presented.
The smartphone manufacturers industry is formed by traditional mobile phones manufacturers as Nokia, Samsung, LG, Sony Ericsson, etc. and other players, like Apple, Google or RIM BlackBerry, that have joined the market in the last years with the arrival of the smartphones.

Currently, the general mobile phone market picture, as Gartner has analysed, can be summarized in the following chart that shows the worldwide vendors distribution market share by sales:

<table>
<thead>
<tr>
<th>Vendor</th>
<th>2nd-Q 2011 (Million Units)</th>
<th>2nd-Q 2011 Market Share (%)</th>
<th>2nd-Q 2010 (Million Units)</th>
<th>2nd-Q 2010 Market Share (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nokia</td>
<td>97.9</td>
<td>22.8</td>
<td>111.5</td>
<td>30.3</td>
</tr>
<tr>
<td>Samsung</td>
<td>69.8</td>
<td>16.3</td>
<td>65.3</td>
<td>17.8</td>
</tr>
<tr>
<td>LG</td>
<td>24.4</td>
<td>5.7</td>
<td>29.4</td>
<td>8.0</td>
</tr>
<tr>
<td>Apple</td>
<td>19.6</td>
<td>4.6</td>
<td>8.7</td>
<td>2.4</td>
</tr>
<tr>
<td>ZTE</td>
<td>13.1</td>
<td>3.0</td>
<td>6.7</td>
<td>1.8</td>
</tr>
<tr>
<td>RIM</td>
<td>12.7</td>
<td>3.0</td>
<td>11.6</td>
<td>3.2</td>
</tr>
<tr>
<td>HTC</td>
<td>11.0</td>
<td>2.6</td>
<td>5.9</td>
<td>1.6</td>
</tr>
<tr>
<td>Motorola</td>
<td>10.2</td>
<td>2.4</td>
<td>9.1</td>
<td>2.5</td>
</tr>
<tr>
<td>Huawei Device</td>
<td>9.0</td>
<td>2.1</td>
<td>5.3</td>
<td>1.4</td>
</tr>
<tr>
<td>Sony Ericsson</td>
<td>7.3</td>
<td>1.7</td>
<td>11.0</td>
<td>3.0</td>
</tr>
<tr>
<td>Others</td>
<td>153.7</td>
<td>35.8</td>
<td>103.4</td>
<td>28.1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>428.7</strong></td>
<td><strong>100.0</strong></td>
<td><strong>367.9</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

Figure 5.4 *Worldwide Mobile Device Sales to End Users by Vendor in 2Q11 (Millions of Units).* Source: Gartner Press Releases 2011.
Exploring the specific market of smartphones, we can get some more insights and understanding on how the smartphone manufacturers’ picture is currently distributed.

<table>
<thead>
<tr>
<th>Vendor</th>
<th>2nd-Q 2011 (Million Units)</th>
<th>2nd-Q 2011 Market Share (%)</th>
<th>2nd-Q 2010 (Million Units)</th>
<th>2nd-Q 2010 Market Share (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apple</td>
<td>20.3</td>
<td>19.1</td>
<td>8.4</td>
<td>13.0</td>
</tr>
<tr>
<td>Samsung</td>
<td>17.3</td>
<td>16.2</td>
<td>3.6</td>
<td>5.6</td>
</tr>
<tr>
<td>Nokia</td>
<td>16.7</td>
<td>15.7</td>
<td>24.0</td>
<td>37.3</td>
</tr>
<tr>
<td>RIM</td>
<td>12.4</td>
<td>11.6</td>
<td>11.2</td>
<td>17.4</td>
</tr>
<tr>
<td>HTC</td>
<td>11.7</td>
<td>11.0</td>
<td>4.4</td>
<td>6.8</td>
</tr>
<tr>
<td>Others</td>
<td>28.1</td>
<td>26.4</td>
<td>12.8</td>
<td>19.9</td>
</tr>
<tr>
<td>Total</td>
<td>106.5</td>
<td>100.0</td>
<td>64.4</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Figure 5.5 *Worldwide Smartphone Sales to End Users by Vendor in 2Q11 (Millions of Units).*
Source: IDC Worldwide Mobile Phone Tracker 2011

Analysing the table above, we can confirm that Nokia loss of market share within the global mobile phone market, it has also occurred at the smartphone market niche. Among the other four top five smartphone vendors, RIM BlackBerry has also reduced its market share in almost 6 points, while the other remaining three: Apple, Samsung and HTC has increased significantly the number of smartphones sold and their corresponding market share.

Apple leads the market with its iPhone, achieving a 19.1% of the market share in the second quarter of 2011, which implies 6 more points than the same quarter of 2010. The second position corresponds to Samsung, being the most outstanding smartphone manufacturer within the analysis shown in the table 5.7, with a 380% increase in the number of units sold during the last year. This increment in the sales of Samsung smartphone devices and the partnership between Samsung and Android partly explain the leading position of the OS from Google. HTC, which also works Android, occupies the fifth position in the ranking of smartphone vendors by worldwide market share with an 11%.

5.2.5. Trusted Service Manager

Trusted Service Manager ultimate role is to make sure the mPayment connection is secure (Planck 2011). The TSM is the actor within a mobile digital wallet partnership responsible for establishing a secure connection between the financial institution with the consumer’s account or card information, and the mobile network operator and other mPayments-related service providers supporting the transaction (VeriFone: The NFC Ecosystem 2011).

VeriFone, one of the global leader players in secure electronic payment technologies, describes the process of the TSM actor role within the NFC-based mPayments setting. Firstly,
the consumer’s card issuer shares the account or card data with the TSM. Then, is the TSM who pushes the card information onto the (NFC-enabled) smartphone NFC secure element. When the consumer taps the mobile device on the (NFC-enabled) POS, the transaction is routed to the TSM secure gateway, “which routes the transaction to the card issuer for processing and connects to the service providers for loyalty and couponing.” (VeriFone: The NFC Ecosystem 2011)

Among the different functions the TSM performs in the mPayments setting, we can highlight: (Gemalto 2008; NFC Forum White Paper 2008)

- Establish the interconnection between card issuers, and mobile network operators and service providers
- Guarantee end-to-end security, by issuing and managing a trusted execution environment
- Assign trusted areas within a trusted execution environment to a specific service
- Activate and deactivate services

The way a TSM handles security data is by coding consumer’s account or card information onto the secure element of the mobile device. Instead of actually saving the account information of consumers in the smartphone, the TSM stores a code, which eliminates a potential security risk. The code mentioned is provided by the TSM, and it is with the TSM with whom the card issuer shares the payment consumer’s data, not with the mobile device (Planck 2011). The code, managed by the TSM, that links consumer’s bank account and consumer’s smartphone is dynamic to every transaction, going one step further into the level of security of NFC-based mPayments. In this sense, NFC-based mPayments are safer than, for instance, current plastic cards that has a CVV code in the back of the card, which is used to verify within an e-commerce setting that the person who makes the payment, has the actual card.

5.2.6. Card Issuer

The card issuer is the bank or financial institution that provides the consumer with a card to perform payments through a mobile digital wallet. Since is an actor within the mPayments setting, the card provided to the consumer can be virtual, no need of an actual physical plastic card. The card issuer actor most of the times consist in the consumer’s bank, which issues different cards to its customers.

Regarding the digital wallets setting, we observed that Google Wallet has partnered with Citi, who by issuing MasterCard credit and debit cards allows paying through the mobile wallet led by Google. In the case of VISA’s Digital Wallet, along with Visa aim of trying to reach as much potential consumers as possible, Visa has already established a business interaction with a great number of financial institutions and banks (for the detailed list of financial partners see previous section 3.3.3. VISA’s Digital Wallet). ISIS party is connecting with different financial institutions to include them into their ISIS Issuers program.
5.2.7. **Point Of Sales Provider**

The Point of Sales (POS) provider is the actor that takes care of developing and managing the actual POS receiver at merchant’s stores. This role may be performed by an independent player or could also be carried out by the TSM. This actor plays an important role because of the compatibility need between the POS terminal and the smartphone, both NFC-enabled. The software of the POS needs to be compatible with the software of the mobile digital wallet, as well as both software versions also need to be up to date.

Regarding the mobile wallet setting, the different wallet partnerships have established agreements with several organizations working on this matter. For instance, at Google Wallet, in order to handle the NFC-POS-related and merchant processing issues, in addition to First Data, who plays a role within these functions as well as the TSM, Google has also partnered with VeriFone, ViVOtech, Hypercom and Ingenico (Google Wallet [1] 2011). Visa announced in its press release about the acquisition of Fundamo and the new agreement with Monitise (Visa Press Releases 2011). These two investments are part of Visa global strategy to launch VISA’s Digital Wallet, being related to develop software and hardware solutions to the POS. It is also notable that Google Wallet announced that its mPayment wallet solution it is compatible with the MasterCard PayPass-enabled POS terminals, and it will be compatible too with Visa’s PayWave system when Google Wallet starts working with Visa’s cards (Google Wallet [3] 2011).

5.2.8. **NFC Technology Provider**

As explained at the beginning of this thesis, the NFC technology consists in a two-way, short-distance, low-power communication protocol between two devices (Nosowitz 2011), the consumer’s smartphone and the merchant’s POS, both NFC-enabled. It is the NFC technology provider the actor in charge of developing the NFC chip and the secure element for the mobile device.
5.3. Summary

<table>
<thead>
<tr>
<th></th>
<th>Google Wallet</th>
<th>VISA’s Digital Wallet</th>
<th>ISIS Mobile Wallet</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Leading Partner</strong></td>
<td>Google</td>
<td>Visa</td>
<td>AT&amp;T, T-Mobile, and Verizon</td>
</tr>
<tr>
<td><strong>Origin Industry</strong></td>
<td>Internet-Tech</td>
<td>Payments</td>
<td>Telecom</td>
</tr>
<tr>
<td><strong>Goal</strong></td>
<td>Expand to a new industry</td>
<td>Maintain its payment leader position</td>
<td>Increase telecom market share</td>
</tr>
<tr>
<td><strong>Scope</strong></td>
<td>Global</td>
<td>Global</td>
<td>Local (US)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Operating System Provider</strong></th>
<th><strong>Handset Manufacturer</strong></th>
<th><strong>Mobile Network Operator</strong></th>
<th><strong>Payment Network Processor</strong></th>
<th><strong>Card Issuer</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Android (Google)</td>
<td>Not specified</td>
<td>MasterCard</td>
<td>Citi</td>
</tr>
<tr>
<td><strong>Handset Manufacturer</strong></td>
<td>Nexus (Samsung)</td>
<td>Not specified</td>
<td>Visa</td>
<td>Non-exclusive</td>
</tr>
<tr>
<td><strong>Mobile Network Operator</strong></td>
<td>Sprint</td>
<td>Not specified</td>
<td>Visa, MasterCard, Discover and American Express</td>
<td>Non-exclusive</td>
</tr>
<tr>
<td><strong>Payment Network Processor</strong></td>
<td></td>
<td></td>
<td>Visa, MasterCard, Discover and American Express</td>
<td>Not Specified</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Payment Network Processor</strong></th>
<th><strong>Card Issuer</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>MasterCard</td>
<td>Citi</td>
</tr>
<tr>
<td>Visa</td>
<td>Non-exclusive</td>
</tr>
<tr>
<td>Visa, MasterCard, Discover and American Express</td>
<td>Not Specified</td>
</tr>
</tbody>
</table>

Figure 5.6 Mobile Digital Wallet Comparative Summary Table.

The influence of the industry of origin of the leading partners drives how these digital wallet partnerships approach their goal and scope, as well as how interaction takes place among the actors involved. Exploring the structural and organizational features of the three wallet parties, we learned the existence of differences at core levels. Google Wallet is characterised by its managing partner Google, who comes from the internet and technology business, and it is a new player within the payments setting. Google drives Google Wallet objective is to expand to a new market, following a global scope. Meanwhile, Visa is driving the VISA’s Digital Wallet party, where its goal is to maintain its position as one of the leading payment processors worldwide, thus, its scope is also global. On the contrary, the scope of ISIS Mobile Wallet is local. ISIS scope is driven by its goal, which follows the objectives of the three leading partners of the wallet party: AT&T, T-Mobile and Verizon. These three US telecom operators seek to increase their corresponding market share, thus, the enterprise scope is local, being limited to the US market.
6. Discussion on the Business Network Theory Approach to the Mobile Digital Wallets Setting

6.1. Discussion based on research and industry analysis

This discussion section analyses the interaction with the origin industry actor from the perspective of the three features of the business landscape noted by the network theory. This analysis is based on the research and the industry study performed by the author of this Master Thesis. The argumentation line is structured by the three main features of the business landscape: relatedness, variety and motion. In parallel sections for each feature noted, it is analysed how the industry of origin of the leading partner of the mobile digital wallet partnerships affects interaction regarding the influence of the corresponding feature. At each feature section, I analyse how the corresponding feature influences the interaction between the wallet and its leading partner. Thus, are analysed the interactions of the OS provider, the payment processor and the telecom operator with the digital wallet.

6.1.1. Relatedness Perspective

In this section, I argue how the industry of origin of the leading partner of the mobile digital wallet partnerships affects interaction regarding the influence of the relatedness of the business landscape. The influence of the relatedness of the business landscape is presented by the team effect within the digital wallet partnerships, understood as a win-win or lose-lose interrelationship.

Exploring the effects of relatedness on the interaction that takes place within the digital wallet partnerships, I observed differences in the interaction with the industry of origin of the main partner of these wallet parties. The influence of the relatedness represented by the team effect varies from the interaction with the payment processor and the interaction with the OS provider or the telecom network operator.

The payment processor benefits from both the number of consumers of the digital wallet and the number of uses per consumer. At every payment performed from the mobile wallet, the payment processor gets certain benefit by managing the transaction. The influence of the team effect on the interaction as a win-win situation is based on both the number of consumers and the number of uses per consumer. The development and establishment of the mobile digital wallet has certain benefits for the payment network processor, but the actual repeated use of the wallet to perform payments implies a unit benefit for the payment processor as well. Thus, not only the establishment of consumers of the wallet app is beneficial at certain level to the payment processor actor, but each time the mobile wallet is used to pay a purchase, the payment processor benefits from performing the payment. In the actual case of the payment processor, the benefit coming from the uses per consumer has a greater weight than the benefit coming from the total number of consumers.
On the contrary, the OS provider and the telecom network operator, even benefitting from both the number of consumers that have the digital wallet app and the number of uses per consumer, the greater benefit for them comes from the total number of wallet consumers. The OS provider, within the interaction with the digital wallet, benefits mainly from the actual development and establishment of the wallet app. The major way the OS provider obtains benefits by partnering with a mobile digital wallet is by consumers choosing the corresponding digital wallet, which is installed on the OS of interest. Thus, the influence of the team effect on the interaction as a win-win situation with the OS provider is mainly based on the number of consumers, rather than on the number of uses per consumer. Regarding the telecom network operator, the influence of the team effect as a win-win situation is similar to the OS provider, related in a greater proportion to the number of consumers of the wallet, rather than to the uses per consumer.

Thus, it can be stated that the influence of the relatedness on the interaction with the digital wallet leading partners, represented by team effect, varies regarding the origin industry of the mentioned leading partners.

At this point, it seems important to clarify that in this section it is not being argued which the benefits are that the different actors may gain by supporting or partnering with a mobile digital wallet. But, within the interaction established between the digital wallets and the corresponding leading actors, it can be stated that certain benefits exist for these actors, which is what motivates their involvement. And these benefits can be related both to the number of consumers of the digital wallet app and the number of uses per consumer.

Accordingly, as it has been analysed studying the interaction between the digital wallets and the three corresponding main partners, it can be stated that the industry of origin affects interaction regarding the influence of the relatedness of the business landscape. On the one hand, the team effect regarding the interaction with the OS providers or with the telecom operators is based mainly on the number of consumers of the digital wallet app; while, on the other hand, on the interaction with the payment processor is based in a major proportion on the number of uses per consumer.

### 6.1.2. Variety Perspective

In this section, it is argued how the industry of origin of the leading partner of the mobile digital wallet partnerships affects interaction regarding the influence of the variety of the business landscape.

The influence of the variety of the business landscape is presented by variety in counterparts within the digital wallet partnerships. In the industry of the NFC-based mPayments mobile digital wallets the variety in counterparts is manifested in the openness of the wallet app, i.e., in how compatible with other counterparts the mobile wallet is. In order to study how variety affects the interaction between the digital wallet and its leading actor, I analyse how this
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leading actor approach openness with the wallet, i.e., how compatible the wallet is regarding the other players at the same actor position of the business network.

I analyse the effects of variety on the interaction that takes place in each wallet with the actor that represents the origin industry of the managing partner of the corresponding wallet. Hence, within Google Wallet, the influence of variety on the interaction between Google Wallet and the OS providers is explored. At VISA’s Digital Wallet, the interrelationship analysed from variety perspective is the one with the payment network processor. While within ISIS Mobile Wallet, the leading partner’s interaction is with the telecom network operator.

Google Wallet is seeking, as its leading partner, Google, has published, to be an “open commerce ecosystem” (Google Wallet FAQ 2011). In order to be an open commerce ecosystem, Google Wallet is planned to be compatible with all the major OS, not only with Google’s Android OS. Then, from the point of view of the business network theory in which the theoretical approach of this thesis is based, it can be argued that in the interaction with the leading partner actor within Google Wallet partnership the effects of variety in counterparts are enhanced. Thus, the influence of the origin industry of the leading partner at Google Wallet setting, from the perspective of the variety of the business landscape, promotes the use of the mobile digital wallet, regardless the OS that supports the wallet. This promotion of the wallet independently of the OS boosts and increases the general awareness of the mobile digital wallets, what stimulates the development and growth of the industry.

Analysing the case of how variety influences the interaction within the ISIS Mobile Wallet party with its leading partners, AT&T, T-Mobile, and Verizon, I observed that the industry of origin of the joint venture of these organizations is also highly relevant. The managing partners of the ISIS enterprise are three of the largest mobile carriers in the US market. Within the comparative industry analysis section it is been analysed that currently, between the three of them, they have a 76% of the whole US market share (Chetan Sharma Consulting 2011). ISIS Mobile Wallet is planned to be exclusive only to the three launching telecom operators. However, as they share more than three quarters of the market, it can be argued that ISIS approach is open, and within the interaction with its leading partners the effects of the variety in counterparts of the network is enhanced. Thus, as well as happens at the Google Wallet setting, the influence of the origin industry of the leading partner at ISIS, from the perspective of the variety of the business landscape, promotes the use of the mobile digital wallet, regardless the mobile carrier involved.

Meanwhile, when exploring the party formed around VISA’s Digital Wallet, it can be observed how the industry of origin of the leading partner affects interaction reducing the effects of the variety of the business landscape. VISA’s Digital Wallet is exclusive to Visa as the only payment network processor supported by the wallet. Therefore, studying this interaction between VISA’s Digital Wallet and its managing partner, from the perspective of the business network theory that supports the theoretical background of this thesis, it can be argued that the effects of variety represented by the variety in counterparts are lessened.

Hence, exploring the three digital wallet settings, it can be stated that the industry of origin of the leading partner of the mobile digital wallet partnerships affects interaction regarding the
influence of the variety of the business landscape. On the one hand, VISA’s Digital Wallet is exclusive to Visa as the only payment network processor supported by the wallet. Thus, regarding the origin industry of the leading partner, Visa approach is exclusive; and on the other hand, Google Wallet and ISIS Mobile Wallet approach seeks for an open commerce ecosystem, promoting the awareness of the digital wallets and stimulating the development of the whole mPayments industry.

6.1.3. Motion Perspective

In this section, I argue how the industry of origin of the leading partner of the mobile digital wallet partnerships affects interaction regarding the influence of the motion of the business landscape. The effect of the motion of the business landscape is presented by the influence of change within the digital wallet partnerships.

The influence of change within an industry where the players are joint ventures formed by networks of actors is highly relevant. Change always carries uncertainty. Thus, the management of the influence of change to deal with uncertainty is essential in an industry like the NFC-based mobile digital wallet partnerships, where different actors have to interact between each other to push forward the wallet common enterprise.

Exploring the effects of motion on the interaction that takes place within the digital wallet partnerships, I observed differences in the interaction with the industry of origin of the main partner of these wallet parties. The influence of change varies from the interaction with the OS provider and the interaction with the payment processor and with the telecom network operator.

The interaction between the mobile digital wallet and the OS provider is based on the nature of the OS role towards the wallet, being the OS the digital platform that actually supports the wallet app. Because of the nature of this interrelationship, the interaction established between the digital wallet app and the OS is deeply influenced by change, becoming present with the constant updating and upgrading process that OS and apps have.

On the contrary, the nature of the interactions the mobile digital wallet has with the payment processor and the telecom network operator actors are not change-based. Although these interactions are affected by change, we can observe differences on how they are influenced by change and how the interaction with the OS is. The upgrading processes that take place within the payment or the telecom networks are done internally, not on the side of consumers. Consumers rarely notice while changes within the actual network of the payment systems or the telecom ones are being performed, when actually these networks are constantly being maintained and upgraded. However, within the OS and the app setting, consumers face the constant process of updating and upgrading versions of their software, being warned of the status of the change process or even being asked if they want these changes to proceed. Thus, it can be stated that the effects of motion on the interaction with the digital wallet leading
partners, represented by the influence of change, varies regarding the origin industry of the mentioned leading partners.

Therefore, analysing the interaction between the digital wallets and the three corresponding main partners, it can be affirmed that the industry of origin affects interaction regarding the influence of the motion of the business landscape. On the one hand, the influence of change regarding the interaction with the OS providers is a crucial feature of the actual interrelationship, being explicit for consumers; while, on the other hand, on the interaction with the payment processor or with the telecom network operator is non-explicit for consumers.

6.2. Discussion based on research interviews

In this section, I deepen how the industry of origin of the leading partner of the mobile digital wallet partnerships affects interaction regarding the influence of the features of the business landscape. In order to strengthen the understanding, I have presented the discussion as well as the analysis argued in the previous section to a group of experts in the area by personal interviews. This interview process has been a constructive opportunity to review and consolidate the observations in the previous section made by the industry analysis performed. Thus, we have discussed within the interviews context the interaction with the origin industry actor from the perspective of the three main features of the business landscape: relatedness, variety and motion, and compare and contrast this review results with the observations made previously by the industry analysis.

Regarding the effects of relatedness on the interaction that takes place between the digital wallets and the leading partners, the discussion on the interviews has been focused on how the leading partners are actually benefitting from the wallet partnership. In the interviews context 6 out of 12 were with experts of the payments area, these respondents observed that within the benefits of the payment processor actor, the number of uses per consumer have a greater weight than the total number of consumers of the digital wallet. The unit profit per transaction performed with the digital wallet is higher than the benefits associated to the total number of wallet users. On the other hand, analysing the effects of relatedness on the interaction with the OS provider and with the telecom network operator, these two actors benefit mainly by the total number of wallet consumers, rather than by the number of uses per consumer. Regarding these two interactions, between the wallet and the OS provider and between the wallet and the telecom operator, most of the interviewees, 10 out of 12, noted an implication on the actors approach towards openness. They commented the influence of the profit model based on increasing the number of customers on how these leading actors may approach the wallet compatibility, being more open. This argument reinforces the observation made by the analysis of the variety perspective, in which the OS provider as well as the telecom operator adopted an active attitude towards openness.
When analysing the influence of the origin industry of the wallet leading partner from variety standpoint, the interviews discussion with the experts on networks economics, as well as with the other interviewees, were focused around the implications of the strategy line of the leading partners towards compatibility. At the interviewees we discussed Google Wallet and ISIS Mobile Wallet approach of being compatible with other players within their actor position, which implies an increase of the general awareness of the digital wallets, as well as a boost to the development and growth of the industry. On the other hand, VISA’s Digital Wallet presented an exclusive position towards Visa, which does not promote the general awareness of the wallets setting. This conclusion is reinforced by the observation discussed before at the relatedness perspective, as the unit profit per transaction performed with the digital wallet is higher than the benefits associated to the total number of wallet users the general adoption of the wallet is not promoted as the increase of use per wallet.

Regarding the influence of motion on the interaction between the wallet and its leading partner presented by the influence of change, all of the twelve interviewees observed change as a critical feature in the mobile digital wallet setting. In addition, the respondents agreed that the influence of change is presented differently in the interaction with each wallet leading partner coming from different industries. The influence of change varies from the interaction with the OS provider and the interaction with the payment processor and with the telecom network operator. As it has been analysed, on the one hand, the influence of change regarding the interaction with the OS providers is a critical feature of the actual interrelationship, being explicit for consumers; while, on the other hand, on the interaction with the payment processor or with the telecom network operator is non-explicit for consumers.

The interview process resulted highly constructive and enriching to review and validate the observations performed based on the industry analysis. In the next section are presented the conclusions of the thesis analysis based on the discussion and the research conducted.
7. Conclusions

7.1. Summary of key findings

I conclude this Master Thesis arguing that the business network theory developed within the IMP Group and proposed in “Business in Networks” (Håkansson et al. 2009) applies to the mPayments NFC-based Mobile Digital Wallets industry. The analysis based on the mentioned business network theory gives a new perspective on the study of the interaction that takes places within the mPayments industry.

This new perspective gained by applying the business network theory proposed to the new developing industry of the mPayments digital wallets, can be really advantageous when analysing how the growth and progression of the industry is going to take part. This analysis can be approached from two points of view, internal and external to the industry. Internally, the perspective the business network theory approach brings to the study of the interaction within the mPayments setting enlightens the analysis of how the digital wallets position themselves within the market, influenced by the origin industry of the leading partners. Externally, from an industry analysis angle, the business network theory perspective embraced illuminates the understanding of how the NFC-based mobile wallet mPayments setting will progress regarding the industry of origin of the leading partners of the digital wallets.

Based on the analysis performed on this thesis discussion based on a business network theory approach, the following observations are concluded as conclusions regarding the origin industry of the digital wallets leading partner.

From Google Wallet perspective, which has Google as leading partner, playing the OS provider role, the observations of this thesis analysis are the following. Regarding relatedness, the team effect represented by how Google benefits from the wallet is based mainly on the number of consumers of the digital wallet app, which implies an active attitude towards openness resulting in an increase of the general wallets awareness. From variety perspective, Google’s approach to openness by advocating wallet compatibility with other OS providers also promotes the general awareness of the mobile wallet setting, as well as the development and growth of the industry. From the standpoint of the influence of the motion of the business landscape on the interaction between the wallet and the OS provider, the influence of change is a critical feature of the actual interrelationship, being explicit for consumers.

Regarding VISA’s Digital Wallet partnership, which is led by a payment processor actor, we can conclude the following observations performed from the standpoint of the three features of the business landscape noted by the business network theory approach adopted in this thesis. From the relatedness perspective, we can conclude that Visa’s benefits coming from the number of uses per consumer has a greater weight than the benefits from the total number of wallet users. Meanwhile, from variety point of view, VISA’s Digital Wallet is exclusive to
Visa as the only payment network processor supported by the wallet, which does not promote the general awareness of the wallets setting. This conclusion is reinforced by the observation at the relatedness perspective, as the unit profit per transaction performed with the digital wallet is higher than the benefits associated to the total number of wallet users the general adoption of the wallet is not promoted as the increase of use per wallet. Regarding the effects of motion on the interaction with the payment processor presented by the influence of change, this last one is non-explicit for consumers.

ISIS Mobile Wallet, the joint venture formed by AT&T, T-Mobile and Verizon, has a telecom network operator actor as the leading partner of the digital wallet partnership. Regarding relatedness standpoint, it can be concluded that the telecom operators benefit from the number of customers of the wallet, and not from the uses per customer, which makes ISIS enterprise also to promote the general awareness of the mobile wallet setting. This strategy line towards the promotion of the general adoption of the mobile digital wallets is supported by ISIS approach to openness, being compatible within the telecom network operator actor position. The three mobile carriers that form ISIS party has around 75% of joint market share, which makes ISIS compatible to three quarters of the whole industry, which implies an increase of the general awareness of the digital wallets, as well as a boost to the development and growth of the industry. From motion perspective, the influence of change is non-explicit for consumers.

<table>
<thead>
<tr>
<th>Relatedness</th>
<th>Variety</th>
<th>Motion</th>
</tr>
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<tbody>
<tr>
<td>Google Wallet</td>
<td>total # consumers ↑ wallets awareness ↑industry development</td>
<td>open approach ↑ wallets awareness ↑industry development</td>
</tr>
<tr>
<td>VISA’s Wallet</td>
<td># uses per consumer exclusive approach does not promote wallets general setting</td>
<td>open approach ↑ wallets awareness ↑industry development</td>
</tr>
<tr>
<td>ISIS Wallet</td>
<td>total # consumers ↑ wallets awareness ↑industry development</td>
<td>open approach ↑ wallets awareness ↑industry development</td>
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Figure 7.1 Conclusions Summary Table.

Therefore, analysing the origin industry of the leading partners of the digital wallet parties is key to approach the industry analysis of the mPayments setting. This relevancy is based on the effect studied on the interaction within the wallet partnerships. Hence, when performing the industry analysis of the digital wallets mPayments setting, it is not only relevant to explore the capabilities and resources of the industry, but to analyse the interaction within the actors involved regarding a leading partner’s origin industry perspective.
Result of the analysis conducted in this study, we can answer the research question proposed, confirming the hypothesis stated at the beginning of the thesis project, that the origin industry of the leading partners influences the interaction that takes place on the digital wallet partnerships.

7.2. Future research

In this section, some areas of future research are suggested. Due to time constraints, the scope of this Master Thesis was limited.

Future work can focus on analysing the influence of the features of the business landscape on the interaction that takes place between all the actors that forms the digital wallet partnerships. As well, it would be of interest a comparative study between the different digital wallets of the mentioned influence analysis of the interaction.

Future research may also review the observations made within this thesis analysis with a quantitative study once the mobile payments industry has been completely developed, comparing both the interaction that takes place at that moment and the one that is taking place right now.

As well, it will be of interest to analyse the development of the mPayments industry in other regions, as this thesis has been focused on the US market.
References


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