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Platform business dynamics: A case study

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Abstract

In recent times a new business model, called platforms, has emerged and showed its potential. The current literature is focusing on platform elements and gives a cross-sectional view of platforms. However, there is a lack of understanding of platform’s longitudinal development over time, which this research focuses on.

This study shows the three different stages of a successful platform’s development, based on a case study. These three stages are internal platform, multi-sided platform and industry platform. Based on the case, a theoretical model is formed, which explains the development process at every stage. The theoretical model describes the actions that the platform makes at every stage in order to develop to the next stage. These actions include both improvements to the existing product or service and experimentation with new products or services. The transition from one stage to the next is marked by a conceptual insight.

Additionally, this research shows the importance of data & analytics in platform development. Data & analytics is a powerful tool to improve the existing service, and the trust on the platform, which both is shown to lead to increased network effects.

Keywords: Platform, Multi-sided, longitudinal development

Publishing language: English
Nyligen har en ny affärsmodell, nämligen plattformar, uppkommit visat sin potential. Den nuvarande litteraturen fokuserar på plattformars egenskaper och ger en statisk bild av plattformar. Detta betyder att det emellertid finns en brist på forskning om plattformars utveckling över en längre tid. Denna forskning försöker på grund av detta svara på vad plattformar gör för att utvecklas och hållas före sina rivaler.


Dessutom visar denna forskning viktigheten av data och analytik i plattformsutveckling. Data och analytik är ett kraftfullt verktyg för att förbättra den befintliga servicen och förbättrar om plattformen, som både anses leda till ökade nätverksfekter på plattformen.

| Nyckelord: Plattform, flersidig, longitudinell utveckling | Språk: Engelska |
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## Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>API</td>
<td>Application Programming Interface</td>
</tr>
<tr>
<td>App</td>
<td>Application</td>
</tr>
<tr>
<td>ETA</td>
<td>Estimated time of arrival</td>
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<tr>
<td>MSP</td>
<td>Multi-sided platform</td>
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<tr>
<td>US</td>
<td>United States</td>
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<tr>
<td>VI</td>
<td>Vertically Integrated</td>
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<td>VTOL</td>
<td>Vertical Take-Off and Landing</td>
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1. Introduction

In the field of strategy, a new topic, business model research, has recently emerged. It has been researched that business model innovation, creates more value to companies than product innovation. Business model research tackles the classical problem of value capture, by looking at it from a different perspective and calling it value creation. Traditionally only the demand side has been considered in value capturing, but now both supply and demand side value creation are taken into examination (Massa, Tucci and Afuah, 2017).

A promising business model, called a platform business model, has been increasingly popular among other things for its value creation and scalable properties (Tan et al., 2009, Gawer and Cusumano, 2013, Parker, van Alstyne and Choudary, 2016, Zhu and Furr, 2016). Platform elements have been widely researched, and there is an understanding of how platforms look like. However, there has been less research on how platforms evolve over time to stay competitive. To understand how platforms work, and how effective they can potentially be, we need to understand what platforms do to develop and stay ahead of rivals. This leads us to the research question of this study.

1.1. Research question

This study aims to understand what are the key actions that platforms need to do over time to stay competitive and evolve. The research question is therefore:

*What are the key actions of a platform that drives its evolution over time?*

1.2. Methodology

The research is done as a single longitudinal case study, following guidelines laid out by Eisenhardt (1989) on case studies. The company that is studied in this case is Uber. The key reason for which Uber was chosen, is because Uber is one of the few
companies that has successfully grown to an extremely large platform company. Uber is also one of the platform companies that has had time and resources to develop its business furthest from the initial growth stage. The other key reason is that there is a lot of public data available about the company from different sources, such as: Uber webpages, Uber Newsroom, other news, chat forums with drivers and passengers.

In the data collection, I used only publicly available data. The first step was to gather data to form an understanding of how Uber has developed over time, based on how the service they were offering had changed over time. This was done by collecting news that from Uber’s own newsroom, and also other news regarding Uber’s service at different points in time. After having formed an understanding of how and when Uber had changed their service over time, it was time to gather data on what actions Uber did to be able to change its service.

The second step was therefore to collect data on the actions that Uber did to be able to improve or change the service. Uber’s own newsroom found out to be useful again in this case, since they post from time to time their own analytics teams results, which showed the capabilities Uber had in those areas. It also showed that Uber was using data & analytics extensively to improve the service. Additionally, the news showed the vast amount of data they could access and the possibilities of what they could do with it. To find data on how the network participants reacted to different changes I gathered data from different chat forums that Uber drivers and Uber users were using to discuss topics in. The chat forums gave insights of how the network participants thought of Uber’s changes in the service. Combined all the publicly available sources gave a fair understanding of how Uber’s service had changed over time and what where the actions Uber did to make these changes.

The third step was then to try and find common patterns in the collected data. In this case, some common patterns could be seen, after which I started to form a theoretical model of the pattern. The theoretical model is created to be able to compare if the same phenomenon occurs in other platforms or in other organizations. The theoretical model was then compared with existing literature on platforms and also with literature on
organizational development. However, the theoretical model is not compared with other platform companies in this work.

The purpose of this case study is to generate a theoretical model on what platform actions are critical for success. This is done with inductive reasoning, which starts with collecting the data and analyzing it, then trying to observe common patterns and finally summarizing the findings in a theoretical model. The idea is to collect data of Uber over its entire history, so that we get a longitudinal view of how Uber has developed over time. This allows the observation of common patterns over time, which then are used to create the theoretical model of longitudinal platform development. The current research has a good cross-sectional understanding of platforms, which is why the theoretical model of longitudinal platform development adds a new dimension to our understanding of platforms.
2. Literature review

2.1. Platform theory

We will first define the term platform, to better grasp the notion of the supply and demand sides, and how they create value. After this the current research of the platform business model is presented, and also current gaps in our understanding of the topic are discussed.

The term “platform” has made several appearances in literature during recent times. There is no clear definition for the word “platform” in literature, and the term is widely used in different context. Therefore, I will now clarify the terms as described in current literature. It started first with internal platforms, then evolving to industry platforms. Considering the newest forms of sharing economy, and how companies have created their business around it, there is a term that is being used more often than others, which is called Multi-sided platforms (MSP).

2.1.1. Internal platforms & Supply-chain platforms

When a product family is built on the same frame, but the components that are connected to the frame can be varied or exchanged to create different products inside the product family, then the frame is called a platform. In the early 90’s Wheelwright & Clark (1992) called these frames “product platforms”. This is the first times when platforms are mentioned in this context in literature. These product platforms have later started to be called Internal platforms, since they are usually managed within a single company (Gawer and Cusumano, 2013). If the product platforms are not entirely managed inside a single company, but for example the connected components are managed partly by suppliers, then the internal platform would be a supply-chain platform (Gawer & Cusumano, 2013, Gawer 2014).
2.1.2. Industry platforms

According to strategy literature an Industry platform is a product or service that is produced by a company, on top of which other companies can build complementary products or services. The Industry platform resembles a product platform, the product frame is the product or service in this case, and the components are the complementary products or services that are produced by other companies. The main difference between internal and industry platforms is the openness of the platform. In internal and supply-chain platforms the access to the platform is limited to inside the company or the supply-chain. Meanwhile in industry platforms the platform is open to other companies, but the degree of openness can be altered. The industry platform can be referred to as an external platform. (Gawer & Cusumano, 2013)

The industry platform allows more innovations to grow, since there is a larger pool of resources that can work on building new things, compared with internal platforms where the resources are limited and there are design principles that might constrain some types of innovation (Gawer & Cusumano, 2013). However, some of the external complementors might develop capabilities that become critical for the platforms success, which means that they can control even more of the platform, turning them into competitors. This is why platforms should be follow closely the complementors actions and take measures before some of the complementors turn into rivals. (Gawer, 2014)

Industry platforms are in fact from the beginning internal platforms that have opened their interfaces and evolved into an industry platform. For example, IBM was a successful computer manufacturer, and they had an internal platform called IBM System/360 that served as a platform for the computers. However, over time other companies started recruiting IBM employees that had knowledge of the internal platform, so that the competitors could produce compatible products for the computers. This way the internal platform evolved unwillingly to an industry platform, since other companies could access the interfaces. (Gawer, 2014) However, the evolution to an industry platform can also be a conscious choice by the company. For example,
Amazon and Uber have chosen to offer Application Programming Interfaces (API) to anyone to access their platforms.

According to current literature there is also another feature, apart from the openness, which distinguishes industry platforms from internal platforms. This feature is the emergence of network effects. In internal platforms, there is no network effects since the platform is closed. In industrial platforms, as the number of participants and complements increases, it makes the platform more attractive and useful for others, which again increases the number of participants and this is called network effects. (Gawer & Cusumano, 2013)

The term industrial platform is a good general term for platforms. However, the current literature lacks some important features of platforms when discussing industrial platforms. The industrial platform term considers mostly how complementors should be managed and what their role is on the platform. A lot of the success of industrial platforms is being explained by the emergence of complementors to the platforms. I agree that complementors and how they are managed is crucial for the success of a platform, but it is not the only factor and there are many things to consider before a platform gets to that stage that it opens its interfaces to complementors. First the dynamics of the core interaction between the different sides should be understood and designed, the core interaction is discussed more in detail in the chapter 2.2 Multi-sided platform elements. Secondly, the influence of network effects should be evaluated more thoroughly. Currently the literature suggests that internal platforms don’t have networks effects, whereas industrial platforms have them. However, network effects can emerge on internal platforms also, and they don’t necessarily require that the platform has complementors, as in industrial platforms. Network effects can emerge when a product or service becomes more useful for the customer if more people are using the product or service, for example the telephone. This means that the difference between internal and industrial platforms can’t be that only industrial platforms have network effects. Thirdly, the evolution of an internal platform to an industrial platform is not described in the literature. The main argument that is used for the transformation of the platform is the opening of interfaces and allowing complements to the platform, which makes the platform an industrial platform. While I think that it would be crucial
for a platform to understand its core interaction and how network effects affect their growth, before starting to think of opening the interfaces to complementors.

2.1.3. Multi-sided platform

Marketplaces have existed since ancient times. In marketplaces people that wanted to sell their products they had made or produced, could come to the marketplace at a certain time and day of the week, and people that wanted to buy things would come to the marketplace at that same time, and then the sellers and the buyers would meet. Nowadays, a marketplace that facilitates a trade between two or more sides is called a Multi-sided platform by researchers in industrial organization economics (Hagiu and Wright, 2015). The Multi-sided platforms (MSP) reminds in many ways an old marketplace, but the difference to an old marketplace is that the MSP is not tied to a certain place or time.

According to the most recent literature there are two characteristic features for a MSP. First, the MSP should “enable direct interactions between two or more distinct sides”, secondly “each side is affiliated with the platform” (Hagiu and Wright, 2015). Direct interaction meaning that the sides have control of the key terms of the interaction. Affiliation meaning that both sides make investments to the specific platform that the interactions happen through. These investments can be for example a fixed monthly payment or spending time to learn how to program with the platforms tools. The first requirement of direct interactions distinguishes the MSP from a pure re-seller and a vertically integrated firm. The second requirement of affiliation separates the MSP from input supplier business model. Figure 1 shows the MPS, re-seller, vertically integrated and the input supplier business models.
The multi-sided platform term does a good job defining the dynamics of the core interaction between the two distinct sides, and their affiliation to the platform. To understand the dynamics of a platform is important, since the business model is entirely different from the existing business models, where the company has usually been between the two sides as we see in figure 1. Whereas, in modern platforms, the platform is only facilitating a direct interaction between the sides. The term is also helpful in identifying the different business models and to be able to categorize which companies are platforms and which ones are for example traditional resellers.

Additionally, the multi-sided platform term helps to better understand the nature of network effects. Since network effects emerge when the number of participants increase on one side, the distinction of two clearly defined sides help to understand how and which of the sides are resulting in the network effects.

The multi-sided platform term is a good to explain the basics of a platform, but it doesn’t take all of the factors into consideration in the evolution of the platform. The
multi-sided platform is not taking complementors into consideration in the overall picture. The role of complementors is not clearly mentioned in the literature, which is why the literature on internal and industrial platforms claims that multi-sided platforms resemble supply-chain platforms. I think that multi-sided platforms are categorized as supply-chain platforms since the term doesn’t fit to the internal platform description or the industrial platform description. It feels that the term multi-sided platform is forced to fit to supply-chain platforms, since it was the term that was the least different of the three terms. The only reason why it could not be an industrial platform is the lack of complementors, and it could not be an internal platform since the producing side can be from outside the company. However, I think that the supply-chain platform is not describing the facilitation of a direct interaction between two distinct sides, neither does it describe the direct affiliation with the platform that is needed. The best solution would be to use a combination of the two terms, multi-sided platform and supply-chain platforms. For example, as the main term multi-sided platforms could be used, and some of the features of the supply-chain platform could be added to be included in the multi-sided platform term. The additional features from the supply-chain could be that the interfaces of the platform are somewhat open and the governance is done with contractual relationships (Gawer, 2014). This addition would clarify the multi-sided platform term, but it would still not be able to include the complementors.

2.1.4. Multi-sided platform vs Industry platform

The multi-sided platform is not the same as an industry platform, but they might share similar traits in some cases. The strategy researchers say that industry platforms are similar to MSPs, since both platforms have indirect network effects (Gawer & Cusumano, 2013). However, industrial organization economics say that also traditional businesses can have indirect network effects (Hagiu and Wright, 2015). Indirect network effects mean that if for example the number of complements increase, then the demand on the customer side would increase because of more complements. One example of traditional company where there can be indirect network effects is a supermarket. If the number of vegetable suppliers in a supermarket would increase, it
would lead to a broader assortment in the store which would attract more customers to the store. Strategy researchers also imply that if the MSP is only facilitating a transaction and not allowing innovation among its complementors, then it should be called a supply-chain platform and not an Industry platform (Gawer & Cusumano, 2013).

In some cases, a MSP can be an industry platform and vice versa. As an example, Apple’s iPhone with its App store. The iPhone is the product, and the apps are complementary products that are sold to the consumer through the iPhone, which makes it an industry platform. Similarly, the iPhone lets the consumer buy apps and have a direct interaction with the app producers. The consumer is affiliated with Apple since they have to buy the iPhone to access the App store, and the app developers have to pay a fee for using Apple’s developer tools.

One example where a platform is seen only as a MSP and not as an Industry platform is Airbnb. Airbnb offers home-owners a marketplace to rent their homes, and for travelers to rent a place to stay. It is the home-owners that decide the price, thereby controlling the key terms of the interaction, which was the definition of direct interaction for MSPs. The home-owners are affiliated with the platform since they have to take time to upload their information to the platform, same applies to travelers that have to sign on to the platform to be able to rent a place to stay. Trying to describe the Airbnb using the Industry platform term is difficult, since Airbnb is not selling a product or service to customers, but instead they are acting as a market facilitator. In the Industry platform, the home-owners would be the complementors, when in fact they are a key part of the offering.

Based on the literature and on the two examples it can be concluded that the terms MSP and Industry platform are useful concepts, but they should be used for describing separate things. When referring to a platform that enables a direct interaction between two or more distinct sides, it should be called a Multi-sided Platform. With the help of the MSP definition, we are able to better understand the relationship between the different sides, and how the nature of direct interaction affects the transaction in terms
of trust and other factors. Furthermore, when referring to a platform that enables third parties to offer complementary services, it should be referred to as an industry platform.

2.2. Multi-sided platform (MSP) elements

There are four main elements in the MSP to consider. The first element is linked to the creation of a MSP, which is platform design. Once the platform is functioning, the second element to consider is platform governance. The last two elements, which are crucial for the platform to grow and succeed, are network effects and data & analytics. (Parker, van Alstyne and Choudary, 2016)

Figure 2. Platform elements

2.2.1. Platform design

The creation of a platform starts with platform design. The platform design is about planning the core interaction that the platform is going to enable. The core interaction
consists of three components, the participants, the value unit and the filter. (Parker, van Alstyne and Choudary, 2016) In the basic core interaction, there are two participants, which are the producer and the consumer. The second component is the value unit, which is a single actual product or service that the producer is looking to sell or exchange. The value unit can for example be a home-owners (producer) house listing on Airbnb. The third factor is the filter that is deciding what value units are shown to which consumers according to their relevance for the consumer. Without the filter the consumers would be overwhelmed with the vast amount of value units, which would lead the consumers confused for not finding what they are needing. In order to succeed in designing the core interaction, all three components have to be clearly defined and considered.

The core interaction is describes very simplified the transactions that take place on a platform. When the platform is created the core interaction needs to be considered, and the description helps to plan it. However, this is only when the platform is created, since when the platform evolves, the participants might change, there can be multiple value-units and the filters can have different functions. Also the core interaction design does not take into consideration third parties, and how they affect the interactions on the platform. When the platform evolves over time, the complexity of the core interaction and other interactions increases remarkably.

2.2.2. Platform governance

After the core interaction has been designed, the following step is to consider the governance of the platform. Governance of the platform includes controlling who can access the platform, the quality and monetization of the platform. The platform owner can decide how open or closed the platform is, and who gets access to it. Access for complementors should also be considered, if the complementors are delivering a product or service that is crucial in the value creation of the platform, then the platform should consider doing it by its own and limiting the complementors access. The platform should also strive to maintain a high quality of the platform interface, and a high quality on the transactions. High quality of transactions means that the platform
is able to filter relevant value units for the participants. The third thing in platform governance is monetization. This means how does the platform generate revenue. A lot of users are not valuable if the platform can’t charge anything from them. Platforms have a lot of different options for monetization. For example, not all participants need to be charged, but one side can pay and the other side is not paying. The non-paying side is called subsidy side and it is usually the more price sensitive side that is subsidized. There are also different ways of charging participants, which can be for example, charging a transaction fee, charging for access or charging for enhanced access. (Parker, van Alstyne and Choudary, 2016)

All three mentioned governance factors influence each other. Controlling access is important in order to maintain the high quality of the platform, since there will more serious participants and less noise. Controlling access can affect the revenue for the platform, since if the platform is open for any complements, some of the revenue might go to complements if they play a central role in the value creation. Charging a fee for access can also function as a controlling mechanism since it might discourage unserious participants to access the platform. (Parker, van Alstyne and Choudary, 2016)

Although the research has identified the mentioned three factors that affect platform governance, the research doesn’t tell us how much the quality affects the users of the platforms. Should the quality for example be high in all of the cases, or should it be the lowest acceptable level of quality, and how these differences affect the value creation among users on the platform. The research also suggests different methods of charging users, but it is not specified which method is best suitable for different platforms. Additionally, the knowledge on how the pricing decisions affect the platform growth is still very limited. The research has some contradictions, since it suggests that platforms should grow at every cost, meaning that the platform should be free to use, and at the same time it is known that it is difficult to charge participants for something that they were used to get for free.
2.2.3. Network effects

The third element in MSPs is network effect. Network effects mean that when more users are joining a platform the more valuable the platform will be, which once more attracts even further users. There is a lower limit of participants before the network effects have impact, which is called a critical mass. When the critical mass of participants is surpassed, the value that the large number of participants create, exceeds the cost of joining the platform. This is when network effects start attracting more and more participants, and it is in a way a self-reinforcing phenomenon that fuels itself, which can be called a virtuous cycle or positive feedback loop. Network effects can be divided into two different types of network effects, same-side and cross-side effects.

There can also be both positive and negative network effects. (Parker, van Alstyne and Choudary, 2016) The same-side network effects, also called direct network effects, start affecting when more participants from the same side join the platform and the high number of participants attract more participants of the same side. If we look for example on an online gaming platform, the more players the platform has, the more value it has for new players since they have more participants to play with, this phenomenon is called same-side network effects. This example illustrates positive same-side network effects, since the number of participants is increasing, negative same-side network effects would mean that participants would leave the platform when the number of participants would increase. This could for example happen with Airbnb, if the number of travelers is increasing, then it will be more difficult for travelers to find accommodation since the demand has increased, which would mean that some participants would leave the platform. The other type of network effects are cross-side effects, even called indirect network effects. When participants on one side increase, and it attracts more participants on the other side, the effect is called cross-side network effect. An example of positive cross-side effects could be that more home-owners listing their homes for rent on Airbnb would increase the number of travelers to join Airbnb since there is an increased supply. A negative cross-side effect could be if the number of advertisers on Facebook would increase too much, then it could affect users to leave the platform.
Network effects is not a new phenomenon. For example, in old marketplaces, an increase in the number of sellers would make the marketplace more attractive for customers, which would describe a positive cross-side network effect. Also the example of supermarkets mentioned earlier, where an increase in the number of suppliers would eventually lead to an increase the number of customers in the supermarket. Recent technological development has led to that an actual product is valued based on the network of users of the product. This means that the actual product is not valuable to the user, but instead the network of users is why the user buys the product. The telephone is a good example of this. A telephone is useless for a person if their friends don’t have one also, since then the person would not have anyone to call. The more people have a telephone the more valuable it is for every user, since they can call more people. This is where you should pay attention, the mistake here is to assume that only the size of the network is influencing the network effects, and that a bigger network automatically leads to larger and stronger network effects. The current research on platforms and network effects suggests in many cases that it is the size of the network that decides how strong the network effects are. Now I will present some factors that could affect network effects more than just the size of the network.

In the example with the telephone, the user gets more value when the number of users increases, meaning that the network grows. What if the user’s friends don’t have a telephone, but still the overall number of users is increasing, will the telephone be valuable for the user? In this case the user does not have anyone to call, which means that the telephone is useless for him. The meaning with this example was to show that it is not always the size of the network that matters, but more importantly the structure of the network.

Recent research suggests that strength of network effects is not only about size, but also about the structure of the network. The centrality of the members in the network play an important role, and also the structural holes within the network affects the network effects (Afuah, 2013). This means that more central members are more important to a network since they have a larger probability to affect others in the network, which leads to stronger network effects. The research argues also that
bridging structural holes within the network is important, and that it will increase the network effects remarkably.

Additional factors that influence the strength of network effects are the feasibility of the transactions and the number of roles each participant plays (Afuah, 2013). The feasibility of the transactions means how useful the transaction is for the participants. This means that the transactions have to in some way add value to the participants so that they will use the product or service. This is also a crucial factor in the whole existence of a platform, since the participants have to get some value out of using the platform, otherwise the participants will abandon the platform. The role that each participant plays affects the network effects, since for example in an online marketplace one buyer of an item doesn’t attract many sellers to the marketplace, but on the other hand one seller might attract many buyers to the marketplace. Therefore, a participant that plays both the roles of a buyer and a seller is creating more network effects than a participant that plays only one role. This is why platforms should distinguish between participants, since certain participants might attract more users than others.

So far we have seen that the structure and the different roles of the participants have a big impact on network effects. In addition to these two factors, there is one important factor, which is trust. The perceived trust among participants affects a lot the behavior of the participants. If the participants feel that the network or platform is safe, they are more comfortable in doing transactions through the platform, and therefore also increasing network effects. Things that affect the trust in a network is the reputation of the participants and the level of opportunistic behavior among participants (Afuah, 2013). If the network is able to increase the reputation of the participants and reduce the level of opportunistic behavior, it will probably increase the value the network creates, and also attract more users and there will be stronger network effects.

The timing of attracting as much participants to a platform has been perceived as important, since it has been thought that reaching the critical size of the platform would decide the success of the platform (Parker, van Alstyne and Choudary, 2016). Now, since the size of the platform is not as important, and there are other things that affect
network effects, the timing is not as important as improving the mentioned factors, which were structure, roles and trust among the platform. These factors affect how valuable the platform is for customers, and therefore it is important to consider these factors over the whole lifetime of a platform (Afuah, 2013).

The research on network effects has identified some of the key factors that affect network effects, we can’t be entirely sure if the identified factors are the only factors, or if there is still some that haven’t been considered. However, the research has not been able to answer how the strength of network effects is measured, and if there is a limit to the size of network effects, or if they are infinite. The research on network effects is on a good way, but there are still things to consider before companies can in a controlled way leverage the network effects.

2.2.4. Data & analytics

Data & analytics is the fourth element of MSP elements. The use of data can be divided into tactical and strategical data use (Parker, van Alstyne and Choudary, 2016). Tactical use of data means that platforms can gather data on the user’s behavior by testing different alternations of the platform. An example of this could be alternating the place of the buy button, the platform can learn which places of the buy button works the best from testing it on users. The other form of use is strategical data use, which means that value creation on the platform would be monitored, and the data would show where and by who value is created on the platform, based on the data analysis. Based on the collected data and the data analysis, the platform owner could better develop the value creation on the platform. This way the data becomes an important part of the value creation, and others without access to the data can not create the same value (Parker, van Alstyne and Choudary, 2016). On top of this, the data the platform collects is usually free, since it comes from the participants when they use the platform (Gawer, 2014). The more participants use the platform the more data the platform can gather, which means it will be even harder for competitors to collect the same amount of data as a large platform.
The tactical and strategical data use gives the platform a competitive edge compared to other companies that don’t have access or are not using their data. However, the importance of data analysis is in general not identified as a critical factor for success in platforms. If we consider current platforms, most of them are digital, or at least have a digital dimension for facilitating the interaction. Usually the platform is accessed through an application that is on a smart phone. The application can collect vast amounts of data of the user. This means that the platform has access to a lot of information about every user, such as with which other participants they are exchanging products or services, location, time spent on application, time of day when the application is opened, how many times the application has been opened, to name a few examples. The more users the platform has, the more data they will get. When the platform has gathered enough data, it can be used to identify habits of people of how, what and when they are buying something. This information is valuable for the platform, since when they can better recognize patterns of people they can make changes to the service for example to maximize the platform revenue. Apart from recognizing patterns in human behavior the data can be used to improve the product or service, by for example optimizing the system to reduce costs or to improve the customer experience. Analyzing the data requires a lot of knowledge and resources, but it could possibly give the platform a competitive advantage, that competitors can’t beat since they don’t have the data or the knowledge to use it.

Data & analytics could be used for analyzing the factors that affect network effects. These factors were the structure, roles and trust among participants in a network. Since the platform collects vast amounts of data of the participants, this data could be used to analyze the structure of the network. The data would also show the roles of the participants. By analyzing the structure and the roles of the participants, the platform could easily try to improve these factors and thereby increase the network effects on the platform. Data & analytics could be used to improve trust among participants of the platform, by excluding badly or opportunistically behaving participants. All in all, data & analytics could be used to increase network effects on a platform, and it could possibly be used for analyzing and measuring the strength of network effects on a platform, which is a topic that current research is trying to understand.
2.3. Limitations of the MSP research

The basic elements of MSPs were presented in the previous chapter, but now we will examine some of the limitations considering the elements.

The biggest gap in research is how platforms evolve over time. Research has focused on a static description of platforms. The key elements of platforms have been identified, and some of the mechanisms for growth, such as network effects. Still the definition of network effects is very vague and is not taking into consideration the development of platforms over time. What currently is missing from the research, is the study on how platforms evolve over time, and what factors make them successful in the long run. In today’s global world the competition is fierce, and there are competitors that will challenge big platform companies even if they have grown huge, what are the actions platforms make in order to stay successful. Another problem that also the big platforms are facing, is the innovators dilemma by Clay Christensen (1997). The innovators dilemma suggests that the success ties a company to its current customers and product. This means that it is difficult to change the product over time. How platforms evolve over time, is the problem that this case study is aiming to examine deeper and hopefully bring some new insights on.

Besides from not having a clear understanding of how platforms evolve over time, there are some elements in the current literature that can also be further researched. Recent research has shown that network effects do not only depend on how many participants the network has. This means that having only a large number of participants, exceeding the critical mass, does not automatically lead to network effects. Also, the intensity of network effects has been questioned, since many times network effects are assumed to be automatic and almost infinite. According to new research, things that affect the intensity of network effects are the centrality of the participant, number of roles played and opportunism (Afuah 2013). This means that more central participants are more valuable to the network since they are creating more network effects. The number of roles played means that a participant that is at the same time a producer and a consumer, depending on the transaction, is creating more value than a participant that is only a consumer. Thirdly has been noticed that opportunism reduces
the value created for the participants, which means that the platform should enhance trust to reduce opportunism. This leads us to the following topic that is trust.

Trust and safety is occasionally mentioned in literature as important for MSPs. However, when trust is discussed, the message has been that trust is important, but the implications have not been discussed further. The rating and review systems have been presented, and their importance for preventing improper behavior (Hagiu and Rothman, 2016). But the implications of rating and review systems and trust in general on the intensity of network effects has rarely been discussed (Afuah, 2013).

Commonly in platform literature, the mentality has been for the platform to succeed it must grow, at any cost, and wait for the network effects to start working. Growing at any cost has meant that in most cases the participants have not brought in any revenue, and the idea has been that once the platform is big enough they can start charging the participants. This strategy hasn’t proven to be that sufficient, since it is usually hard to monetize on the participants that have got used to the free service. An alternative strategy would be to develop and improve the core interaction and monetization before starting to expand. (Hagiu and Rothman 2016)

2.4. Organizational development

The organizational theory could give some helpful insights to platform development from how organizations develop to maintain high organizational performance. Siggelkow (2002) suggests that there are 4 processes that organizations use to develop their fit. These four processes are patching, thickening, coasting and trimming.

Patching means that the organization develops a new core element that is central and highly interdependent with other elements. This can be compared with platforms when they develop a new element that is central and linked with the core product or service. Thickening again means that a new element is added to an already existing core element. This makes the existing core element further reinforced. The new added element is not by itself a core element, rather an element that reinforces a core element.
The term thickening could be used to describe when platforms add features or improvements to their product or service. The term coasting means that no changes are made to the elements, in these cases the elements are working as they are and they are not changed. Coasting can be used for those processes that are left unchanged in the platform. The process of trimming is define as removing an existing core element, and therefore making the whole organization simpler. Trimming can be used to describe if some process or feature is removed from the platform. (Siggelkow, 2002)

These four processes form 2 different strategies for organizations to develop their organizational performance. The first strategy is thin-to-thick, which means that the organization only thickens the existing elements over time (Siggelkow, 2002). The thin-to-thick strategy is similar to entrepreneurial and umbrella strategy (Mintzberg & Waters, 1985). The second strategy is called patch-by-patch which again suggests that the organization evolves over time by patching, which means that they add new core elements and build the organization that way. In many cases the actual strategy of an organization is a mix of the two mentioned strategies. (Siggelkow, 2002)

Even though there are two different strategies for developing organizational performance, both strategies are often used by organizations. The research doesn’t answer the question of in which situations organizations should use which strategy, and what the outcomes are in different situations. It is also unclear if both strategies should be used in parallel or in sequence. Since there is a difference if an organization is using thin-to-thick and patch-by-patch strategies simultaneously, or if the organization uses first thin-to-thick and after that it continues with the patch-by-patch strategy. If the organization uses the strategies after one another, the order of strategies would have a difference. The theory suggests that there are in total 4 processes that organizations can use to increase their performance, but in the strategies, only two of the total four processes are included. This leaves us with the question of when to use the remaining two processes, coasting and trimming. The theory helps us to identify and understand basic phenomena of how organizations can develop over time, but it doesn’t give us practical tools that could be applied to deciding the strategies for developing organizational performance.
2.5. Technological change

There are also other theories that examines technological change. Anderson and Tushman (1990) suggest that times of incremental technical improvement can be interrupted by technological breakthroughs. The time after a technological breakthrough is called an era of ferment, when various technological experimentations emerge. However, after a while of an era of ferment, usually a dominant design emerges, and the variety of technological experimentations scaled down, and the time after a dominant design has emerged is called a time of incremental technical progress. The dominant design means that most of the industry adopts one of the designs, which then is improved over time. The research suggests that technological advance is driven by three things which are, chance and randomness (variation), actions of individuals and organizations (selection) and the existing actions that organizations do in order to stay competitive (retention). Additionally, the research suggests that organizations should both have capabilities to improve the existing dominant design, and at the same time be able to create entirely new breakthrough technologies. Organizations also have to react quickly to technological breakthroughs, which they can manage either by being the one that invents the technological breakthrough or by being quick to adopt the new technology. (Anderson & Tushman, 1990)

Historically, when the new dominant design has emerged, it has almost in every case totally replaced the old technology. When a new dominant design has emerged, the old technology is eventually abandoned completely. Could it be possible for a new dominant design to co-exist with the old dominant technology? What if the new dominant design is totally new, but instead of replacing the old technology it would be complementing it. This could be possible if for example the new technology is expanding to another field, combining the new field with the old technology and field. This would mean that the combination of technologies and fields would result in the new dominant design, but the old technology would still be needed as it is for the whole new technology to work. Instead of replacing the old technology, the new technology would rely on the old technology to work.
3. Case analysis: Uber

3.1. Structure of the analysis

The structure of the analysis is divided into three different parts depending on the stage of development of the company. These three stages are: service business, creation of platform (1st stage platform) and platform development (2nd stage platform). For all three stages I will describe the current stage’s characteristics and target group, and also what are the developments are made during each stage. For the two last stages of the platform I will also analyze separately hygiene factors that are needed for the platform to exist and differentiating factors that enable the company’s competitiveness. The hygiene factors are trust, facilitation and incentives, and differentiating factors that will be discussed are unused assets and data & analytics improvement. I will additionally present the two conceptual insights that mark the transition of one stage to the next one.

3.2. Uber presentation

The idea for Uber was born in 2008 when Travis Kalanick and Garrett Camp were on a trip to Paris and they had difficulties to get a taxi. They thought that it would be convenient to order a taxi with your mobile phone. Based on this thought UberCab
was founded in 2009 by Travis Kalanick and Garrett Camp. UberCab started out first in San Francisco, later expanding to other large cities in the US and to other large cities worldwide. (Uber Newsroom, 2010) UberCab changed its name to Uber in 2011. Uber’s valuation has grown from nothing to 62.5 billion dollars (2015) in just six years (Bloomberg, 2015).

3.3. Service business (early stage)

3.3.1. Early business model

Figure 4. Early business model dynamics
UberCab launched its first mobile phone application in San Francisco in June 2010. In the first business model, Uber had made deals with private hire cars and local taxis that Uber would forward the ride requests they got from the app to the private hire cars and local taxis. Customers could request for a private hire car or a taxi through the UberCab application or by sending a SMS message with the address they wanted to be picked up from (TechCrunch, 2010). When opening the customer version of the UberCab application, the passenger could see their current location on a map, to send a ride request the passenger had to check that they had the correct location that they would want to be picked up from and press “confirm pick-up location” button. If the passenger wanted to be picked up from another location, they could just move the location pin on the map, and then press the “confirm pick-up location” button. Then this ride request would go to the closest vacant driver that has a driver version of the UberCab application, which then shows an incoming ride request and the name and rating of the passenger. The driver has then 15 seconds to either accept or decline the request, if the driver accepts the request, then the passenger will see the estimated arrival time of the car. If the driver declines the request, then the request is sent to the 2nd nearest vacant driver and so on. This describes the first step of exchanging information and matching that the application does, which is pictured in figure 4. After the driver has accepted the passenger’s request there are 2 options, the first option is just to wait for the car to arrive and use it like a normal taxi, meaning that the passenger tells the driver where he wants to go and then the driver fills in the destination in the driver’s UberCab application. The second option is that the passenger fills in the destination while waiting for the car to arrive, when the car arrives the passenger gets in the car and the driver already knows where the passenger wants to go, since he got the destination through the UberCab app. This is the second step in the service interaction, which consists of exchanging the service, that is pictured in figure 4. When the car then arrives at the destination, the application will charge the passenger’s credit card directly through the application, and UberCab will pay the amount reduced by UberCab’s share to the private hire car or taxi company. The final step of the service interaction was the exchange of currency that is illustrated in figure 4. After the ride the application will ask both the passenger and the driver to rate each other on a scale from 1 to 5 stars. (UberCab, 2010)
3.3.2. Target group

During the early stage of UberCab the target group consisted of customers that used taxis. This group includes for example businesspersons that need to travel fast and convenient due to their work, people that need transportation from restaurants or bars, travelers and generally people that need transportation and can afford it. Since the UberCab application is enabling to request a private hire car or a taxi with a phone, then the target customer for UberCab must be people that can afford taking a taxi. There are different elements that affect the choice of transportation, such as the price, the time that it will take, the available options and the user experience.

3.3.3. Payment

There was only one option for the payment when using UberCab application, which was to pay through the UberCab application with the passenger’s credit card. Using this alternative, it is more convenient for the customer and the driver since there is no hassle with cash payments in the car. UberCab app knows the distance and duration
for the ride, since it knows the starting point and the destination, based on the distance, duration and the demand of rides at that time the price is calculated by UberCab (TechCrunch, 2010). The price is then immediately paid to UberCab from the passenger’s credit card, which is linked to the UberCab application, and the price is then displayed on both the passenger’s and the driver’s respective UberCab applications (UberCab, 2010). The amount that is attributable for the private hire car or taxi is paid by Uber to the private hire car or taxi company. The amount that the private hire car or taxi company receives is the price for the ride deducted with a fixed percentage that Uber has decided.

3.4. Development during early stage

3.4.1. Service development

Already right from the start Uber was focusing on improving the service to be reliable and fast in getting rides. They were monitoring the time it took for the cars to pick up passengers around the clock, depending on different times of the day. Uber was also monitoring how many passengers were active and how many drivers were active during different times of the day. To monitor all of these different variables they used a so called “God’s view” that showed the location of all drivers and passengers that had requested rides (Wired, 2011). Additionally, they had heat maps of the city that showed the waiting times for a ride in different areas (Wired, 2011). With precise monitoring, they could see how long the waiting, ride and transit times were for the cars. The “God’s view” and heat map were only seen by the Uber development team, because if all of the drivers would see the heat map they would go directly to the crowded areas and the other areas would not have any drivers.

As we can see from the examples with the “God’s view” and the heat maps, Uber was using data and analytics extensively to improve the service. It was insights from the data analysis lead them to the idea of the surge pricing mechanism. Since the waiting times grew too long during high demand, Uber decided to create the surge pricing mechanism. Surge pricing means that the price for a ride is higher when the demand
for rides is higher. This mechanism was designed to attract more drivers to drive during high demand, because now they would get better paid for the rides during high demand, and more drivers would mean shorter waiting times. (Uber, 2017) Uber used data and analytics also to improve the time and price estimates in the Uber application based on the data they had collected.

3.4.2. Attracting customers

In the beginning, Uber targeted cities where there was difficult to get a taxi, for example San Francisco and New York City. Additionally, Uber had targeted marketing during holidays or big public events, during which the demand for taxis would be higher than normal. (Blanding, 2016) This would then get the people to start using Uber, and when they realize how easy it was they would start using it for everyday trips and spread the word to their friends.

3.4.3. Network effects

More people using Uber meant the private hire cars would have more passengers and could earn more. This would then attract new private hire cars to drive for Uber. More
cars driving would reduce the waiting times and increase the coverage of the service. This improvement in the service would then attract more passengers. As we now see this is a loop that is self-reinforcing, also called a virtuous cycle, which increases the coverage density of the service continuously. (Parker, van Alstyne and Choudary, 2016) The network effects are illustrated in figure 4 in the first step with exchange of information and matching.

3.4.4. Pricing

The price of rides in the beginning for private hire cars was about 1.5 to 2 times higher than normal taxis. This was because Uber positioned itself as a luxury transportation provider, and the private hire cars were usually more expensive black sedan cars. Uber was also reasoning that they had a faster and more reliable service than normal taxis which would explain the 50-100% price premium. Uber was still cheaper than the price for a traditional car service. (TechCrunch, 2010) The pricing was also depending on supply of cars and demand for rides. There is the surge pricing mechanism that increases the price for rides when demand is going to exceed supply. (Uber Newsroom, 2012) This way Uber tries to increase supply by attracting more drivers to meet demand, and at the same time maximize the profits by maximizing completed rides. The surge pricing mechanism was a result of the comprehensive use of data & analytics that Uber worked with in the beginning when trying to improve the service. The surge pricing mechanism recognizes when demand is increasing above the supply of cars, meaning that the average waiting times increase over certain limit. Then the surge pricing will put a small multiplier on the normal price for a trip. If the demand is very high, then the multiplier grows. In one extreme case the multiple was 50 times the normal price, which means that a trip that normally costs 10€ would cost, with the 50x multiplier, 500€ in total. High multipliers have obviously not been welcomed warmly by the passengers. (Dholakia, 2015) Later on, Uber introduced a limit on the surge pricing multiple, which would mean that the multiplier would not grow endlessly.
3.4.5. Governance

Uber has already from the beginning been the one deciding the price for the rides and how big the percentage is that Uber keeps, for the moment Uber has been keeping 20% of the total driver revenue but Uber has been experimenting with different fees in different cities. (Business insider, 2014)

Having high levels of trust among the users of the service has been important for Uber. For a driver to join the platform there are certain minimal requirements, in order to keep a high quality. Passengers joining don’t have to fill any requirements. Additionally, the rating system has been part of the application from the beginning. The rating implies that drivers with bad ratings are excluded from the platform. The rating threshold depends on the number of trips driven and it can vary between different cities. (Uber Johannesburg, 2017) Also the rating of the passengers is monitored, and passengers with low ratings are excluded. In most cases Uber seems to be strict and decisive in their decisions, but at the same time they try to be open in their actions.

3.4.6. Geographical expansion

Uber was careful in expanding to other cities before they knew their service was good enough and worked well in daily use. In the early stage of the business Uber expanded its service first to New York City in May 2011. The expansion to New York City gave Uber many new insights of how the city structure and traffic affects their service. Uber was surprised of the amount of traffic and congestion there was in New York City (TechCrunch, 2011). This made it difficult for Uber to keep the waiting, ride and transit times short enough for the service. After they had solved the problems they were ready to start expanding. During the following months in 2011 Uber expanded into other major US cities. In the end of 2011 Uber made its first international expansion to Paris, France, half a year later entering London, UK. (Business of Apps, 2015)
3.4.7. Use of Data & Analytics

Uber was using data & analytics extensively from the beginning. It was the use of data & analytics that enabled Uber to distinguish from the existing players in the market, and to continuously improve the service to be even better and faster. The use of data & analytics can be divided into two main factors that Uber tried to improve. First factor was trust amongst Uber drivers and passengers. The second factor was improvement of the service quality.

To improve trust among the drivers and passengers Uber included a rating mechanism in the application. The passengers were asked to rate the drivers and at the same time drivers were asked to rate the passengers after each trip on a 1 to 5 star scale. This way Uber got the users of the application to rate each other and the rating was instantly generated after each trip. Then Uber could analyze the ratings and if someone’s rating was lower than other Uber would take measures to improve the user’s rating, in order to keep the overall trust among the users on a high level. Another thing that data & analytics enabled to increase the trust among the users was GPS tracking of the cars. The GPS position of the car is shown to the passenger in the Uber application when the cars is driving to pick up the passenger, this means that the passenger knows that a car is coming to pick them up, and also how long it will take until the car arrives. The car’s position is also showed during the trip along with the intended route to the destination, which increases the trust for the passenger that the driver will drive the correct route. The GPS tracking allows the pricing to be proper and precise, since the price is calculated from the trip’s length and duration. This enhances the trust even further since the passenger knows that the price for each trip is correctly calculated.

Uber used also data & analytics to improve their service quality. As mentioned earlier in the Service development chapter, Uber used “God’s view” and heat maps to analyze and improve the service. This means that Uber gathered all the information they could get on the cars’ and passengers’ locations, the waiting times, the duration and distance of every trip. Based on the gathered data Uber could follow the demand for transportation and for the supply of cars at different times of the day in different areas.
Based on the data Uber could improve the estimates for trip time, estimated time of arrival and price estimation. Additionally, Uber is trying to steer the supply and demand of transportation with the surge pricing mechanism. The surge pricing mechanism relies on the data & analytics that Uber uses to gather and estimate the demand and supply.

When Uber had developed the mechanisms that increased trust and improved the quality of the service, they were ready to make a big change in their business model. I call this big change the first conceptual insight.

3.5. 1st Conceptual insight

The first conceptual insight for Uber was when they launched the UberX service, where private hire cars and taxis were replaced with normal people driving their own private cars. Uber had already established a large customer base in several cities, Uber had developed their application and it was working well, since it had features that increased trust and they monitored the demand and supply of transportation to maintain a high quality for the service.

Now the drivers were private people driving their own cars in their spare time to earn some extra money on the side. This was the step that made Uber an actual platform that connected drivers with cars and spare time with people that needed transportation. The change is described in the Figure 5. By using private people instead of taxis Uber could charge a fare for one trip that was approximately 35% lower than their existing Uber fare with private hire cars in the US (AllthingsD, 2012). The new lowered price is cheaper than taxis in most cases when the trips cost more than 35 US dollars, and in other cases the price is similar to taxi prices (Business Insider, 2014, Consumer Reports, 2016). This meant that the target customers would not be limited to people that used taxis, but target customers would also include people that would normally not afford taxis.
The idea of using private people’s cars to transport other people has been known for a long time. In fact, Sunil Paul patented the idea for a method to determine an efficient transportation route for providing transportation services in 2002 (Paul, 2002). Additionally, two companies called Sidecar and Lyft introduced such a service before Uber (Medium, 2017). Yet, it is not considered an easy task to create a successful platform that connects private cars with people that need transportation, since there are many issues such as payment, trust and the quality of the service. However, in the case of Uber they had already the application that connected private hire cars with people that needed transportation, the payments were made through the app, data & analytics was used to enhance trust among participants and to maintain a high level of quality for the service. For Uber to make the shift to a platform, they only had to change the private hire cars to private cars that normal people would drive. Everything else remained the same way as it was before.

3.6. Creation of platform (1st stage)

UberX launched in mid 2012, meaning that anybody could be a driver with their own car. Uber marketed the service as the low-cost Uber for everyone. They also mentioned in some cases that UberX is the ecological alternative, since in the beginning there were a lot of Toyota Prius hybrid cars. Although later on the cars used could be of any make. Launching the UberX was the change that created the actual platform, since Uber was now connecting normal people with cars to people that needed transportation.
At this stage, trust and the quality of the service became a top priority on the platform. There were a lot of new drivers and a lot of new customers. Trust was needed for people to get into total strangers’ cars, and for the drivers to take total strangers in their own cars. The rating mechanism should be working perfectly so that the whole platform would work. The monitoring of demand and supply should be working seamlessly in order to keep the waiting times low and thus the quality high.

When the platform would attract a lot of new drivers and new customers, then Uber would be able to collect vastly larger amounts of data from the drivers and passengers. By having more data to analyze Uber can improve the service even further and maybe get some new insights of people’s behavior.

Regarding the earlier mentioned different elements that affect the choice of transportation, which were the price, the time that it will take, the available options and the user experience. Compared with normal taxis, UberX is a little bit cheaper, they will eventually have shorter waiting times and therefore shorter overall trip time, they will be available in more locations and it will be more convenient to order and pay a UberX through their application. It seems that UberX is better or at least at par with taxis when compared the four different elements.

3.6.1. Target group

Normal taxi users are still an important target group. Additionally, since the transportation is now cheaper than before, it allows a large group of people that were not taking Uber’s private hire cars, since they were so expensive, to take UberX. The possible customer base grows a lot when the price for a ride is 35% cheaper than before, and now even a bit cheaper than a taxi in some cases (AllthingsD, 2012, Business Insider, 2014, Consumer Reports, 2016).
3.7. Development during 1st stage

Figure 6. 1st stage business model dynamics

3.8. Hygiene factors required for everything to work

3.8.1. Trust

In the UberX service, the drivers are ordinary people driving their own cars in their spare time, which is why it is important that they can trust that the passengers will behave well. The same applies to the users, they must be able to trust the drivers to drive them where they want to and that it’s safe to make the trip. Uber had introduced the rating system already from the beginning when there was only private hire cars and taxis, in this case the rating system is nothing new to the users who had been using Uber earlier. But the new drivers and new users had to adopt the new rating system for the whole platform to work. The rating system is made as easy as possible for all participants and for Uber. For Uber, it would be both time consuming and challenging to accurately rate all the drivers and customers, which is why the task is given to the platform participants. The drivers are asked after every trip to rate the users and vice
versa the user is asked after every trip to rate the driver. This way there is no additional work for Uber, the rating is accurate and instantly generated by the platform participants. Now the task left for Uber is to decide what rating levels must the drivers and passengers have so that they maintain access to the platform, and if the drivers or passengers have a rating below the limit Uber will deny access to the platform.

Another factor that can strengthen the trust for the platform is that Uber provides insurance for the trips (Uber Newsroom, 2014). Since Uber is providing insurance for the trips, then it is easy for the drivers to use their own cars and they don’t have to worry if there is an accident. The insurance covers also bodily injuries to all occupants in the car, which means that the passengers will know that they are insured during their trip, even if it’s a normal person’s car and not a taxi.

Figure 7. Insurance in the US and Puerto Rico since 2013 (Uber Newsroom, 2014)
On top of the rating mechanism and the insurance Uber saves all the information of every ride, including the route, who was driving and who was the passenger. This is to ensure quality of the service and allows to go back and examine the trips. The Uber app also lets the user track the car while waiting for it to arrive and the app also shows the route to the destination and the current location of the car. This is to create a feeling of safety when the passenger knows that the driver follows the predetermined route. The passenger can also contact the driver afterwards through the app if they forgot something in the car. In this case the phone numbers are encrypted to ensure safety of both the drivers and passengers. (Uber, 2017)

The way that the payment is made increases also the safety and therefore the trust of the transactions. The payment is charged directly from the passenger’s credit card, which means that there is no cash in the car and there is lower risk for theft. Also when the price is calculated by Uber based on the exact route and duration of the trip, the pricing is more open and reliable than if the driver would make up the price. The way the payment was designed in the beginning helps to increase trust on the platform, which is crucial in this stage when the drivers are private people driving their own cars.

3.8.2. Facilitation

UberX makes driving easy for the drivers. The requirements for starting to drive for Uber are clearly stated on Uber’s website. The driver only needs a car that is in good condition, a driver’s license, minimum age of 21 and a smartphone. These are things that a lot of people own already, this means that they don’t have to buy anything else before starting to drive for Uber. Uber provides the customers, the driving directions, they take care of the payments, pricing and insurance. The only thing for the driver is to drive the routes that the application is guiding. (Uber, 2017)

UberX is a viable option for passengers to take an Uber instead of a normal taxi and in some cases, even public transportation. For passengers, it is easy to start using the Uber application and to order a car. The passenger doesn’t have to try to find a taxi in the street or to walk to the nearest bus or train station, they can just push a button in
the application and it lets the user know how long it will take for a car to arrive, and how long the trip will take and the cost estimation. In the cities where Uber is present, there are enough drivers for the waiting times to be short. This means that taking an Uber is easier than a taxi or public transportation, faster or as fast as a taxi or public transportation and cheaper than taxis and only a little bit more expensive than public transportation.

3.8.3. Incentives

The incentives for a normal person to start driving for Uber is that they can earn money on their car that would otherwise remain unused. Owning a car is expensive nowadays and it is not used all the time, therefore it can be seen as an opportunity for people to try and cover some of these costs by earning money with the car they have already bought. Driving for Uber is made easy, and the drivers get to keep approximately 80% of the fare price. Additionally, during high demand for transportation Uber has the surge pricing mechanism, which increases the prices for the rides. This again means that the drivers can earn more money when the demand is higher, since they get to keep approximately 80% of the fare price during the surge pricing (Uber, 2017).

UberX is about 35% cheaper than normal Uber, and also a little bit cheaper than taxis in the US (AllthingsD, 2012, Business Insider, 2014, Consumer Reports, 2016). At the same time, UberX is easier and as fast as taxis. This attracts both current taxi users but also people that haven’t used taxis because they have been too expensive, but now they can order an Uber and get the same convenience as a taxi but with a lower price. The lower price attracts also people that use public transportation, to occasionally take an Uber if they must make a trip that would take too long with public transportation.
3.8.4. Attracting drivers & passengers

Uber has also used deliberate actions to attract passengers and drivers, for example if a passenger recommends the app to another person and that person starts to use the Uber app, then both of them get a small reward (around 10€) that can be used to pay rides in the Uber application. There are also similar referral fees for when an Uber driver refers a new driver to start driving for Uber, then the recommending driver gets a reward ranging between 100-500€. (Rideshareapps, 2017)

The referral fees are meant to speed up the growth of the drivers and users, but there are also network effects that increase the number of participants. Network effects are occurring when more passengers are trying to request a ride and the demand grows, this attracts more drivers since they see the earning potential of the higher demand. When there are more drivers, it means that the service has a better geographical coverage, which leads to shorter waiting times and lower prices. This again attracts more passengers and the same starts all over again. This is called a self-reinforcing loop that fuels itself and grows bigger by itself. (Parker, van Alstyne and Choudary, 2016)

In the case with UberX the passengers can easily become drivers for Uber, since the drivers are normal people driving their own cars. This is called side switching, and the phenomenon is considered to increase the competitiveness of the platform (Parker, van Alstyne and Choudary, 2016). The positive network effect is different for one additional passenger and for one additional driver, since one driver will probably result in more rides over time compared with one user that uses the service. Therefore also the difference in the referral fees for one new user and one new driver (10€ vs 100-500€).

The change from private hire cars (UberBLACK) to UberX means that the available cars to possible drive for Uber increases. This is simply because there are more people with cars than private hire cars or taxis in a city. By looking at statistics of active UberBLACK and UberX drivers since 2012 when UberX was launched and 2015 in the US we can see that the growth of UberBLACK drivers has been stable and only
moderately growing during the period. During the first year for UberX the growth has been minimal, but once the number of drivers started growing the growth rate increased at the same time and the overall growth looks as it is growing exponentially.

Figure 8. UberBLACK vs UberX drivers (Solomon, 2015)

3.9. Differentiating factors

3.9.1. Unused assets

When Uber introduced the UberX service, it made it possible to increase the utilization rate of peoples’ cars. Cars are expensive to buy and maintain, as everyone can’t afford one, but the cars are not in use most of the time. People’s cars are used some time of a day or a week, but mostly they are just parked and unused, by connecting these unused cars(assets), with people that need transportation, Uber creates value for the car owner,
for the passenger and Uber gets a 20% share of the price. The car is in this case a physical asset, it’s mobile but still the location is fixed to a certain area, usually inside one city or between close cities. The number of cars that could possibly drive for Uber is considerably large but still finite, however the number of cars still vastly exceeds the number of taxis and private hire cars. Additionally, the unused cars are now used most efficiently when the Uber application is matching the cars with the demand for transportation. It would not be as efficient, if the matching would be made by humans.

Since the cars that are used in UberX are normal people’s cars, and they are also in normal use, Uber can charge a lower price for the rides compared with a taxi. Also, the fact that most drivers have a full-time job and driving for Uber is only a part-time job and they drive without taxi licenses, means that the drivers can accept the lower prices for rides than taxis. Additionally, in the UberX service no party is paying any taxi licenses or medallions that is needed in most cities to transport people (The Guardian, 2014). This is a thing that can be questioned if it’s right or wrong, but it will not be evaluated more in this research.

Introducing the private cars in the service was made possible by the development based on data & analytics to improve trust and the quality of the service. Since everything else remained the same as before, except for the cars and drivers. It was also important for the customers that this was not something entirely new, but only a minor change. Starting to use private people’s cars was important for Uber, since it allowed them to lower the cost as mentioned above, and thereby offer the service to a broader group of passengers.

3.9.2. Data & analytics improvement

After the introduction of UberX Uber gained a lot of participants to their platform, and the number of trips taken increased. At the same time this meant that the amount of data collected from drivers and passengers increased a lot, which then could be used to improve the service further.
More data means Uber has more to analyze and they can improve the data & analytics methods from the previous stage, which were better trust and service quality. These two factors are extremely important, since there are new drivers that are not professional drivers and there are a lot of new customers, that haven’t necessarily been using taxis before. It is important to keep the trust on a high level with all the new participants and at the same time maintain a high quality for the service, so that people will use it.

On top of previous stage improvements, Uber can now with the aggregated data use it to do the following three things: 1. Reduce costs, 2. Improve customer experience and 3. Optimize entire system. First, analyzing the aggregated data helps Uber optimize the routes that the cars take, both to pick up passengers and to transport passengers, which again helps to save time and fuel costs. Secondly, the data analysis helps Uber improve the customer experience by giving more accurate estimates of the trip time, estimated time of arrival and price estimation. It is also important to keep in mind that the relevance of the alternatives displayed affects the quality of the service. Since there are a lot of drivers connected to the platform it is important not to show all free cars in the world to one user, but instead to show only the ones that can pick up the user in a reasonable time, meaning the most relevant options for the user. Thirdly, data & analytics help Uber optimize the whole system, by letting analytics efficiently connect unused cars with people in need of transportation. For example in 2011 there was an 80% chance to be picked up by an Uber car in less than 10 minutes, in 2014 the probability was 97% to be picked up by an Uber car in less than 10 minutes (Uber Newsroom, 2015) Another example of the capabilities of the Uber data & analytics team is that they showed that they can predict with 74% accuracy the final exact address where the passenger is planning to go, such as work, home or restaurant etc. based only on the trip data (Uber Newsroom, 2014). This means that Uber can extract valuable information from the data they have collected.
3.9.3. Geographical expansion

Once Uber had figured out all of the issues and developed the application to a desired level they started aggressively expanding geographically both in the US but also in other countries. This helped Uber to get a first mover advantage in all of the countries and cities they expanded to. Additionally, they developed and spread the Uber brand so that it became well-known reliable brand all over the world.

Figure 9. Geographical expansion, blue US cities, red outside US cities  
(Business of Apps, 2015)

3.10. Conceptual insight 2

Once Uber got the UberX working they started to experiment with other offerings. Some of them require new participants with new assets (other than cars) others rely on the existing drivers of the private cars. Some of the services that needed new participants with new assets were: UberCARGO with vans and UberChopper with
In these cases, Uber has to convince the new participants with special vehicles to join. As we saw from the previous stages, this can be a difficult thing to do, and it requires time and money. However, Uber was also adding new services that used the existing drivers of the private cars. These services that uses current drivers and cars are: UberFRESH (2014), UberRUSH (2014) and UberPOOL (2014) (Bloomberg, 2014, TechCrunch, 2014, Thenextweb, 2014). These new services have a really low extra cost for Uber, since they use the existing drivers. UberFRESH now named UberEATS is Uber’s service for delivering food. UberRUSH is the service for delivering small packages and UberPOOL allows passengers to share their Uber ride with other passengers. UberPOOL takes ride request from several users and then Uber calculates the optimal route and then the car picks up every passenger and drops them off at their destinations. This way the Uber ride can get even cheaper than the UberX (Thenextweb, 2014).

Even though Uber experimented with these new offerings, the most promising are the ones that use existing cars, which means no extra cost for Uber, and expand the offering to a totally new category where there is a large demand. The mentioned new services from Uber have been popular in some areas, but they have only brought in a small number of additional customers. However, Uber has also chosen to develop an API that was released in 2014, which allows 3rd parties to order transportation from outside the Uber application, for example through Google Maps. Additionally, the API allows also 3rd parties to include data from Uber for example estimated time of arrivals displayed in smartwatches. (Uber Developer, 2016 and 2017)

The API makes it easier for people to order transportation, since it can now be done in multiple different ways, such as using the Uber app, through Google Maps or other 3rd party applications. On top of this, Uber gives online shoppers the alternative to have their purchases delivered directly with Uber. The combination of the ease of use, and the new ways of using Uber transportation, will probably increase the demand for Uber remarkably. This is why the second conceptual insight is the creation of the API, as described in figure 10.
3.11. Platform development (2nd stage)

Uber has already developed their service to successfully transport people with private people driving their own cars. This means that the mechanisms they have created to enhance trust and safety on the platform are working well. Furthermore, Uber has managed to build a strong and reputable brand in many countries. This means that Uber should be able to start transporting packages when they are not transporting people in their cars. Uber has an advantage to other players that would want to start delivering packages with private people’s cars, namely the fact that they have shown that Uber has drivers that can be trusted. Additionally, they have collected a lot of data on transportation and therefore they are aware of common problems in traffic and they are able to make more precise estimations of trip times and arrival times than competitors.

Now the Uber API allows companies and private people to transport, besides people, also packages and food. It is also made easier than before, since it doesn’t have to be done through the Uber app, but the ordering can be integrated to any website or application. For example, Amazon’s intelligent personal assistant Alexa can order an Uber for you. It is also more often integrated by online stores to order an Uber delivery for your purchases. Compared with traditional transportation of online purchases, Uber has a big chance of being able to deliver the packages to a lower cost than existing
players. This is because Uber has a lot of drivers in many cities, and while they are waiting for people to be transported, they could be delivering packages at the same time. The same reasoning as in the previous chapter on why Uber can be cheaper than taxis, will probably also be relevant in this case. The reasoning was that Uber is cheaper than taxis because they use people’s own cars, and the drivers are usually driving Uber as their second job. This would mean that transportation of goods would be cheaper since people drive their own cars, and they might do it on the side of their real job, to get additional income.

The API allows also 3rd party developers to access some of the Uber trip data, such as location and estimated time of arrival (ETA). This means that 3rd parties can start to integrate this information into their products, and make new innovations that Uber maybe hasn’t even thought of. According to the strategy literature now that Uber lets its complementors innovate, it would make it an Industry platform. Allowing 3rd parties to use some of the data can make the experience of taking an Uber better, for example by displaying the ETA of the ride on the user’s smartwatch or hotels and restaurants connecting with passengers already during their Uber ride to their destination. Opening up the interfaces has also created some 3rd party services for drivers, such as getting discounts in different stores depending on how much they drive, or help in tax planning depending on how much the drivers drive. (Uber, 2017)

3.11.1. Target group

The target group for Uber at this stage is still passengers that need transportation, but on top of this they are targeting people that need transportation for their things, which could be food or online purchases. This way they get additional customers, but they can still deliver the service with their existing fleet, which means that Uber doesn’t have any extra costs except developing the API.

Now Uber has to consider also developing and marketing the API so that others will implement it as widely as possible. This means that Uber has to encourage other companies to implement Uber’s API to their websites and apps. This way even more people can access Uber’s service, when it is embedded into other applications, which
eventually will lead to increased demand. Uber should also consider encouraging 3rd parties to experiment with their API, since this could lead to additional innovations around Uber.

3.11.2. Sector expansion

Introducing that Uber can now drive packages is a big step, since they are expanding to a new sector, in this case parcel and food delivery. The expansion is not an entirely easy and risk-free thing to do, but Uber has practiced and developed their service with transportation of people. By having developed the service for a time, Uber has attracted a significant number of drivers, there is a have high level of trust among users, and the waiting and trip times have been optimized based on the data & analytics work Uber has done. This means that Uber has everything that is needed for starting delivering parcel and food. They have drivers that can be trusted, they have the system for requesting cars and they have an advanced route optimization system.

3.12. Hygiene factors

3.12.1. Trust

Trust is still a key factor for the service to work. This time customers let private people drive their packages, which means that the drivers have to be trusted 100% of the time. However, Uber has managed to overcome the issue with trust already on the previous stage by using the rating system, insurance and different ways of using data & analytics. This means that Uber doesn’t have to start from the beginning to create trust, but they have already the means for creating trust among the participants.
3.12.2. Facilitation

At this stage ordering an Uber is made easier than before. Now the passengers can order a car through Google Maps, without opening the Uber app. This means that the user’s Uber account has to be linked to Google Maps, or the user can log in using only Google Maps. There are also other ways to order an Uber, since the new API was released. The users can order an Uber through Amazon Echo, which is an intelligent personal assistant called Alexa, that can be controlled with voice. Still the Uber can be ordered through the original app. This means that there are many different ways of ordering an Uber, which will probably increase the use of Uber in the long run.

Ordering food with Uber is done with UberEATS or through the restaurants website if UberEATS is integrated to it. At the moment food can be ordered through Ubers UberEATS app or from the UberEATS website. This might be the easier way to order food, since all of the available food and restaurants can be viewed from a single place. The other option is to order from the restaurants website and then the restaurant manages the ordering the Uber delivery. Again Uber has several different ways of ordering a delivery for food.

If a customer wants Uber to deliver a personal package, the customer can use the Uber application. When ordering delivery for a purchased item, usually with small businesses the delivery is ordered from the store, and the store orders the UberRUSH for the customer. If the store is a large business then the UberRUSH can be integrated on the website, so that the delivery is more automated. (Uber, 2017)

3.12.3. Incentives

The incentives for the drivers remain the same as in the previous stage, but now when there are new customers, such as the orders of food and packages, there might be an increased demand, which would mean that the earning potential for drivers has increased. Additionally, delivering food and packages can now be done with bicycles, and the age limit for delivering food and packages with bicycles is lower than with
cars. This means that even younger people can join driving bicycles for Uber, and the costs for a bicycle are much lower than for a car. Uber added also an option for the drivers of food to have fixed workhours during lunchtime breaks to deliver food to people. This might help in planning the work for the drivers.

The customers can now order their Uber ride from multiple different sources, not only using the application. Additionally, the customers can order food and packages that will be delivered home, and it is probably cheaper than other transportation options available. Later on, some of the 3\textsuperscript{rd} party applications might increase the ride experience so much that it would increase the usage of Uber as transportation for people, food and packages.

The incentives for 3\textsuperscript{rd} parties to implement Uber’s API is that the 3\textsuperscript{rd} parties can access the passenger’s smartphones to show content during the transportation. In today’s hectic world, the time during transportation people are relatively undisturbed compared with the rest of the day and therefore it is an opportunity to show content to the passengers during their trips (Uber developer, 2016).

3.13. Differentiating factors

3.13.1. Unused assets

Uber uses again private people’s cars, but now they don’t use it only for transporting people, but also to transport food and packages. Uber has made it possible for people to use their bicycles or scooters for delivering food and packages. This means that the costs for joining Uber to transport things are even lower than compared with a car. Also the age limit has been lowered for the drivers of food and packages only, which enables Uber to attract drivers from a larger group of people. At the same time Uber has not the same requirements for the cars, if they are only delivering food and packages, and not people. (Uber, 2017)
To sum up, Uber has at this stage expanded the number of potential drivers, since they have lowered the age limit, introduced the transportation by bike and scooter and lowered requirements for the cars that deliver food and packages only.

3.13.2. Data & analytics

The data analysis gets increasingly complex during this development stage, since there are many new elements to the platform. First of all there is a new type of vehicles, the bicycle and scooter, which can have different routes and lower speed and range than the cars. Then there are two new categories of transportation besides from people, which are food and packages. Transporting food has different requirements than transporting people, which is for example that the food has to be delivered within a short time so that it doesn’t cool down before it arrives, and there are peak demands during lunchtimes and on evenings. Transporting packaging is an interesting opportunity, since in theory the drivers could be delivering people and packages on the same trip. How it is done in practice is a lot more complicated, since the package has to be picked-up before the passenger, and delivered after the passenger. But then the routes for the passenger and the package have to be known at the same time, but when a person orders an Uber it should arrive as quickly as possible, which would mean that it doesn’t have time to pick up the package before the passenger.

At this stage the complexity of the whole system has increased, and it takes time to analyze all of the new data, and improve the delivery times and routes so that the system would be fully optimized. At the same time, the complexity of the system might give totally new ways of optimizing different things, which might not have been possible with a simpler system. Uber is also continuing to improve the basics of the service. They have introduced statistics on how safely the driver drives, measuring acceleration and location from the smartphone that the driver uses for the app. The application can, if enabled by the driver, notify the driver if the speed is over the limit, if the driver shows signs of exhaustions and needs rest and how smoothly the driver accelerates and brakes (Uber, 2017).
3.13.3. Next steps/Next conceptual insight

Uber is already experimenting with new things, even though they have not fully developed their current service with the delivery of food and packages and the API. At the moment Uber is experimenting with self-driving cars together with Volvo in some cities in the US (The Verge, 2017). If Uber would get the concept working, it would make a major change in their revenue, since now most of the revenue (about 80%) is paid as compensation for the drivers. If Uber would have self-driving cars it would change the whole business. Currently the experimentation is still far away, because recently one of the self-driving Ubers was involved in a crash, which lead to Uber cancelling the experimentation at least for the moment (USAToday, 2017).

Another interesting experiment that Uber is exploring is UberELEVATE that would use vertical take-off and landing (VTOL) aircrafts. Currently the VTOL aircrafts are under development and there is not a clear date when there would be first test flights. The experiment with UberELEVATE is trying to tackle the increasing trip times for longer trips between cities that usually have heavy congestion. This means that Uber would use the VTOL aircrafts to transport people on longer trips, and they would make the trip times significantly shorter. (Uber Elevate, 2016)
4. Summarizing theoretical model

We have so far presented the development of Uber’s service over its lifetime. Based on the Uber case a more general theoretical model is built and will now be presented. The upper part of figure 11 presents the different elements in the development, whereas the lower part of the figure shows an overall development of the product or service.

Starting with the upper part of the figure, the development begins with a product or service (further on in the text referred to as service, but can be a product also). Then the service is offered to customers, so that the company can start collecting data on how customers use the service. When the company has collected enough data they can start analyzing it. Based on the data analysis the company can improve the existing service. Some of the improvements can affect the trust among participants (customers and service providers), for example when opportunism is reduced among participants, trust among the participants usually increases, which again leads to increased network effects. Network effects attracts more participants to use the service, which means that the company will get more data from the users. More data to analyze means that the company can improve the service even further. This means that the improvement of
the service is an iterative process, that develops the product gradually at every iteration, based on the results from the data analysis.

Once the company thinks that the service has been developed to a sufficiently high level in terms of quality and trust among participants, the company should consider experimenting with new types of services. The new services that the company is experimenting with, should somehow be linked to the existing service. The fact that the services are somewhat similar means that the development of the existing service is in fact a part of the development of the new service that the company is experimenting with. This can be compared to a case where the services would not be similar at all, then the development of the new service, that the company is experimenting with, has to be started from the beginning. Apart from saving costs in the development process, since the development has already started, there will be significantly lower costs if the services are somehow similar. In the best case the company can use some of the existing service providers to deliver the new service that they are experimenting with. This means that the same service providers can deliver both the old service and the new service, which will increase revenue a lot more than the costs will increase if it is successful. Experimenting with similar services that can be tested with low costs allows the company to test more than one new service, compared with a totally different new service that would require lot of resources, there would not be enough resources to test multiple different new services. Additionally, the new services that are experimented with should be conceptually different from the existing service, meaning that the new service could not be achieved by only improving the existing service gradually based on the data analysis.

Experimenting with different service offerings will eventually reveal one service that has more demand than the other experimented services. Finding and realizing this new opportunity is what I call a conceptual insight. It is when the company realizes that they can grow their revenue significantly by expanding to this new service. This doesn’t necessarily mean that the old service will be discontinued, but the services can both exist at the same time. The conceptual insight is the step that leads to the creation of a service that is disruptive compared with the previous service.
The lower part of the figure 11 shows the development of the service as the line, with time as the x-axis and development or refinement of the service on the y-axis. In the beginning the service is not developed, which is why the line is horizontal. When the data analysis starts, the service starts to develop gradually. Then the process is iterated over and over, and the service improves gradually over time. It is after the conceptual insight that the development of the service has a disruptive change and “jumps” to a new higher level, and there the change happens instantly.

When the new service is introduced the whole figure starts from the beginning again, with the new service as the existing service. This allows the company to constantly improve their products and services over a long time with this theoretical model. One thing to notice is that the development needs the experimenting that leads to the conceptual insight, since the data analysis can only improve gradually the service, and not take it to a completely new level. On the other hand, the gradual improvement is equally important, also to save costs, but also because when the disruptive improvement occurs, the “jump” or the instant change is smaller if the service has been gradually improved. A smaller disruptive change makes it easier for the company, the technology, the participants to adapt to the new service, instead of a big disruptive change. This means also that a smaller disruptive change in the service has better probabilities to be a successful service, compared with a larger disruptive change.

When compared with the organizational development theory, we can see some similarities the features of the improvements. The gradual improvement resembles thickening, which meant adding new elements that reinforced the existing core. Whereas, the radical improvement resembles patching, where a new core element is added in parallel with the existing core element. However, the organizational research didn’t suggest any order for the two types of improvements, when this theoretical model suggests that first the core should be thickened, and after that it should be patched.
5. Discussion

First I will briefly discuss some of the most important factors that made Uber so successful, and also mention some factors that were not considered in this study. Uber started out with a simple service, which they improved by using data & analytics rigorously. Their service was extremely sophisticated after the improvements they had made. There was a focus on improving trust on the platform, which probably helped increase the network effects among other improvements. It was only after they had refined the service, that they started to experiment and expand their offering. The fact that Uber had developed the existing service so far, made the first disruptive change smaller than if they would have started from nothing. The service had in a way been tested before, and with the change it was only the drivers and cars that changed. Additionally, advances in technology might have played a part in the success, since before smartphones were invented, it would have been difficult to develop such a service that Uber did. Since Uber is a platform that is using physical assets (cars) in their service, it could have been an issue when physical assets are usually limited to a certain place. However, in the case with Uber, the physical assets (cars) are so popular and widely spread, that this was not remarkably limiting their growth. The factors that this study did not focus on was the legal issues with Uber’s business, since every country has different legislation. Still this is a thing that should be followed, since Uber’s actions can in some cases be questionable. For example, Uber is trying to reduce opportunism on the platform, while at the same time they are opportunistic by not paying taxi licenses and operating without permission in some countries. Uber tries to lower compensation for drivers in different countries and some drivers even accuse Uber of not paying all of the referral fees that belong to the drivers. Recent news reveal that Uber has deliberately developed a program, called Greyball, that is supposed to deny law enforcement access to the application. Despite these issues, Uber has had an enormous impact on the society and transportation in general.
5.1. Comparison of results with existing theory

Next I will discuss how the findings in this study relate to existing research on platforms. Gawer (2014) suggested that platforms evolve from internal platforms to supply-chain platforms and then to industry platforms. Based on the results of this study I agree that the evolution of a platform can be divided into three stages. However, I think that Gawer’s (2014) middle stage, the supply-chain platform term, should be changed to the term and definition of the Multi-sided platform. This would mean that the evolution of a platform would have three stages which are internal platform, multi-sided platform and industry platform. These three stages are identified in the Uber case.

![Figure 12. Uber evolution](image)

In figure 12 above we can see the evolution of Uber, and we can identify the three stages. The first stage, the service business, can be seen as an internal platform, then the second stage, the creation of platform, can be identified as a multi-sided platform, and the third stage, the platform development, can be recognized as an industry platform.

The change between the stages is marked by the conceptual insights. And the evolution inside every stage that ends in the conceptual insight is described in the theoretical model in figure 11. These findings are significantly different from the current literature.
describing the three stages (Gawer, 2014) First, Gawer (2014) suggest that the change is continuous between the different stages, while my findings suggest that the change is marked by a conceptual insight. Secondly the literature is not describing how the evolution occurs in each step, whereas the theoretical model that I have created based on the case is describing how the evolution occurs in every step. I agree with Gawer (2014) that the evolution of a platform is continuous inside every step, as described in the theoretical model, but based on this case study I would suggest that the changes between the three stages are distinctively marked with the conceptual insights, and therefore not continuous. As we can see from the figure 11 that describes the theoretical model, the change is disruptive after a conceptual insight. This means that change is continuous during each stage, but disruptive between the stages.

5.1.1. Comparison with MSP theory

The current literature on multi-sided platforms is mostly describing different factors and options to consider in a multi-sided platform. The research gives network effects a big role, and explains that the growth of platforms depends mainly of network effects (Parker, van Alstyne and Choudary, 2016). However, there is no clear explanation on what drives the strength of network effects, and how network effects can be created or enhanced. This research shows that trust and network effects are somehow affecting each other, since increased trust leads to increased network effects. Also the results suggest that an improved service, for example in terms of coverage or quality, can increase the network effects on a platform. To improve the service, whether it being coverage, quality or something else, a platform can use data & analytics. The Uber case shows that data & analytics is a powerful tool for improving a service. Since the service can be improved with data & analytics, it means that it will eventually affect the network effects on a platform. This connection is however not mentioned in the multi-sided platform research.

Additionally, the research on multi-sided platforms concentrates only on the multi-sided platform stage, and it does not take into consideration how the platform evolves and what are the new things to consider when moving to an industry platform. This research shows that a multi-sided platform is only one stage of a platform’s evolution,
and that the development of a multi-sided platform to an industry platform follows the theoretical model. This implies that the dynamics of the platform changes, when it moves to the industrial platform stage, and that then there are new things to consider, such as the role of complements.

5.1.2. Comparison with organizational theory

Organizational theory suggested that there are two strategies that organizations use to improve their organizational fit. These were thin-to-thick and patch-by-patch strategies, but the research didn’t specify if the strategies should be used in parallel or in sequence and if the strategies depend on a specific situation. (Siggelkow, 2002) The results from this case study suggests that successful platforms first use the thin-to-thick strategy to improve their existing service, and after that they use the patch-by-patch strategy to introduce a new product or service, that is described as a conceptual insight in the theoretical model. After the conceptual insight, the cycle starts over from the beginning with the thin-to-thick strategy followed by the patch-by-patch strategy. This means that the strategies are used sequentially, first thin-to-thick and then patch-by-patch, and it is periodical, which means that the same sequence is recurring each time. In practice there might be some overlap with the two strategies, meaning that the thick-to-thick strategy might be ongoing while the organization is introducing a new product or service (the patch-by-patch strategy), and similarly that there is some development of a new product or service while the organization is using the thin-to-thick strategy. This means that the organization is simultaneously developing both strategies, but the actual changes in the organization can still be distinctively identified to be sequential and periodical.

Earlier research also suggests that after a time of experimentation a dominant design will emerge, that will become the new industry standard (Anderson & Tushman, 1990). In this research we can see that there is a period of experimentation inside the platform, and that this period ends in the conceptual insight that introduces a new product or service. If the platform is the most popular and leading platform, the new product or service can be seen as a new dominant design for the whole industry. The interesting part is that the new product or service, that becomes the dominant design, builds on
the previous technology of the platform. This means that the dominant design is not completely replacing the old technology, as it usually has done according to the current theory. Now if the new dominant design builds on the old technology, new entrants that are planning to enter the market would have huge barriers to entry, since they would have to develop both the old and the new technology to be able to compete with the existing platform. Currently it is still too early to tell how the situation will develop between Uber and its competitor Lyft, after Uber has launched their API. But this is an important subject both for new entrants, in planning how to enter a new market where there is a strong platform, and for platform leaders to monitor that they don’t reach a monopolistic position that would have legal consequences.

5.2. Generalization of results

If we look briefly at other platforms and see how well the evolution of the platforms can be divided into the presented three stages. Starting with examining the development of Facebook, we can clearly distinguish the three stages of development in Facebook’s history. Facebook started in 2004 as a website for Harvard students only. In the beginning Facebook resembled mostly an internal platform, since it was limited to Harvard students only. After Facebook had launched, they slowly began allowing other students from other Ivy League colleges to access the website. The next step was to allow all students from US colleges to participate. As we can see, Facebook was constantly evolving and starting to accept more and more participants, but it was still an internal platform. When Facebook in 2006 decided that everyone aged over 13 and with an email address could join, it made Facebook to a multi-sided platform. It was the decision to open up for everyone that was the first conceptual insight with Facebook. They continued to develop the website, and the number of participants increased once the website was open for everyone. In 2007 Facebook opened the Facebook platform, that was a development tool for developers. This was the second conceptual insight in Facebook’s history that changed Facebook to an industry platform. Once Facebook allowed third party developers to their platform, their growth rate increased compared with the growth rate before the conceptual insight. The example of Facebook, shows us how a successful platform starts first as an internal
platform, then it has a conceptual insight that turns it to a multisided platform, and then the second conceptual insight is when they allow third party complementors to the platform, turning it to an industry platform. The development can be divided into these three parts based on the conceptual insights, but one thing to remember is that the platform is constantly developing and improving during each stage.

As another example we can briefly examine Amazon’s development. Amazon is launched in 1995, and they started with selling books over the internet. After they have launched the service they start selling CDs and DVDs, and later on they expand to toys and electronics. At this time Amazon is still an internal platform, since they are selling the products themselves. In 2000, Amazon allows outside sellers to sell products through the Amazon website. This is the first conceptual insight, and it makes Amazon a Multi-sided platform, since it connects sellers and buyers through the platform. Allowing outside sellers to the website expands Amazon’s product offerings. Amazon starts to develop cloud services first for the company, but later on the cloud services were opened to third parties. In 2006 Amazon launched Amazon Web Services, that is a cloud computing platform. This marks the second conceptual insight that turned Amazon into an industry platform. Later, Amazon has developed several different APIs and other services that third parties can use to build services on. The history of Amazon shows that there was continuous development and experimentation with new services, and that there was a distinctive change, what I call a conceptual insight, that moved the platform to the next stage.

5.3. Further research

This work showed how platforms evolve through 3 different stages. The actions that the platform makes during each step were described in the theoretical model (figure 11). The study also analyzed how data & analytics, trust and network effects, affect each other and how they are related to platform evolution and success. Although this study was a single case study, which has its limitations, it could be showed that the three stages of evolution and the theoretical model could be identified in other platforms also, such as Facebook and Amazon.
I would suggest that further research would verify the theoretical model from this study with other cases. Additionally, further research should focus on trying to understand better how data & analytics, trust and network effects work. Our knowledge is still limited regarding these three factors, and it would be important to know better if all of the three factors are equally important during each stage, or if there are any differences between the factors and between the timing. It could be also insightful to study a platform, that has considered all three factors, and made everything according to the theoretical model, but still failed to succeed. I am not sure if there are any platforms that meets all these requirements, but also the lack of such platforms would be an interesting insight in itself, since this would underline the importance of the three factors and the theoretical model.
6. References


