

# **How do digital platforms compete?**

## **Developing a framework explaining competition outcomes**

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## Abstract

Digital platforms are transforming almost every industry today. They are slowly finding their way into the mainstream information systems literature. The current literature on digital platforms offers proficient lenses on platform businesses and their potential competitive advantages. However, little attention has been paid to the competition between digital platforms within the same market, that is, the factors and drivers that influence the competition and explain how and why specific competition outcomes evolve over time. This is unfortunate, since more knowledge about what drives digital platform competition would be highly valuable for researchers and practitioners confronted by the complexity of managing them. This paper proposes an analytical framework for explaining and predicting digital platform competition outcomes by identifying and analyzing factors and its interrelationships influencing the competition in digital platform markets. This research study presents a multi-case study comprising the five cases of Hungry.dk, MyHammer, Lendino, Fiverr and Graduateland in which context the framework is applied to. The study reported in this paper contributes to digital platform research and practitioners in three ways: First, we combine the economical view of digital platform competition research by identifying four main influencing factors and combining these into one framework. The four identified influencing factors are network intensity, differentiation, multi-homing & switching costs and pricing model. Second, we use the developed framework to explain how the factors lead to competition outcomes. Third, we derive implications that advances current knowledge about digital platform competition and discuss briefly the impact of the research findings.

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# 1 Introduction & Motivation

Digital platforms are disrupting almost every industry today. More and more companies are adapting to this change and implement platforms as their business model (Pollari, 2018). Martin Kenney and John Zysman (2016, p. 2) argue that *“we are in the midst of a reorganization of our economy in which the platform owners are seemingly developing power that may be even more formidable than was that of the factory owners in the early industrial revolution.”* Digital platforms play a major role in various economically large industries including mobility, financial exchange, e-commerce or media streaming. While social media platforms such as Facebook changed how humans interact, operating systems such as Android and iOS disrupted the mobile telecommunication industry. Payment platforms such as Apple Pay or PayPal changed the financial industry while peer-to-peer digital platforms such as Uber and Airbnb have created the so-called *“sharing economy”*. (Reuver, Sorensen, & Basole, 2016)

In general, digital platforms create value by bringing two or more different types of user groups together and facilitating interactions between them that make all users on the platform better off. They facilitate by building trust, take on risk, increase transparency or balance information. This opens the way for radical changes of how we socialize, create value in the economy and compete for the resulting profits. As a direct result to this change, much attention has recently been paid to how digital networks are competing. Many ways in which companies have traditionally operated and competed have altered (Kenney & Zysman, 2016). The biggest difference between traditional business models and platforms as a business model is that platforms are positively influenced by network effects. Each new user on the platform enhances the value of the network exponentially, leading to a snowball effect. In comparison to physical networks, digital networks allow for a more rapid scale-up and geographic reach at substantially lower capital intensity, as well as negligible marginal costs to serve incremental consumers (Gandhok, 2018).

The following quote from Tom Goodwin (2015) explains the dimension of the growing platform economy: *“Uber, the world’s largest taxi company, owns no vehicles. Facebook, the world’s most popular media owner, creates no content. Alibaba, the most valuable retailer, has no inventory. And Airbnb, the world’s largest accommodation provider, owns no real estate. Something interesting is happening.”* As if this was not already enough, the most successful platforms such as Alibaba or Amazon are offering more and more services beyond their core competence and thereby entering and tying together multiple industries. Amazon, for instance, meanwhile entered the streaming market by offering Amazon Prime Video and is now also competing with platforms such

as Netflix or HBO. Alibaba went beyond being a traditional e-commerce platform by also offering financial services. Platforms are taking on gigantic proportions in the overall global economy and thereby gaining increasingly more power.

This raises the question if digital platforms as a business model especially favor winner-take-all outcomes where one market player is claiming almost the entire market for itself (T. Eisenmann, Parker, & Alstyne, 2006). This then raises the question if this means the end for effective competition. While winner-take-all power in itself does not violate any competition laws, the abuse of such power does, especially when fair competition cannot be granted anymore. Examining existing industries, it can be concluded that platform markets with winner-take-all situations but also co-existing and competing platforms exist. Many scholars, for instance, consider Airbnb as winner-take-all in the peer-to-peer private accommodation sharing market or Facebook as winner-take-all in the social networking market. In contrary, for instance, in the peer-to-peer car sharing market or in the food delivery market multiple platforms are co-existing and competing. Another example is the music streaming industry, where Spotify as the market leader cannot completely push other streaming services such as Apple Music or Deezer out of the market.

Some scholars suggest that winner-take-it-all dynamics will lead to a consolidation of the marketplace and ultimately to one single platform dominating the market space (Armstrong, 2006; Gawer, 2014). Contrary to this believe multiple industries have shown that this is not (yet) true, leading to additional research into the credibility of the winner-takes-it-all claim (T. Eisenmann et al., 2006; McIntyre & Chintakananda, 2014). Academic research has not found a consensus in this field yet. Current literature tackling this research field has not been examining this issue sufficiently. A reason for this might be that the research issue is of complex nature. Reuver, Sorensen and Basole (2016) argue that this research field is *“a challenging research object because of their distributed nature and intertwinement with institutions, markets and technologies.”* Rather than assuming that winner-take-all outcomes are unavoidable in all platform markets, it is important to critically examine their relevance and applicability in specific contexts (Gandhok, 2018). To the present day, researchers have only examined competition based on specific influences in isolation. There is a need to further examine and understand digital platform competition. Hence, this research study develops an analytical framework containing four factors and multiple influencing drivers derived from existing academic research aiming at closing the presented research gap and providing detailed explanation for digital platform competition outcomes in specific contexts. The four identified influencing factors are: Network Intensity, Differentiation, Multi-Homing through Switching Costs and Pricing Model.



We contribute to the research field by providing a multi-layered framework which not only combines potential influencing competition factors but also analyses its interrelations and describes what drives these factors. The framework therefore offers a more in-depth analysis than prior scholars have done so far.

This paper adopts a positivistic-based objectivism view when developing the analytical framework. Our theorizing further draws on a multimethod research design, comprising a document analysis and semi-structured interviews into a multi-case study including the five cases of Hungry.dk, MyHammer, Lendino, Fiverr and Graduateland. The document analysis provides initial knowledge about the case industries and companies. Then through semi-structured interviews the identified influencing factors and its interrelationships determining the competition in digital platform markets were assessed.

Besides the theoretical value this research provides, a practical target audience can be identified due to the increasing relevance of this topic for many organizations. This research study helps strategists and managers of platform businesses understand what factors drive platform competition and how it can be influenced. We provide guidance and practical implications for developing competition strategies. No prior research has yet provided a comparable comprehensive framework to analyze platform competition.

All in all, this study contributes to digital platform research and practitioners in three ways: First, we combine the economical view of digital platform competition research by identifying four main influencing factors and combining these into one framework. Second, we use the developed framework to explain how the factors and its drivers lead to competition outcomes. Third, we derive implications that advance current knowledge about digital platform competition and discuss briefly the impact of the research findings.

## 1.1 Research questions

The question what influences the competition outcome between multiple digital platform markets is a rising field in the study of network markets. This research is aiming to synthesize the existing academic literature into one framework describing identified influencing factors and what drives them. It therefore aims to fill the existing gap of combining multiple influencing factors and taking a step towards understanding those factors better. Therefore, this research study tries to answer the following research questions:

*How do different platform competition outcomes emerge, and what factors and drivers are influencing the respective competition outcomes?*

## 1.2 Advanced Organizer

This research paper contains the chapters motivation, theoretical grounding, analytical framework, methodology, results, discussion and conclusion.

In the motivation of this paper the phenomenon of platform competition is defined. It is presented why the research field is highly relevant and requires further investigation. Afterwards, in accordance with the motivation of this study, the specific research question is formulated.

The theoretical grounding section is then examining the research domain on platform competition to summarize and synthesize existing literature and related research on (digital) platform competition. It first distinguishes between the technological view of platforms and the economical view of platforms. Afterwards the subtopics of the value proposition of platform markets, network intensity, pricing strategies and boundary resources are established and explained. The theoretical grounding closes with a summary of the existing findings on platform competition outcomes and a clear definition of the problematization this study is addressing.

Based on the theoretical grounding section an analytical framework is developed which includes a clear definition of digital platforms in the context of this study as well as a detailed portrayal of the four influencing factors of network intensity, differentiation, multi-homing and the pricing model.

As a next step, in the methodology section, the theoretical perspective is defined together with the epistemological grounding behind the perspective. Then, the research strategy is presented in combination with the research design and the selected data collection methods. To conclude this section, it is described how data is analyzed in the context of this study and quality criteria are discussed.

In the result section, the collected data for each case of the multi-case study is aggregated and presented together with an explanation of the current competition outcome.

As a next step, the created framework and its influencing factors and drivers are discussed. The study also discusses another theoretical perspective on the presented issue. Furthermore, the research findings and its socio-political impacts are critically discussed.

Lastly, a conclusion summarizes the research study and its findings by tying the research together and providing answers to the research question.

## 2 Theoretical Grounding

### 2.1 Introduction to the research domain

This chapter aims to review already conducted research about the researched domain of platform economics. The objective is to synthesize existing knowledge which can be used to answer the research question, identify knowledge gaps in the literature and propose future research directions (Rowe, 2014). All in all, the study aims to create a foundation which can be used as a starting point to add to this existing knowledge about the researched phenomena.

The objective of this literature review is to summarize the existing literature and related research on network markets and (digital) platform competition with a focus on the phenomena of winner-take-all dynamics and other platform competition outcomes. The goal is then to develop a framework to broaden the understanding of the influencing factors explaining competition outcomes. It is therefore a problem centric review, focusing on the phenomena of winner-take-all dynamics, which is used as a starting point for the broader issue of platform competition. This is in alignment with the formulated research question. The article selection will be starting with a database driven approach, followed by forward as well as backwards snowballing. A detailed description of the approach can be seen in Appendix A. Using a combined approach increases the chances of a complete coverage of relevant literature (Webster & Watson, 2002).

The first step in the theoretical grounding is to clearly define digital platforms in the context of this research study. This is necessary since multiple different definitions of digital platforms exists and a consensus has not been reached yet. At the same time, platform-related research established two theoretical perspectives: economics where platforms are defined as two- or multi-sided markets, and engineering design, which sees platforms as technological architectures. The economic perspective is focusing on platform competition aspects, while the technological or also called engineering design perspective is concentrating on platform innovation. (Gawer, 2014) It is important to understand both theoretical perspectives and to have a clear distinction between the two schools of thought. This paper will give a short introduction into the technological perspective of digital platforms and then elaborate in detail on the economical perspective. The focus is put on the economical perspective because it deals directly with competition dynamics and possible explanations for different competition outcomes.

## 2.2 Technological view of digital platforms

The technological view of platforms or the engineering design perspective views product platforms as technological designs that help firms generate modular product innovation. With the platform as a technology, companies are not just providing their customers with standalone products, but rather provide a fundamental group of technologies which are open enough to be complemented by products and services, sometimes provided by outside companies (Cusumano, 2011). Gawer (2014, p. 1242) defines the principle of a “*systematic re-use of components across different products within a product family [...]*” on technological platforms. She concludes from this that the creation and harnessing of economies of scope in innovation is the fundamental principle of platform-based product development. This is based on the insight that platforms share the structural communality of being built modularly, while being separated into stable core components forming the platforms core and changeable peripheral components (Baldwin & Woodard, 2009). As a result of being modular, platforms lead to the facilitation of innovation (Gawer, 2014). The innovation in modular architectures comes from “*autonomous innovation within modules, as well as mix-and-match innovation through innovative recombination of modules*” (Gawer, 2014, p. 1242). The peripheral components are accessing the platform through interfaces which is related to the openness of platform boundaries which will be further discussed in a later section.

While it is useful to understand how platforms facilitate innovation, this research stream does not give indication on the competition between platforms which is the focus of this paper. However, it is necessary to understand the distinctions between the different schools of thoughts in order to move forward.

## 2.3 Economical view of digital platforms

### 2.3.1 Defining a digital platform and its value proposition

The economical view has developed a theory on platforms defining them as a special kind of market while referring to them as “*two-sided markets*”, “*multi-sided markets*” or “*multi-sided platforms*” (Gawer, 2014). Within this theory, different economists have been focusing on different aspects of these special markets which

is represented in their definitions of platforms. While some are focusing on pricing considerations<sup>1</sup>, others are more fixated on the value creation in platform markets<sup>2</sup>.

Even though the definitions differ and emphasize different aspects, they are still based on the same perspective – the economical perspective of digital platforms. Within this economic assumption, the fundamental technology provided by the platform provider is used to facilitate the exchange between different types of actors or actor groups, which could otherwise not interact with each other (Gawer, 2014). It is therefore solving a transaction cost problem by coordinating the connections between these actor groups (Evans & Schmalensee, 2014). Because of their reliance on network effects, those markets are also called network markets or platform markets (Luchetta, 2014). The number of sides a platform accommodates is defined by the number of distinct user groups allowed on a platform (Ruutu, Casey, & Kotovirta, 2017).

The interplay between actor groups on a network market is defined by network effects. Network effects describe the phenomenon where an actor group benefits or is adversely affected if another actor joins the platform. If the additional actor joins the same actor group, same-side or direct network effects appear, otherwise if the actor joins another actor group of the platform, cross-side or indirect network effects occur. If the network effects are beneficial to the actor group, positive network effects ensue, otherwise negative network effects arise. Indirect network effects imply the need of the existence of an underlying connection or interdependency between two or more actor groups (Gawer, 2014). Network effects have been identified as being existential to the research into platform markets (Rysman, 2009). It is important to understand the nature of network effects, because the strength of these effects on a specific platform influences the competition between platforms and will therefore be examined in detail in the following chapter.

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<sup>1</sup> “[a] market is two-sided if the platform can affect the volume of transactions by charging more to one side of the market and reducing the price paid by the other side by an equal amount; in other words, the price structure matters, and platforms must design it so as to bring both sides on board” (Rochet & Tirole, 2006).

<sup>2</sup> “[a] multisided platform has (a) two or more groups of customers; (b) who need each other in some way; (c) but who cannot capture the value from their mutual attraction on their own; and (d) rely on the platform owner to facilitate value-creating interactions between them” (Evans & Schmalensee, 2014)

While some scholars are satisfied with the existence of multiple sides in order to call such a market two-sided (multi-sided) (T. Eisenmann et al., 2006; Rysman, 2009), others demand a higher burden to warrant this definition. To be more precise, following the definition of two-sided markets as proposed by Luchetta (2014), a platform only truly operates as a two-sided market, when first, these network effects are created within one single transaction between the groups, and second, when inter-side positive externalities exist. In other words, positive cross-sided network effects need to be present for both (all) sides of the network and they need to be created within the same transaction. This definition would exclude services where two-sides exist but not the interconnectivity necessary between them, like Google, where the user side looking for information is not experiencing positive cross-side network effects through the existence of commercial users on the other side (based on the assumption that users do not appreciate advertising) (Luchetta, 2014).

Adoption decisions by users are influenced by the size of a platform's installed user base relatively to the installed base of existing competitors. A large installed base in absolute terms also signals long-term viability which reduces uncertainty and ensures that adoption efforts will be beneficial. (McIntyre & Subramaniam, 2009) Hence, since network effects are influenced by actor group sizes which in turn have an impact on participation decisions of potential actors on all sides (Armstrong, 2006), network markets face a "chicken-and-egg" problem as in order for one side to be attracted to join the platform, enough users must be participating on the other side and vice versa (Claussen, Kretschmer, & Mayrhofer, 2010). This makes the attraction of a sufficient amount of users one of the key issues for platforms in its early stages (Claussen et al., 2010; Ruutu et al., 2017). It is important for platforms to achieve this critical mass of platform users in order to achieve self-sustained growth of the network market (Ruutu et al., 2017). Adoption decisions are at the core of the assessment of competition between platforms. Installed user base sizes are influencing the decisions users make regarding which of the available competing platforms they will join and therefore represent a vital competition factor.

Traditional economic theory furthermore suggests, that if network effects are strong enough, they can result in "winner-take-all" market situation where one company controls the entire ecosystem (Gawer, 2014). Following Porter, network effects induce market imperfections in an industry, making it structurally attractive through high barriers of entry, power imbalances over buyers, and low intensities of rivalry (Porter, 1980), creating a competitive advantage for organizations choosing to invest in platform development (Ruutu et al., 2017). This can be attributed to the concept of path dependence, whereby performance outcomes of platforms strongly depend on past decisions regarding technological quality and strategy, leading to positive feedback loops where leading firms usually extend their advantage (McIntyre & Subramaniam, 2009). With the promise of winner-take-

all dynamics in these markets, the magnitude of strategic decisions is amplified due to the risk of being driven out of the market (T. Eisenmann et al., 2006).

To summarize, the economic view studies the existence of distinct user groups which transact with each other on the platforms. Further, it attributes the decisions users make regarding which platform to join to the already existing number of users in each user group. Therefore, the larger the installed user groups compared to a competitor, the more users decide to join this platform. The economical view predicts that in extreme cases this effect leads to one platform controlling the entire market. This scenario is called a winner-take-all situation. The winner-take-all situation is only one possible outcome of the competition between digital platforms.

The question remains why users join a platform market meaning how a platform creates value. In network markets, the value consumers derive from participating in the market is based on two distinct aspects of the product or service. First, the intrinsic or stand-alone value the product has even in the absence of a network and second, the network value derived from other consumers already using the product. While the stand-alone value depends solely on the attributes of the product, the network value is linked with direct and indirect network effects and the size of the installed base. This means that strong positive direct and indirect network effects increase the product value with each new user joining the platform. (McIntyre & Subramaniam, 2009)

The sources for the overall value created by a platform for all participants can be attributed to the four value drivers of efficiency, complementarities, lock-in and novelty. The value driver of efficiency is based in transaction costs theory and includes the lowering of transaction costs through enabling faster and more informed decision making, the reduction of information asymmetries, increasing the speed and facility with which information is transmitted while simultaneously reducing search and bargaining costs as well as opportunistic behavior to name only a few factors. At the same time, the complementarities driver is based in multiple theories, like strategic literature, the resource-based view, as well as network theory and states that a product bundle is more valuable than having each product separately, therefore increasing the value through revenue increases. The willingness of users to engage in repeat transactions and by strategic partners to maintain their associations with the platform is considered in the value driver of lock-in. By preventing the migration of users and strategic partners to competing platforms, the transaction volume on the platform is increased; also, the willingness to pay of users is amplified and opportunity costs of firms are lowered. The lock-in phenomenon has been studied within multiple theories and has been attributed to different factors like e.g. switching costs in transaction cost theory or as network externalities in network theory. Novelty as a value driver on one hand speaks to value creation through innovation established by Schumpeter but on the other hand in network markets also to the innovation

of new ways to do business by introducing new forms of transactions formerly unknown to the market. Also, they are connecting formerly unconnected user groups, eliminating market inefficiencies through efficient transaction facilitation or by creating new markets. The four value drivers are intertwined with each other so that different platforms use a combination of these drivers to create value for their user base. (Amit & Zott, 2001)

### 2.3.2 Network intensity

Following the value generation theory in network markets, scholars argue for different strengths of network effects or network intensities. This intensity is based on the ratio between the value generation by intrinsic characteristics and the value derived from the network. (McIntyre & Chintakananda, 2014; McIntyre & Subramaniam, 2009) Network intensity is therefore defined as *“the extent to which the value of a given product to a consumer is dependent on the size of an existing installed base of other users of the product”* (McIntyre & Chintakananda, 2014, p. 119). Scholars argue that this intensity is driven by the value derived by customers from interacting with a large installed base, the availability and scope of complementary products or services and the strength of ties among users, specified by the frequency and depth of interactions. Depending on the network intensity, the winner-take-all scenario becomes more or less likely. (McIntyre & Chintakananda, 2014)

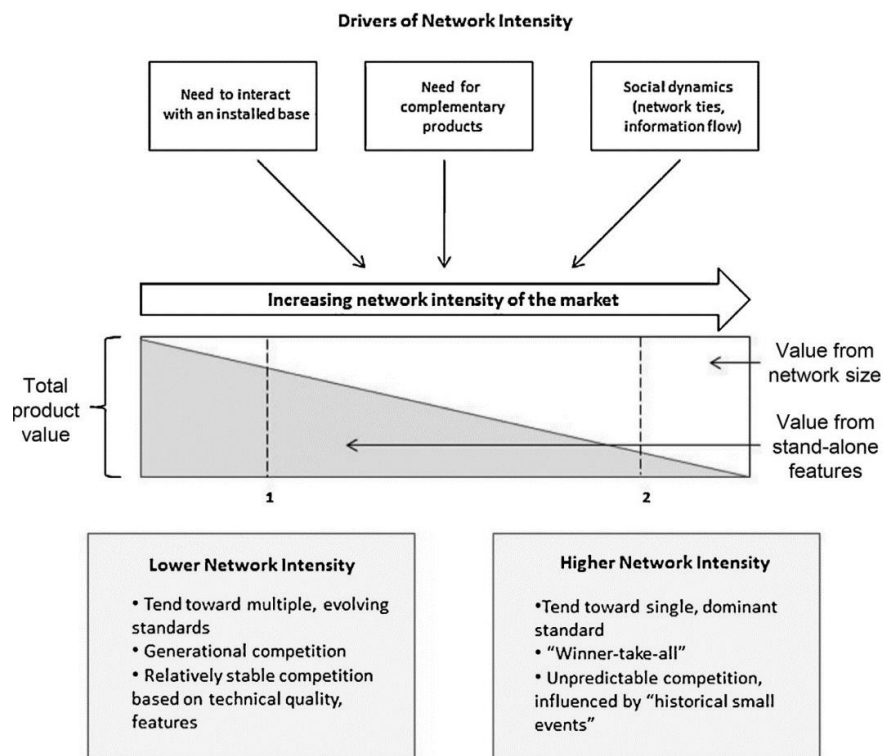


Figure 1: Drivers of network intensity (McIntyre & Chintakananda, 2014)



Figure 2 visualizes the interrelation of the network intensity drivers and suggests outcomes when markets or platforms are being subject to higher or lower network intensity. The study also identifies ways in which these network intensities can be manipulated by strengthening the before mentioned drivers of network intensity. First, platform providers can increase customer participation by offering information and opinions about a product. This is leading to more time users spend on the platform increasing the value generated by the product. Second, opportunities for customers to interact can be created. Also, by improving the management of complementors and consequently increasing the availability and variety of complementors will increase network intensity. (McIntyre & Chintakananda, 2014)

The network intensity gives an insight into how important the installed user base is for the competition between platforms. It also identifies the main drivers behind network intensity, which are the need to interact with an installed base, the need for complementary products and social dynamics. McIntyre and Chintakananda (2014) suggests that network intensity is manageable on an organizational level. Therefore, network intensity is one of the factors influencing competition outcomes.

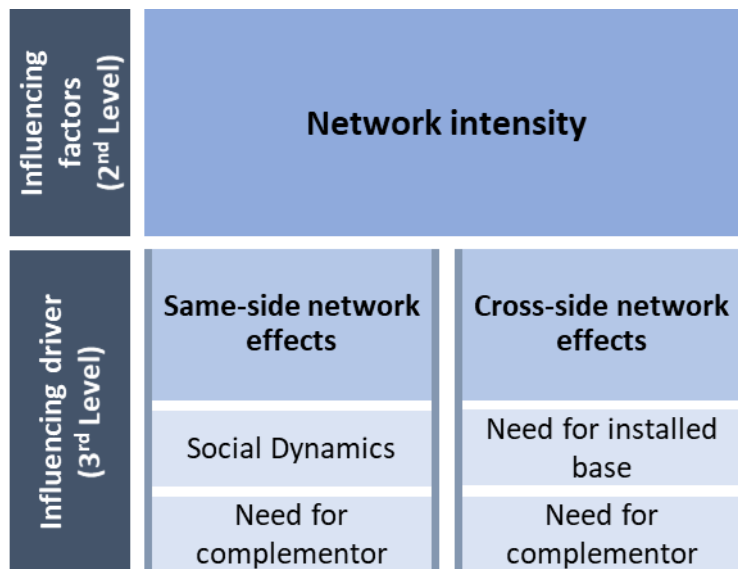


Figure 2: Network intensity as an influencing factor (own illustration)

Formerly, a lot of research has concentrated on the total size of the installed user base on a platform as the main source of value for users in a network market. By now there are multiple authors arguing that platform users do not only value a certain size and its connectivity of a network but rather are locally biased networks. In theory,

when one user joins and thereby expands the network, the value increases for all users in the network. However, customer's selection of a platform is sometimes influenced more by the existence of his or her acquaintances on the platform than by the total size of an installed base. Therefore, this global network effects assumption was challenged through the application of complexity theory. It was identified that the winner-take-all outcome can depend on the structural characteristic of a user base network (Lee, Lee, & Lee, 2006). In a clustered network, users within that cluster tend to know each other very well, while not many links exist between these clusters, leading to the preservation of local biases and therefore the adoption towards several platforms. Exchanging information with others is often a key source of platform benefits which are referred to as direct network effects (Katz and Shapiro 1985) and are realized through interactions among users on the same side of the platform. When sharing information with others, users are more likely to contact his or her acquaintances (e.g., family or friends) than the majority of unknown others in a network of all previous adopters (Lee et al., 2006). Therefore, users often do not benefit from any global user joining the installed base but from a local user joining the platform and therefore increasing local connectivity or local network effects. A large installed database can therefore be of less value if a user is locally biased which might act as a brake on the winner-take-all process and leaving room for smaller platform players to survive. Nevertheless, this might depend on the industry or market the platform is operating in and the structural characteristics of the network. If, for instance, many complementary services or products of high-quality exist, the effect of local bias can be reduced even in highly clustered networks. (Huotari, Järvi, Kortelainen, & Huhtamäki, 2017) The authors specify that this kind of local bias can be eliminated through the creation of links between the clusters, driving the market towards a winner-take-all scenario. Also, they showed that network compliments, which have global effects on consumer choice, can reduce the effects of local biases when they are relevant to direct network effects. This effect is especially strong when the value for platform users derives mainly from the availability of compliments and not from the interactions among customers. Suarez (2005) states that if users choose the platform that prevails in their strong-ties networks, a situation of "*multiple equilibria*", where more than one outcome is possible, can occur. Consequently, different platform owners can hold on to different parts of the market not necessarily on the grounds of the overall installed base but on the base in a specific part of the network with which they have strong ties.

Thus, instead of evaluating platform performance based on the size of the installed base alone, it is important to shift research to a level of platform competitiveness where the platform is analyzed as a holistic system (Cennamo & Santalo, 2013).

To summarize, if networks are clustered the importance of an installed user base is altered. It could be established that the two drivers of network intensity, social dynamics and need for complementors are influencing each other.

### 2.3.3 Pricing strategies

Multiple scholars have tried to address the decision on which side and how much to price on a network market. Rysman (2009) summarizes the results of these attempts and shows that the pricing depends not only on the demands and costs associated with the users of one side but also how their participation influences the participation on the other side(s) of the network market. Therefore the prices on both sides depend on a *“joint set of demand elasticities and marginal costs on each side”* (Rysman, 2009). Following this argumentation, besides a scenario where a platform owner prices both sides differently, it is also possible that negative prices emerge on one side of the network, the subsidy side, which is being subsidized by the positive prices on the other side, the money side (T. Eisenmann et al., 2006; Rysman, 2009). In such a case, the subsidy side is supported to incentivize growth, which will positively affect the growth rate on the positively priced money side. Therefore, subsidy side users pay less in a network market scenario than they would on a non-network market, while the opposite occurs for the money side, which pays more. The money side is only willing to pay this premium because of their desire to reach subsidy side users, expressed in the existence of cross-side network effects. When making pricing decisions, it is not always clear if a side should be subsidized and to what degree, which shows the complexity of finding the correct pricing for platform users. (T. Eisenmann et al., 2006) Thus, pricing strategies can be considered as another vital factor influencing platform competition and therefore a closer look into what influences pricing decisions besides the mentioned demand elasticities and marginal costs for network markets must be undergone.

The first factor is the ability to capture the positive prices provided by the money side (T. Eisenmann et al., 2006). Accepting negative prices on the subsidy side is only profitable if enough revenue is generated on the money side; subsidy side users should not be able to perform transactions with the money side outside of the platform (T. Eisenmann et al., 2006). Whether the subsidy side is provided with a technology or information, the users must be detained from avoiding to performing the transaction on the platform in order for the platform owner to capture the money side payment.

Generally, it can make sense to subsidize the user side which is more price-sensitive while charging the side which reacts more strongly to changes in the installed user base on the other side. Subsidizing a side creates a

strong growth incentive. As a result to this growth, the more reactive side will increase their platform participation as well. (T. Eisenmann et al., 2006)

Another factor is the sensitivity of users towards quality. The side which is responsible for creating the quality on the platform (e.g. movie makers or video game designers) needs to be assured of the availability of many users (potential customers) on the other side of the network, because of the high costs connected to ensuring this quality (T. Eisenmann et al., 2006). Therefore scholars argue that the side demanding but not creating the quality needs to be subsidized in order to grow and ensure the necessary large number of users required by the quality creating side (T. Eisenmann et al., 2006)

The output costs, describing the cost of adding a new user to the subsidy-side, are also affecting pricing decisions, since the fallout of not reaching enough money side users is especially grave when adding up more and more subsidy users is creating escalating costs for the platform provider (T. Eisenmann et al., 2006).

Also, same-side network effects should be part of the considerations, which were explained above. As Eisenmann, Parker and van Alstyne (2016) argue, "*[i]n the face of strongly negative same side network effects, platform providers should consider granting exclusive rights to a single user in each transaction category – and extracting high rent for this concession.*" This is based on the assumption that in the presence of strong same-side network effects, the growth of one side will be hindered by these dynamics and therefore fail to reach enough participants. In such situations governance rules must be in place to ensure that the cross-side network effects are not effected by monopoly positions or other behavior dissatisfying the other side. (T. Eisenmann et al., 2006)

Furthermore, just like branding plays a role in traditional markets, attracting highly coveted users to the platform will have a positive effect on the growth of the other side of the network (T. Eisenmann et al., 2006). In such scenarios, especially with smaller platforms, the coveted user populates a powerful position in the network which can lead to conflicts regarding the distribution of created profits of the platform (T. Eisenmann et al., 2006).

Additional deliberations can be made regarding price discrimination. Just as in non-network markets, price discrimination allows platform providers to capture a higher surplus. When price discrimination is applied to one of the networks sides, the extracted value on that side is higher, which leads to an increased importance to grow the other side of the network resulting in lower prices (higher subsidies) on this second side of the network market. Also, because of the formerly mentioned branding considerations, the attractiveness of different users to the other side is heterogenous and has to be considered. (Rysman, 2009)

Dynamic pricing is another factor which needs consideration. Using penetration pricing in the beginning of a platform lifecycle in order to grow network sides is a viable option for platform providers. This price will be raised after a sufficient number of users has been achieved. (Rysman, 2009)

### 2.3.3.1 Pricing models

Practically speaking, a platform owner first must determine the money and subsidy sides of the business by also considering each sides price sensitivity. The platform owner designs the price structure that is imposed on the members with the aim of making the entire business ecosystem grow continuously while producing profits of their own.

<b>Pricing Structure</b>	<b>Money Side</b>	<b>Subsidy Side</b>
<b>1<sup>st</sup> Strategy</b>	Supply Side	Demand Side
<b>2<sup>nd</sup> Strategy</b>	Demand Side	Supply Side
<b>3<sup>rd</sup> Strategy</b>	External Side	Supply Side and Demand Side
<b>4<sup>th</sup> Strategy</b>	Supply Side and Demand Side	None

*Table 1: Possible revenue structures for platforms*

Based on Kim (2016), four possible pricing models could be identified. The first strategy is to charge the supply side while the demand side represents the subsidy side. For instance, eBay charges a fee to the sellers – the supply side – while providing the purchasers – the demand side – free access to the platform. Most of the purchasers are individuals who pay for the products or services offered by the supply side and might tend to be sensitive towards prices. In contrary, sellers might be less sensitive to higher prices since they make profits by selling products or services on the platform. If commissions are imposed on both sides, it could be argued that only the supply side will participate while the demand side will not, which might lead to a stop of all trading on the platform.

The second strategy describes a scenario where the demand side represents the money side and the supply side represents the subsidy side. Kim (2016) explains the example of Microsoft and Windows, its PC operating system. Microsoft creates profits on the demand side with PC purchasers. If the number of quality programs available for Windows PCs is small, then PC purchasers might not see the value of using Windows and consequently the entire platform is degraded. Therefore, it is important to make sure that enough and high-quality programs and software can be accessed on the platform. In this regard, Microsoft for instance provides software development

kits (SDK) to developers for free as a subsidy side. Also, in many nightclubs which can be considered as physical dating platforms, charge male customers while granting female customers free access. It could be derived that the nightclubs see female guests as supply side and decided to charge the demand side, the male customers.

The third revenue structure strategy represents the case where neither the supply side nor the demand side are being charged but instead an external third parties pay for expenses. For instance, advertisers, who pay for advertisements in exchange for using the platforms and services, are the money side. This model is appropriate inter alia when the price competition is fierce or when both the supply and demand sides have high price elasticity, which often occurs in competitive markets or when both sides mostly comprise individuals.

The fourth strategy describes the scenario where supply and demand side are representing the money side and no subsidy side exists. For instance, Airbnb or Uber charges both sides, suppliers and consumers of their platforms. However, Airbnb for instance charges the supply side approximately 3% of the transaction volume whereas the demand side is charged up to 20% of the transaction volume. Thus, it could be argued that even though both sides are charged, the supply side is on the subsidy side since they pay less than the demand side does and therefore receives subsidies.

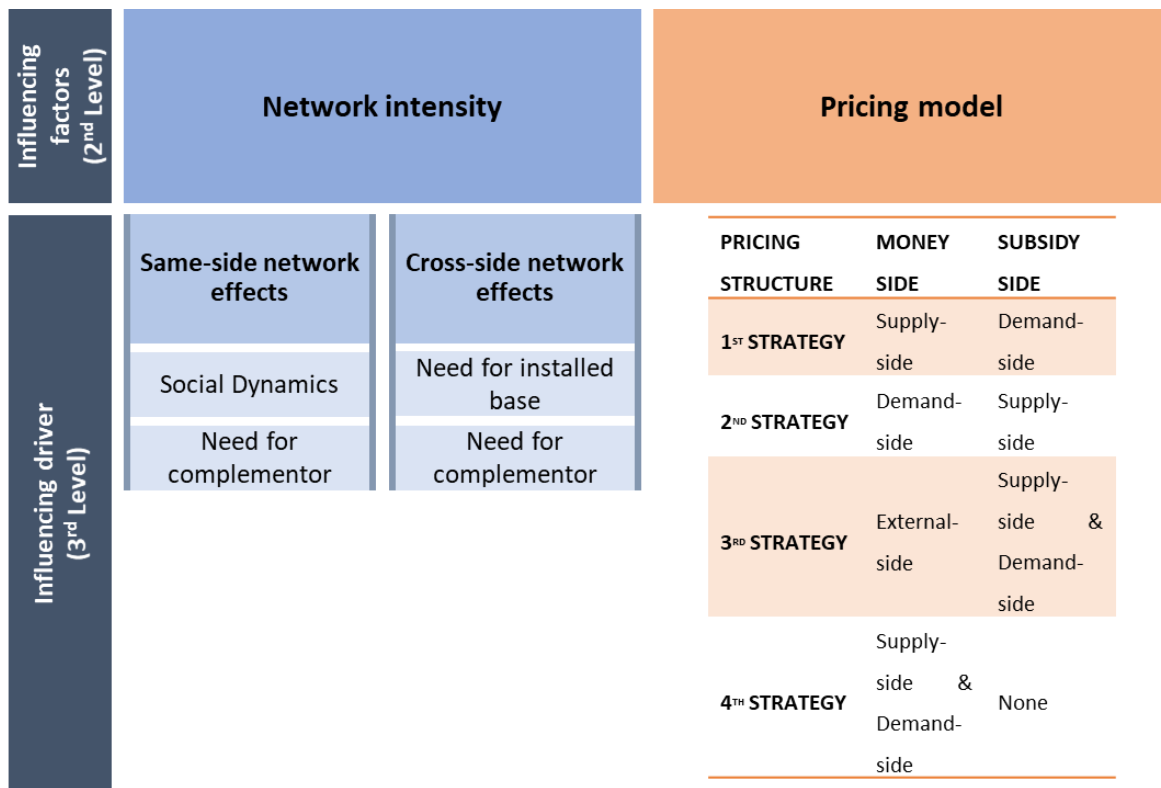


Figure 3: Pricing model as second influencing factor (own illustration)

Lastly, it must be said that supply side and demand side are not always clearly distinguishable. Females and males on dating platforms for example represent supply and demand at the same time. Pricing models of platform providers must be examined when assessing the overall platform competition within a market.

### 2.3.3.2 Revenue schemes

The final goal of any business is to create revenue and be profitable, and platform businesses are no exception. It is therefore necessary to analyze platform's potential revenue streams. However, since the growth of the platform's network might be slowed by profit generation, platform owners must judge their revenue models carefully through considering the platform strategy. The chosen revenue model directly affects the platforms future growth. (Kim, 2016)

Revenue streams of platform businesses can be clustered into direct revenue and indirect revenue and into recurring and non-recurring. The most common revenue streams are subscriptions and transaction-based are

revenue streams which are direct and recurring. Subscriptions are fixed installments a platform user pays in order to get access to the platform and using its services. A popular example of this revenue type is for instance the video streaming service Netflix which charges its customer a monthly fee for providing access to their video content. Transaction-based is another way of generating revenue. Whereas subscriptions do not or only partially consider a user’s platform usage, transaction-based revenue models take the usage behavior of the platform user into account. Furthermore, the platform owner can generate direct revenues by charging user an access fee to enter the platform. As well as subscription or transaction-based models, an access fee provides direct revenues, however, only as a one-time payment and therefore not recurring. Indirect recurring revenues can for instance be generated by online advertising where the platform owner demands a share of an advertiser’s income (e.g. pay-per-lead or sale) or by selling “screen area” (e.g. pay-per-view or click) on the platform. Indirect non-recurring revenues can for instances be generated by requesting a revenue share for placing and promoting applications developed by third party software developers onto the platform. (Eurich, Giessmann, & Mettler, 2011)

<b>Recurring</b>	Subscription Transaction-based Additional services (certification, training)	Advertisements Affiliate services
<b>Non-recurring</b>	Admission fee Downloads/upgrades	Revenue sharing
	<b>Direct Revenue</b>	<b>Indirect Revenue</b>

Figure 4: Potential revenue streams (Eurich, Giessmann and Mettler, 2011)

### 2.3.3.3 Pricing under competition

Besides looking at pricing decisions for a single platform, scholars analyzed the effects of competition between multiple platforms on pricing decisions. Rysman (2009) points out, that the dynamics affecting the decision to subsidize platform sides are multiplied in case a platform owner is not only competing for consumers based on demand, consumer costs and the mark-up to sellers (effects on the other side of the network), but also for the



chance to poach competing platform users of the subsidy sides. This in terms would decrease the value of the competitive platform for the money side users, while increasing the value of the own platform (Rysman, 2009).

This effect is influenced by the ability and willingness of platform users to change or perform transactions on multiple platforms; this subject is called single- or multi-homing which will be introduced in detail later in this study. In this section, it is only to be mentioned that in case a subsidy side is drawn towards single-homing scenarios, platform providers regularly compete aggressively for this side to achieve a monopoly position over the access to it and charge monopoly prices on the money side (Rysman, 2009).

#### 2.3.4 Degree of openness & boundary resources

An important question regarding the achievement of a critical mass of platform users is the degree of openness and its interoperability through open and common interfaces as well as the easy exchange of data across platforms (Ruutu et al., 2017). Eisenmann, Parker and Van Alstyne (2008, p. 1) go so far as to say that “[s]electing optimal levels of openness is crucial for firms that create and maintain platforms”. The decision needs to be balanced based on considerations regarding adaptability and appropriability. While opening a platform usually leads to more users joining the platform because of the stimulation of the creation of differentiated products, at the same time, user switching costs are reduced which leads to increased competition (T. R. Eisenmann et al., 2008). Furthermore, the opening of boundary resources can enhance the magnitude of existing network effects through third party application integration (Ruutu et al., 2017).

To understand openness in the context of platforms, one needs to consider what aspect of them can be regulated and to which degree. Eisenmann, Parker and Van Alstyne (2008) define the following roles as being influenceable towards their degree of openness: each of the platform sides, which can be influenced differently if needed; the platform providers, who are influencing the contact point of users; and platform sponsors, exercising property rights on participation privileges for technological development. Those roles can be placed under no restrictions at all or can be given different regulations to various degrees based on strategic considerations. Currently successful network markets with all combinations of openness of these roles exist. (T. R. Eisenmann et al., 2008)

##### 2.3.4.1 Horizontal strategy & integration

Horizontal integration refers to if and how the platform should cooperate with competing platforms, seeking compatibility with them, integrating with them or trying to block them out through incompatibility (Rysman, 2009). Interoperability between rivaling platforms on a technical level leads to the ability of platform users of one platform being able to access services provided by a rivaling platform (Ruutu et al., 2017). This is a

fundamental “yes” or “no” decision, whether users of the own platform should be able to transact with the other side of another platform. This decision can be segmented based on user sides and even more specifically towards user subsections on the same side. (Rysman, 2009) Following the roles identified before as relevant for the openness of a platform, platform owners must make these decisions for the following aspects. First whether to allow rival platforms users to interact with users of their own platform; Second, whether to allow additional parties to participate in the commercialization of the platform; Third, whether the technological development of the platform should be open to outside forces. The choice for or against compatibility with a rival platform should be based on considerations regarding market size, market share as well as projected margins for both cases. (T. R. Eisenmann et al., 2008)

#### *2.3.4.2 Vertical strategy & integration*

The first aspect of vertical integration for platform markets is the decision about the number of sides the platform should pursue (Rysman, 2009). The decision on how many sides to allow on a platform is closely related to the question of vertical integration (Rysman, 2009). Platforms can decide to provide the services or products to an existing user group themselves. This results in high costs, allows however the platform to reach a sufficient number of users on one side of the platform, before taking advantage of cross-side network effects by “opening” the platform to another side (Rysman, 2009). On a technical level this means opening harmonized application programming interfaces allowing for the inclusion of outside service providers on the platform (Ruutu et al., 2017). This shows that the number of sides on a platform is not necessarily technologically predetermined or tied to the business case but rather a purposeful strategic decision (Rysman, 2009). The same goes for introducing more than two sides to the network market, allowing for other services or products to be present (Rysman, 2009). This decision is especially complex when possible complementary products or services are available and “make-or-buy” decision have to be made as well as decisions to grant exclusive access rights to carefully chosen complementors (T. R. Eisenmann et al., 2008).

## **2.4 Digital platform competition**

### **2.4.1 Competition scenarios – potential outcomes**

Several authors have focused their research on the potential competition outcome scenarios and the factors influencing those outcomes. This chapter will provide an overview of identified competition outcomes by prior scholars and thereby determine and explain further important factors influencing platform competition. The winner-take-all scenario has been the primarily identified outcome by scholars for matured platform markets (Gawer, 2014; Shapiro & Varian, 1999). However, a growing number of scholars are describing other possible

outcomes or tie this scenario to specific conditions (Armstrong, 2006; T. Eisenmann et al., 2006; Ruutu et al., 2017).

Ruutu, Casey and Kotovirta (2017) describe three possible scenarios which might emerge. The scenarios are winner-take-all, fragmented development and collaboration and competition scenario. In the winner-take-all market situation one platform is able to successfully accumulate enough resources to lock-in customers and achieves a monopoly position, driving competitors out of the market. When platform markets succumb to the fragmented development, the critical mass of users which would be necessary to benefit from self-sustaining growth through feedback loops is not achieved by any platform participating on the market. As a result, the installed base of users on all platforms eventually decreases and the platform market fails. In the collaboration and competition scenario a balanced competition between several coexisting platforms emerges. (Ruutu et al., 2017) Likewise, Eisenmann, Parker and van Alstyne (2006) predict that a winner-take-all situation may arise as a result of platform competition. Also, the authors see this however not as inevitable as the traditional economical view of platforms suggests, but rather dependent on several industry factors and strategic decision making. They also argue that for markets where one industry-wide platform is likely, the competition between platform providers might be much more fierce (T. Eisenmann et al., 2006).

As a consequence of the insights provided by Ruutu, Casey and Kotovirta (2017), three possible outcome scenarios are defined (see Figure 5).



Figure 5: Competition scenarios

Besides having to compete with other platforms which serve the same user groups, other forms of competition can emerge for platform providers. These asymmetric competition scenarios include single-sided competitors focusing on one of the user groups, multisided platforms which compete for some but not all of the existing sides of a platform as well as multisided platforms which has all of the platform sides plus additional ones (Evans & Schmalensee, 2014).

The reasons why platform markets are resulting in a specific competition outcome have been analyzed with growing attention in the academic community. The following section is going to give a summary of the identified explanations for competition outcomes.

#### 2.4.2 Multi-homing & switching costs

Multiple authors emphasize the importance of user groups not being exclusively on one platform. This is referred to as multi-homing. According to Eisenmann, Parker and van Alstyne (2011), for a winner-take-all situation to arise, multi-homing costs must be high for at least one of the user sides. As opposed to single-homing, multi-homing refers to users participating in multiple platform ecosystems (Choi, 2010). The costs connected to homing are referring to all the expenses user infer when using a platform, this includes the adaption to the platform, operation as well as opportunity costs for using the platform (T. Eisenmann et al., 2006). When it is expensive for users to affiliate with a platform, they are highly unlikely to pay the same costs multiple times and join multiple platforms.

Evans and Schmalensee (2014) second this sentiment. They also conclude single-homing and multi-homing scenarios can lead to different market outcomes. According to them, if actors from both sides of the platform single-home, then the actors are restricted to one single platform in order to interact with the actor from the other side of the platform. In this case, platforms compete by attracting more actors of both sides as more transaction partners become available on the platform and leaving fewer actors on the competing platform. Another market environment is that actors from one side of the platform join several platforms – they multi-home – whereas the actors from the other side single-home. This makes the single-home side of the platform to what Armstrong (2006) refers to as “*competitive bottleneck*”. Practically speaking, if an agent on the multi-homing side wishes to interact with an agent on the single-homing side, the agent has no choice but to join the chosen platform of the single-homing agent. If for instance, only Netflix has the exclusive right to provide movies from The Walt Disney Company and a user wants to watch these movies, he or she does not have the choice to subscribe to a different movie platform such as Amazon Prime or HBO but must join Netflix’s media-services platform. Consequently, platforms have monopoly power over providing access to their single-homing customers for the multi-homing side. This monopoly power might lead to increased prices for the multi-homing side whereas the platform competes for the single-homing actors and thus must presumably pay price premiums. (Belleflamme & Peitz, 2019) In an extreme case, the higher profits generated by the multi-homing side are entirely passed on to the single-homing actors (Armstrong, 2006, pp. 669–670). Nevertheless, other authors are arguing that the price structure as described does not always turn out as the “*competitive bottleneck*” theory

would predict (Evans & Schmalensee, 2014, p. 16). From the perspective of the platforms, it can be concluded that platforms in the two-sided single-homing market are competing on both sides of the platform, whereas in the “*competitive bottleneck*” market environment, platforms compete on the single-homing side and the multi-homing side must pay monopoly prices. (Belleflamme & Peitz, 2019)

In this context, it is also important to address “*switching costs*”. Switching costs refer to the cost incurred by users to abandon a multi-sided platform and join a competing platform. Researchers argue that switching costs in the digital world are often lower than in the physical world and therefore digital platforms can be disrupted more easily (Amit & Zott, 2001). High switching cost, disregarding monetary or emotional switching costs, in its ultimate form create a lock-in for the consumer so that these consumers stay and transact within the platform ecosystem. If a lock-in can be achieved highly depends on the type of network and the strategic decisions made by the platform owner. For instance, a consumer who wants to rent a private home for his vacation can easily open a free account at several different platforms – assuming the platform charges transaction-based – that offer this kind of service. In comparison, switching social networks effectively means leaving behind all the established connections to other people and starting over. In that sense, lock-ins are often but not exclusively for social networks. Nevertheless, for the described private home sharing economy platform switching costs also exist. For instance, the consumer must get familiar with another platform which entails learning and training costs. Further, search cost might arise if the consumer must find a similar platform which offers similar services and products first. Furthermore, the consumer might face possible loyalty or trust costs because the trust forming mechanism of the new platform might be different and the building trust process towards suppliers starts over. (Demary, 2015)

The importance of switching costs and its impact on single- and multi-homing possibilities and decisions is mentioned by several authors. Hence, this represents another factor influencing the competition outcome. The ability to multi-home is assessed for both the supply- and the demand-side. This influencing factor determines if platforms compete on one or multiple sides of the platform and needs to be evaluated in combination with the other competition factors (see Figure 6).

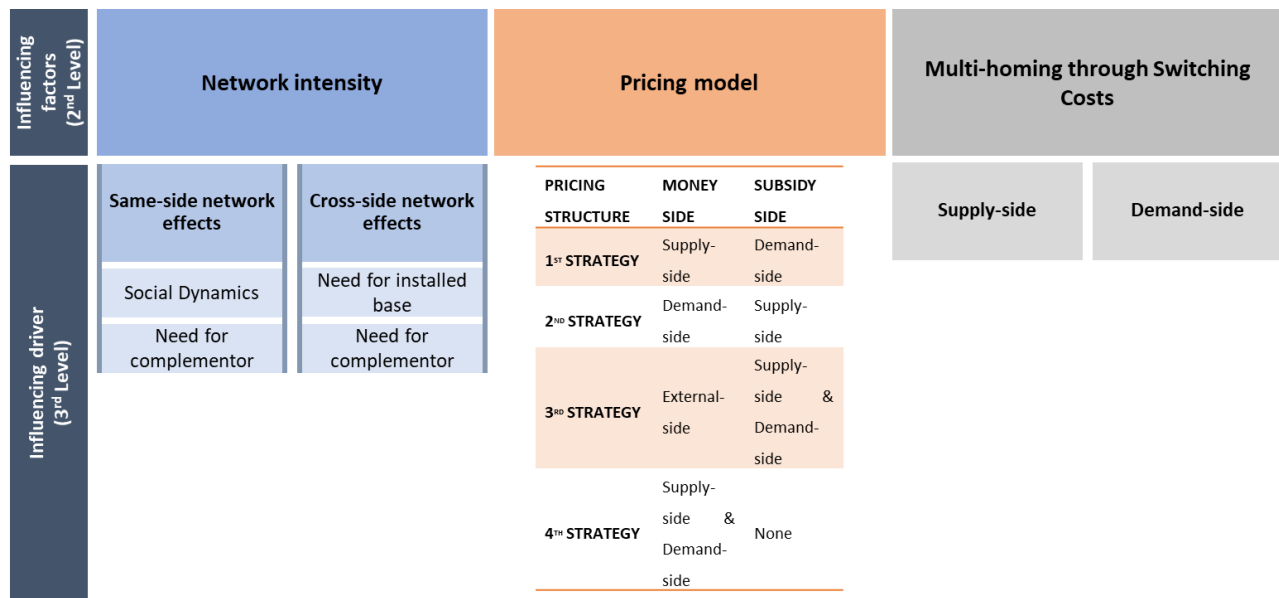


Figure 6: Multi-homing as third influencing factor (own illustration)

### 2.4.3 Strength of network effects

As already stated before, another important aspect is the strength of the network effect of a network market. As stated by McIntyre and Chintakananda (2014), network effects are platform specific and can therefore differ between competitors. This is true for same- and cross-side network effects. Different strengths of network effects lead to different strengths of self-reinforcing feedback loops which leads to different growth rates of installed user bases.

Also, the strength of network effects has influences on multi-homing decisions. When cross-side network effects are positive and strong, the user side with high multi-homing costs will increasingly join the large-scale platform and since they have high costs for multi-homing, they will likely pick only one platform to join. Positive same-side network effects on this side furthermore strengthen this effect. (T. Eisenmann et al., 2006) It is therefore important to assess the strength of existing same- and cross-side network effect when analyzing platform competition.

This again emphasized the important of network intensity for the framework. It also shows the interconnection between multi-homing and network intensity and further legitimized the approach to assess competition outcome as a combination of the identified influencing factors.

#### 2.4.4 Differentiated user preferences exist

The third factor influencing competition is differentiated user preferences. If users on all sides of the platform are homogenous and do not have different preferences, this means that a differentiation strategy is not available to platform providers (T. Eisenmann et al., 2006). Evans and Schmalensee (2014) see the existence of multiple platforms within an industry as the result of differentiation strategies. Platform providers can choose to appeal to different subsections of user groups and differentiate themselves from competitors by selecting different product attributes. In network market scenarios differentiation decisions on one side of the platform affect demand on the other side and therefore need to be reached in consideration of all existing sides. Differentiation can create value for agents by making it easier for them to reach a specific group of value-increasing users. Differentiation strategies can result in collaboration and competition scenarios as described by Ruutu, Casey and Kotovirta (2017) even though other influencing factors would point towards a winner-take-all scenario. (Evans & Schmalensee, 2014)

Rysman (2009) also sees the ability of platforms to differentiate from each other as a vital factor in whether multiple platforms can coexist within a market or whether the tipping of a market towards a monopoly occurs (Rysman, 2009). However, he also states that the higher the ability of providers of complimentary products or services is to differentiate themselves from each other on the same platform, the more likely the tipping of a market becomes (Rysman, 2009). In other words, when a user cannot distinguish itself from other users on a platform, the user is more likely to differentiate itself through joining another platform. In such a case, multiple platforms would coexist, and the tipping of a market would be prevented. Besides the competition between platforms he therefore adds a perspective addressing the competition between complementors on the same platform (Gawer, 2014). If complimentary product providers cannot be differentiated they will differentiate by adoption different standards, ergo by choosing different platforms, which can, in extreme cases, even lead to a failure in the adoption of any platform (Rysman, 2009).

Differentiation is also connected to multi-homing. From the perspective of the actor sides, it can be concluded that if competing two-sided platforms are considered *“as homogenous by members of one group but are viewed as differentiated by members of the other, the latter will single-home, the former will multihome, and ‘competitive bottlenecks’ will arise endogenously.”* (Armstrong & Wright, 2007)

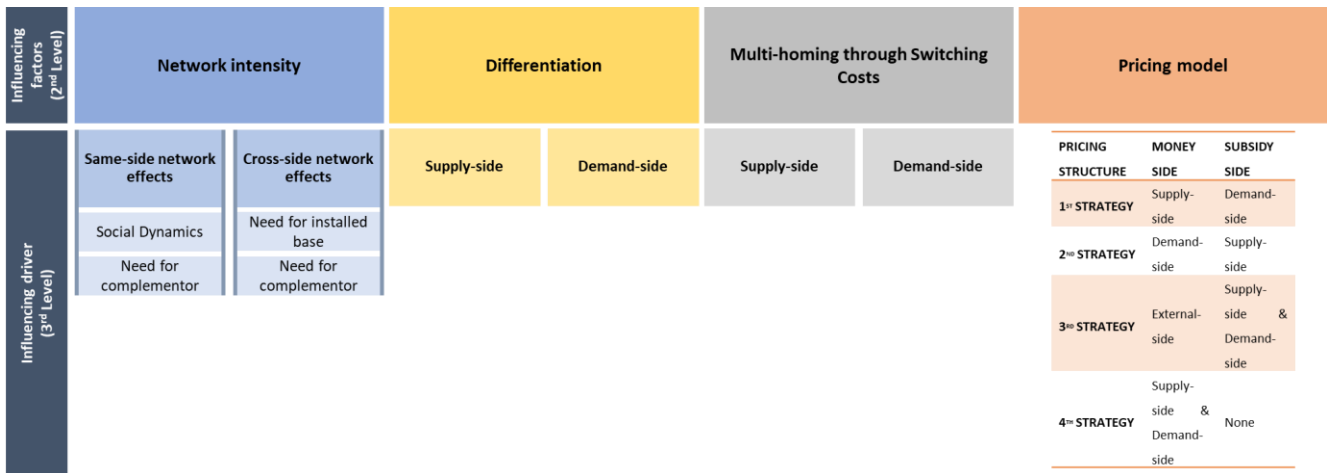


Figure 7: Differentiation as influencing factor (own illustration)

## 2.5 Problematization

Throughout the theoretical research, we identified that different views on platforms exist. Next to the technological view which deals with innovation, the economical view tackles the broad field of platform competition. Therefore, the economical view will be considered for this research study. We further identified how platforms in the economical view are defined as two- or multi-sided markets, explained how they create value and how they can be managed. Based on this understanding, we were able to introduce the factors of switching costs and multihoming, strength of network effects, pricing and differentiation between platforms, as they have been identified by scholars as being influential in the determination of competition outcomes. Each of this factor was identified by multiple scholars within the existing literature. Besides this, we identified other potential competition outcome scenarios besides the winner-take-all outcome.

Nevertheless, current academic literature does not analyze all identified influencing factors in combination and therefore current competition analysis does not acknowledge the interrelations of factors. Therefore, no competition outcome analyses have been conducted based on an integrated view of all currently known influencing factors determining competition outcomes between digital platforms. This research study aims at closing this gap so that a more sophisticated understanding of competition outcomes can be developed. This gap must be closed due to the ever-rising quantitative and qualitative importance of platforms as a business model. Part of closing this gap is the development of a framework incorporating all the identified influencing factors through reviewing existing research literature. However, the question remains what influences the identified



factors. By adding the drivers of influencing factors, we are examining what impacts the influencing factors and thereby add another layer to the analysis. By doing so, we ensure a more in-depth analysis of the presented research problem. The multi-layer framework will then be used as a tool to analyze several exemplary cases. The framework is also developed in order to serve as a tool which can be utilized by practitioners to rank themselves within their specific competition scenario.

## 3 Analytical Framework

### 3.1 Development & description

Based on the theoretical insights presented in the research domain section, in this chapter an analytical framework is developed consolidating the factors presented by scholars as being influential in the outcome of platform competition. It therefore contributes to the research field of platform competition theory by combining relevant research, which prior has only been analyzed in isolation, into a comprehensive framework integrating differentiated perspectives. This research study helps strategists and managers of platform businesses understand what factors drive platform competition and how it can be influenced. We provide guidance and practical implications for developing competition strategies and further development of their platform businesses.

The framework can be used to identify differences in the influencing factors between platform providers determining the competition outcome. The relevant influencing factors are network intensity, differentiation, multi-homing through switching costs and pricing model. While some interconnectivity between these influencing factors exist, they are treated as equal in their influence on the competition outcomes. While a market leader aims for a winner-take-all situation, organizations in early development stages are aiming to break this domination and move the market towards a competition and collaboration scenario. Platform competitors can derive actionable insights based on their respective market situation after gaining the necessary insights regarding influencing factors through the provided framework.

This chapter first defines potential users of the framework by setting clear criteria which need to be fulfilled for the framework to be applicable. Then, the framework components are described in detail while providing a first step towards an assessment of these influencing factors. While this framework does not grade the dimensions on a scale, it allows for a relative comparison between two or more platforms. The framework has been visualized and will be described in detail in the following (Figure 8). The framework consists of three levels. The first level represents the potential competition scenarios. These scenarios are influenced by the influencing factors on the second level. The third level was introduced to make the influencing factors measurable and describes what drives these factors. For the factor of network intensity, the drives are differentiated between same-side and cross-side network effects. For differentiation and multi-homing through switching costs, the supply-side and the demand-side are evaluated.

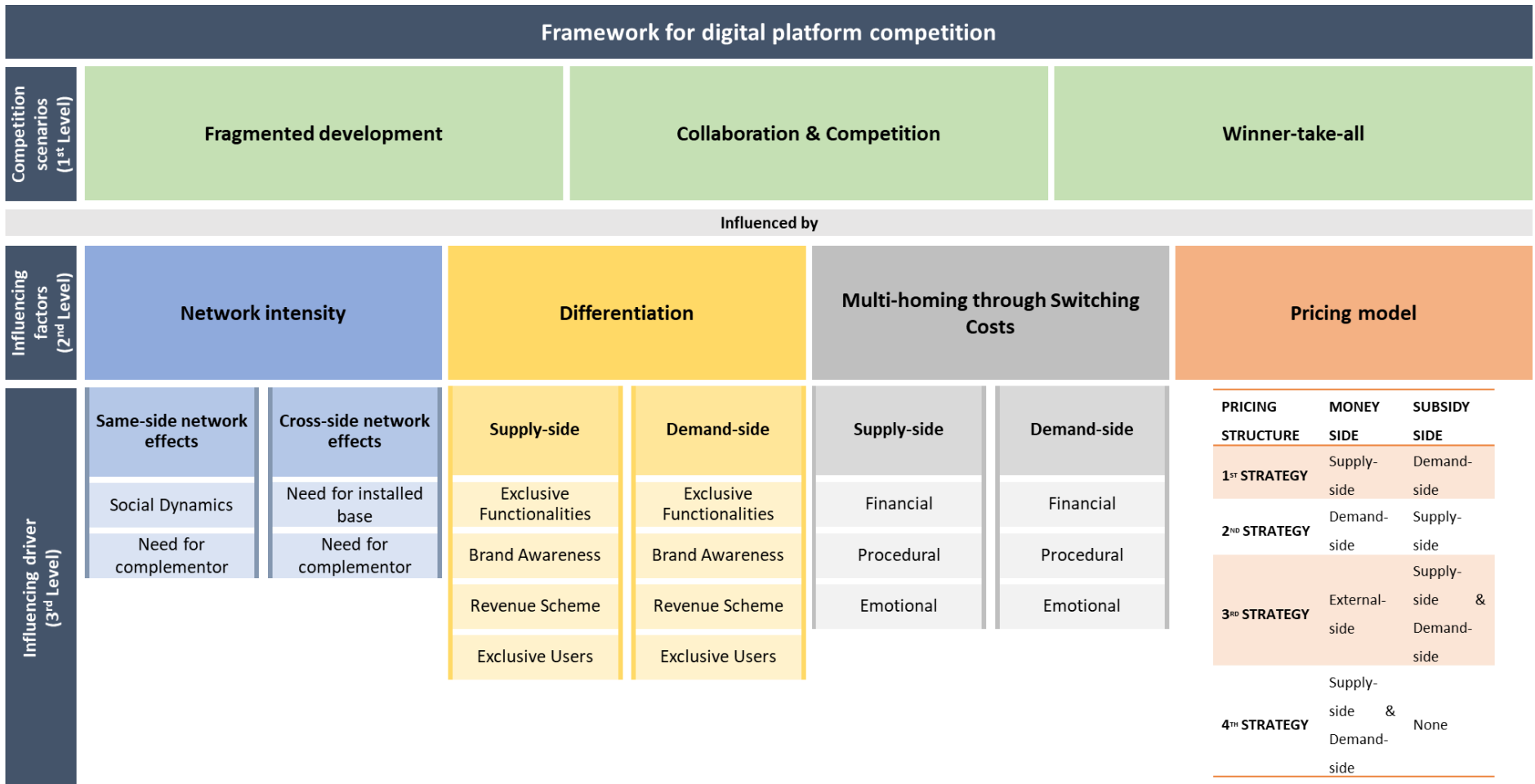


Figure 8: Framework representation (own illustration)

### 3.2 Defining a multi-sided digital platform

First it must be examined if the presumable platform business can be considered as multi-sided platform in the understanding of this research. It is therefore necessary to define clear platform inclusion criteria. A platform is considered a multi-sided market when it is facilitating the exchange between actor groups which otherwise would not be able to interact with each other in the same way. Furthermore, the consumer must derive some part of the overall value of the product or service from the existence of other consumers which are also using the product or service. Finally, positive inter-side externalities must be created within the same transaction. This paper is furthermore focusing on digital platforms. The influencing factors of this framework might be affected by the digital nature of the platform which will be addressed in the relevant factor descriptions. Furthermore, this paper only addresses markets where digital platforms have been competing for an adequate amount of time.

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Inclusion Criteria
<ul style="list-style-type: none"><li>• <b>Facilitating exchange between user groups</b></li><li>• <b>Digital Platform</b></li><li>• <b>Positive cross-side network effects</b></li><li>• <b>Positive inter-side externalities within the same transaction</b></li><li>• <b>Mature Market</b></li></ul>

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*Table 2: Digital platform inclusion criteria (own illustration)*

### 3.3 First influencing factor – Network intensity

The network intensity factor is closely related to the value creation in network markets. It speaks to how much of the value generated for consumers is reliant on other consumers using the same product or service, compared to the value created through intrinsic product characteristics. The more the overall value relies on network value, the higher the network intensity and the stronger the self-reinforcing feedback loops and the possibility of a winner-take-all market situation. In this framework network intensity is seen as firm specific and therefore a possibility exists for platform providers to lower or raise their network intensity. It should therefore be the goal of a firm to increase their network intensity over the network intensity of their rivals in order to benefit more from self-reinforcing feedback loops and grow more. Hence, a platform provider must compare the network intensity of its platform to the network intensity of its competitors.

The ability to assess network intensity and the knowledge how to manipulate them is relevant for platform providers in order to understand the impact the forces driving network intensity might have on their business and their capability of leveraging these effects. While it is difficult to assess this intensity on a fixed scale and

specific metrics for the assessment are missing (McIntyre & Subramaniam, 2009), the relative strength to market competitors is investigated to evaluate the market dynamics and competition positions within a market.

In former research network intensity was merely measured by the size of the installed user base and available complements. These factors are not enough to evaluate the network intensity differences of the competing firms in a market. Scholars have called for the development of accurate metrics (McIntyre & Subramaniam, 2009). This paper makes a first step into the direction of making direct- and indirect network effects measurable by looking into the drivers of network effect strength.

To assess the actual value of a network to a marginal adopter, one must first identify the source of the value. This source of value for an adopter can be different depending on the driver of the network effects. The currently known factors influencing network intensity are (a) the need for an installed base of users in the fundamental design of the product, (b) the need for complementors and (c) the network structure and tie strength within the installed user base (McIntyre & Chintakananda, 2014; McIntyre & Subramaniam, 2009). These factors are the driving forces behind network intensity, but they behave differently. For factor (a), the higher the need for an installed base of users, the more network intensity relies on the existence of an installed base of users. For factor (b), the higher the need for complementors to the core product, the more the network intensity relies on the existence of a network of well managed and relevant complementors. And for factor (c), the stronger the tie strength within an installed user base, the more the network is clustered, which leads to less importance of global size of installed user base. Rather, the competition outcome depends more on the network structure and smaller platforms have room to exist next to the market leading platform. While factors (a) speaks to the strength of the cross-sided network effects, factor (c) influences the same-side network effect intensity. Factor (b) is relevant for both same- and cross-side network effects.

The classic way for a network market to drive value generation would be that the platform was designed in a way that most of the value is created through the installed base and the fundamental design leaves no room for intrinsic value generation. A prime example for a network market driven by this value driver are dating websites. In this example, the installed user base is deemed to be the most important way of comparing different platforms. Therefore, the network intensity for all platform sides is assessed according to number of users.

Value in network markets can however also be driven by social dynamics, like in the case of social networks. In such a case the network structure retains strong ties between individual users leading to local biases when adopting to a platform, which needs to be accounted for. To do so, this analysis will look for opportunities for

same-side information exchange through interactions among users. No matter how clustered the industry network is, by allowing users to communicate, links are created between users and user clusters which decreases network clustering and as a result increases the network intensity. In this context, platforms are evaluated based on the existence of information exchange between same-side users. Also, by creating new links, relationships are formed between users which are creating switching costs, since these relationships can only be maintained by staying on a platform.

Another possibility is that the value is being driven by the existence and amount of complementors, like in mobile operating systems (iOS or Android). To analyze this, the existence of complementors on the platform will be evaluated. If complementors exist, the value generation is assumed to be at least partially driven by complementors. The comparison would then move towards the number of available complementors. Part of this assessment must be the willingness of the platform provider to provide open boundary resources to allow outside complementors on the platform.

Since no metric for network intensity currently exists, this framework will assess these three factors in order to make a relative determination for both direct and indirect network effects and ultimately the network effects intensity of the platforms in relation to each other. Afterwards an assessment can be made which platform is operated under more intense network effects and therefore which platform can benefit from more intense self-reinforcing feedback loops. This platform will be identified as more likely to reach a winner-take-all market situation. Then, to account for the outcome centric market characteristic perspective, which was demanded by scholars, the projected outcome when considering the network effects perspective will be compared with the actual market outcome.

### 3.4 Second influencing factor – Differentiation

If differentiation potential in a market exists and platform businesses manage to exploit this potential, then multiple platforms can coexist within the same industry. Therefore, it should be the goal of market followers to differentiate themselves from the market leader. The market leader, however, should aim to prevent such efforts. To clarify, while product differentiation traditionally is defined as *“[a] product offering [being] perceived by the consumer to differ from its competition on any physical or nonphysical product characteristic including price”* (Dickson & Ginter, 1987), in this case it is defined as a platform being perceived by users to differ from its competition. This leads to the necessity to compare platform characteristics between competing platform markets in order to find differences. Since this study is dealing with network markets, all sides of the market

must be evaluated from a differentiation perspective. To distinguish between different sides, this framework uses the categories of supply- and demand-side of a platform.

Product differentiation can furthermore be an effective strategy in the presence of differentiated market segments. In such a case the market leader would serve the biggest market segment by adopting its platform characteristics to this segment's needs and wishes. At the same time, competing platforms would move towards the product characteristics desired by smaller market segments and therefore justify their existence by serving a niche market. (Dickson & Ginter, 1987)

When analyzing product characteristics, one must consider the price as well as the relevant product characteristics from the perspective of the user groups. Applying this to digital platforms, besides pricing this paper will evaluate the characteristics of available platform functionalities, marketing expenses and the existence of coveted users on platforms. The product characteristic of pricing will be considered in terms of different pricing options. This framework evaluates if different pricing options exist and if prices vary significantly. If pricing options between platforms vary, the platform is seen to be differentiated from its competition. Furthermore, the available functionalities next to the core functionality must be taken into account. However, since differentiation is about being different from your competitors, only the functionalities not available on a competitor's platform are relevant. Therefore, functionalities for all user groups are analyzed for each platform and later compared to find differences. The willingness of a platform provider to provide open boundary resources towards complementors developing functionalities for the platform sides will be considered. Also, the marketing presence of platforms regarding their brand awareness towards users is compared to their rivals. Furthermore, the presence of coveted user groups which are exclusive to one platform will be analyzed. The aspect of coveted users includes user group members which stand out, for instance, due to their branding efforts, skills, content or availability. The existence of coveted users will be analyzed on an amount bases and also (if possible) on their relevant influence in the marketplace.

The mentioned characteristics are relevant for both supply and demand side of a network market but might have different implications, wherefore both sides must be assessed. A differentiation effort in any of the presented drivers will be interpreted as an effort by a platform provider to differentiate and will therefore be a sign against a winner-take-all situation.

### 3.5 Third Influencing factor – Multi-homing through switching costs

Multi-homing speaks to platform users who participate in the market while using multiple platforms. Multi-homing scenarios have a profound impact on competition outcome scenarios, as they define on how many sides platform providers compete for potential users and therefore effect the ability of one platform to be an industry wide solution (T. Eisenmann et al., 2006). Multi-homing costs will be evaluated on both the supply- as well as the demand-side of a platform market. If multi-homing costs for one of the sides is high, users of this side are more likely to join only one of the competing platforms.

When combining multi-homing costs with the influencing factor of network intensity, further evaluations regarding competition outcomes can be drawn. When cross-sided network effects are strong and positive, the user side which has high multi-homing costs will increasingly join the leading market platform. Strong same-side network effects intensify this outcome. Under these conditions, the chances of a winner-take-all scenario rise.

As presented in the theoretical grounding, single-homing and multi-homing decisions are closely related to switching costs. Switching costs can be divided into three categories: Financial, Procedural and Relational (Demary, 2015; Jones, Reynolds, Mothersbaugh, & Beatty, 2007).

Financial switching costs describe the costs associated with the loss of money when switching the currently used platform. This for instance contains costs such as cancelation fees, new sign-up fees, new equipment or installation costs or giving up on collected financial rewards through loyalty programs. Procedural costs include the loss of time and effort when getting familiar with a new platform. These costs result for instance from onboarding or training costs. Relational costs contain discomfort experienced by users of a new supplier when adapting to the change. Users might have built a certain loyalty to a brand and therefore identify with the brand of the platform. This type of costs is almost impossible to quantify and therefore requires the estimator's best judgement. While this type of cost is an important factor, it should not be overemphasized. High switching cost in its ultimate form create a lock-in for consumers, so that these consumers stay and transact within the platform ecosystem. (Demary, 2015; Jones et al., 2007) Thus, it must be investigated how cost intensive it is to switch from one platform to another for users on all sides of the platform.

In order to measure switching costs, the results of Chen and Hitt's (2002) research study will be followed and applied. In summary, the two authors found that customer demographic characteristics have little effect on switching, however, that systems usage measures and systems quality are associated with reduced switching. They further found that firm characteristics such as product line breadth and quality reduce switching. The



authors of this study identified important switching cost measurement factors which were clearly supported in their hypothesis-based approach. Thus, these approved hypotheses will be part of the assessment of the switching cost factor of the developed framework and will be explained in the following.

The first hypothesis states that the “[u]se of multiple platforms is positively correlated with switching”. For instance, consumers who multi-home and therefore adopt multiple platform providers may be inherently “disloyal” and more likely to switch. It therefore must be examined what share of existing customers of a certain platform multi-homes and therefore also uses another platform which offers the same core service as the investigated platform.

Second, “[c]hanges in usage patterns are positively correlated with switching”. Customers who change their usage patterns might also be more inclined to switch to the extent this suggests a change in underlying preferences. It therefore must be examined how consumers change their usage patterns on a platform.

Also, “[h]igh volume of Web site usage is negatively correlated with switching”. Moreover, to the extent that systems usage encourages retention through system-specific learning, it would imply that firms could improve retention by encouraging consumers to frequently visit and use their sites. Thus, it must be examined to what extent consumers use the platform by comparing the result with competitors.

Next, “[s]witching is positively correlated with ease of use”. Easy to use platforms do not force consumers to make sunk investments in learning, switching costs may indeed be lower for services that are easier to use. To evaluate this factor, it must be examined how consumers evaluate the ease of use of a certain platform. This hypothesis needs to be investigated out of the perspective of the user, which is not part of the research design of this study.

It was also shown that, “[s]witching is negatively correlated with quality”. In general, higher quality may reduce switching because it may build greater affinity with customers and decrease the chance of a negative customer service interaction. It must be examined how users assess the quality of a platform. Questions such as, “how do users value the product and service offer of the platform? “, must be answered. Again, the perspective of the user will not be evaluated as part of this study.

“Switching is negatively correlated with breadth of offerings”. Firms that offer a broader product line can satisfy a greater range of customer needs, especially if needs change over time. The breadth of offering must be evaluated compared to a rivaling platform.

All in all, it must be said that distilling switching or multi-homing costs into a quantifiable metric can be very complicated. Any result will be quite specific to that exact business and market. Nonetheless, to make an evaluation on switching costs for platforms, the existence of financial, procedural and relational switching costs, must be evaluated.

### 3.6 Fourth influencing factor – Pricing model

This sub-section of the created framework helps to draw conclusions from comparing the different pricing structures of platforms within the same market. How to price the sides on a platform depend on a joint set of demand elasticities and marginal costs on each side. It must be determined which side will be the “subsidy side” and which side will be the “money side”. The subsidy side is supported to incentivize growth, and thus subsidy side users pay less in a network market scenario than they would on a non-network market. Accepting negative prices on the subsidy side is only profitable if enough revenue is generated on the money side.

<b>PRICING STRUCTURE</b>	<b>MONEY SIDE</b>	<b>SUBSIDY SIDE</b>
<b>1<sup>ST</sup> STRATEGY</b>	Supply Side	Demand Side
<b>2<sup>ND</sup> STRATEGY</b>	Demand Side	Supply Side
<b>3<sup>RD</sup> STRATEGY</b>	External Side	Supply Side and Demand Side
<b>4<sup>TH</sup> STRATEGY</b>	Supply Side and Demand Side	None

*Table 3: Potential pricing structures of platforms adopted from Kim (2016)*

The platform owner designs the price structure that is imposed on the members with the aim of making the entire business ecosystem grow continuously while producing profits of their own. It is worth mentioning that supply side and demand side are not always clearly distinguishable. Females and males on dating platforms for example represent supply and demand at the same time.

Furthermore, an extended version of the revenue structure strategy framework from Kim (2016) has been integrated into the analytical framework introduced in this chapter. A fourth strategy which describes the scenario where the supply and the demand side are representing the money side and no subsidy side exists, has been added to Kim’s (2016) existing framework. Platforms such as Airbnb or Uber are currently following the

fourth strategy and thus charge both sides, suppliers and consumers of their platforms. Airbnb for instance charges the supply side approximately 3% of the transaction volume whereas the demand side is charged up to 20% of the transaction volume. Nevertheless, it could be argued that even though both sides are charged, the supply side is on the subsidy side since they pay less than the demand side does and therefore receives subsidies.

Pricing strategies change just as platforms do over time and must therefore align with the development stage of the platform. Examining the example of Airbnb once more, it can be identified that Airbnb started by charging exclusively the demand side and changed their pricing strategy, presumably once a critical mass was reached, to charging both sides of the platform. Airbnb broad further sides such as people who offer experiences (cooking classes, city tours etc.) to the platform and charges them a premium of 20%. Since Airbnb can be considered as market leader in the peer-to-peer property rental market, they are currently in the position to charge both main sides of their platform and charge additional sides with a higher premium. It can be assumed that examining the development of a platform firm's pricing strategy provides information about their current position in the market by evaluating their pricing strategy.

## 4 Methodology

This section will justify the used methods, the choice of methodology, the theoretical perspective lying behind the methodology as well as the epistemology which informs this theoretical perspective. This is done in order to prove that objective, valid and generalizable conclusions have been drawn from the outcomes of this research paper. The overall methodology will be unique and developed to meet the purpose of this study.

### 4.1 Epistemology & theoretical perspective

*“Epistemology is a way of understanding and explaining how we know what we know”* (Crotty, 1998, p. 3). It is *“the underlying philosophical grounding for deciding what kinds of knowledge are possible and how we can ensure that they are both adequate and legitimate”* (Maynard, 1994, p. 10). The epistemological stance informs the theoretical perspective, which itself is inherent in the chosen methodologies and methods. Multiple epistemological stances exist. Three of the most common are objectivism, constructionism, and subjectivism.

This study follows the epistemological stance of objectivism. Objectivism is *“the notion that truth and meaning resides in their object independently of any consciousness”* (Crotty, 1998, p. 42). It is an epistemology which is found in the positivistic view. This view states that knowledge is not speculatively but is instead convinced that scientific knowledge is certain and accurate. It therefore alleges an objectivity to science where science is not ascribing a meaning to an object but rather is discovering an inherently objective and given meaning. In summary it suggests that *“there is objective truth and appropriate methods of inquiry can bring us accurate and certain knowledge of that truth”* (Crotty, 1998, p. 42). Positivism is linked to empirical science, which acquires information by observation or experimentation. It sees the world created by scientists as abstractions of the real world. In the spirit of post-positivism, the principle of falsification is followed. According to this belief, developed by Sir Karl Popper, *“[a]n advance in science is not a matter of scientists making a discovery and then proving it to be right. It is a matter of scientist making a guess and then finding themselves unable to prove the guess wrong [...]”* (Crotty, 1998, p. 31). This study therefore starts with general principles and comparing them to specific cases to try to disprove those principles. The logic of inquiry is hereby a deduction. The objects analyzed in this study are digital platforms and the objects are studied in the context of competition. The general principles are derived from the existing literature.

## 4.2 Research strategy

In this sub-chapter, we describe the research strategy of this study which will shape the selection and use of specific research methods and links this to the desired outcomes. We thereby do not only describe the methodology but also the rationale it provides for the choice and the form of the selected methods. (Crotty, 1998)

The research design in this study is a case study. The case study design follows the descriptions made by Yin (1993). Yin provides meticulous and methodical guidelines for case studies which are especially valuable for positivist qualitative research (Su, 2019). Case studies are an important research method in social sciences. According to Yin (1993), case studies are an overarching research strategy which should be the chosen method when the phenomenon under study is not readily separated from its context. The context of the phenomenon becomes relevant when it is theorized to contain important explanatory variables about the phenomenon. Another reason is if the boundaries between phenomena and context are not clearly distinguishable. Yin (1993) also states that because of the richness of the context, a study will likely have more variables than data points. Case studies furthermore allow for the attribution of causal relationships (Yin, 1993, p. 31).

Three types of case study exist, exploratory, descriptive and explanatory. This study is using an explanatory approach. This approach allows for the use of explanatory theories as guidelines for what variables of a context to analyze.

The phenomena of competition outcomes cannot be separated from the context of the industry it competes in. At the same time, scholars have theorized about explanatory variables which aim to explain the phenomena of platform competition. In this study these variables are called influencing factors. The influencing factors are guiding the specification of what variables are being explored as part of this research. Therefore, an explanatory case study fits the purpose of this study.

Although Yin (1993, p. 3) considers case studies as a method not to be implying any particular form of data collection, which means that both qualitative and quantitative methods can potentially be used, this study will use qualitative methods. Qualitative methods are a contested field rather than a clearly defined approach (Su, 2019). It is referred to as an “umbrella term covering an array of interpretive techniques which seek to describe, decode, translate, and otherwise come to terms with the meaning, not the frequency, of certain [...] phenomena in the social world”(Maanen, 1979, p. 520). All quantitative methods are equal in their lack of quantification and

focus on discovering concepts and relationships in the collected data. Afterwards these concepts and relationships are organized in a theoretical explanatory scheme. (Su, 2019)

To summarize, “positivist qualitative research assumes the existence of an objective, external reality that can be apprehended and summarized, although not readily quantified” (Su, 2019, p. 3), and is looking for regularities and causal relationships. In this study the influencing factors are not yet quantifiable wherefore a qualitative approach based in post-positivism allows for the comparison of the general principles, underlying concepts and relationships theorized by scholars with specific real-world cases.

### 4.3 Research Design & Sampling Rational

Case studies have been chosen as appropriate research design which differ from case studies as a method. Choosing case study as research design means one is focusing mainly on the logic whereby the initial research questions can be subjected to empirical testing. Deciding between single- or multiple-case studies or selecting the specific cases to be studied, are part of the case study design. How the data is collected will be part of the data collection process – the research method – not the design.

We follow the case study design structure from Robert Yin (1993). Therefore, as a first step, the major unit of analysis for the case study must be identified. Defining the unit of analysis provides stability to a case study design. In our research study, the unit of analysis is the comparison between two platform owners competing in the same market.

Secondly, instead of a single case study, a multiple case study approach following a replication logic is conducted. This means that multiple cases are included within the same research precisely because the researchers hope that similar results – replications – will be found. Thus, the logic bringing the cases together is considered a replication logic rather than a sampling logic. If such replications can be found for several cases, the researchers can have more confidence in the overall results which can then be considered as very robust findings.

Thirdly, we present how the multiple cases are being selected based on predefined selection criteria. A summary of the established selection criteria can be seen in Table 4.

<b>Platform Inclusion Criteria</b>	<b>Relevance</b>	<b>Feasibility and Access</b>
Facilitating exchange between user groups	Market Situation	Senior level
Digital Platform	Market Position	Willingness
Mature Market		Feasibility
Positive cross-side network effects		
Positive Effects within the same Transaction		

*Table 4: Data source selection inclusion criteria (own illustration)*

When explaining Table 4 and the case selection process, also the screening process to determine potential case study partners will be explained simultaneously. The first selection criterion, platform inclusion criteria, refers to the chapter “5.1.1 Defining a multisided digital platform” where it is explained which platform businesses are considered a platform in the scope of this research. We therefore only select candidates which are meeting these basic requirements. With the next selection criterion, “Relevance”, we aim to have a balance in terms of market situation and market position between the different case studies. The goal is to investigate cases of different market situations. We are doing case studies with market leaders but also market followers in various market situations. In order to gain access to at least one of each described scenario, multiple similar potential case candidates were contacted. We proactively connected with senior level employees to gain experienced and valuable knowledge. Furthermore, some organizations are willing to be part of a case study while other do not or cannot due to different reasons.

#### 4.4 Data collection methods

When doing positivist qualitative research, a variety of data, which is mostly unstructured, is used as input. The sources selected in this study are interviews and documents to fit with the analyzed fields of business and management. Within this type of research, interviews usually are in the form of open-ended or semi-structured questions.

Besides its fit with the theoretical perspective and the research design of this study, a major advantage when conducting semi-structured interviews with platform providers is that questions can be phrased identically and therefore allow to compare responses regarding, for instance, the network intensity, which is required for a relative comparison. This fits with the replication logic established in the research design. This allows us to gather

both information from individuals about their practices as well as their expert knowledge about the studied topic. Also, this data collection method in connection with the created framework has not been done before by other scholars and is in alignment with the existing time, budget and staffing restraints of the study as well as its access to data sources. (Harrell & Bradley, 2009)

This primary data collection method will be supported through secondary data collection through document analysis. The secondary data will be verified throughout the semi-structured interviews with the platform providers and will therefore be conducted prior to the interviews. The document analysis will be used as preparation for the interviews and to formulate more targeted questions.

Part of this study is the creation of a framework incorporating the discovered patterns, concepts and insights. A framework is among the most common types of the output of such research. (Su, 2019) Keeping the researcher's goal and the research methodology in mind, it makes sense to conduct semi-structured interviews and to use a directive form of questioning with the interview partners (Crotty, 1998).

The group identified as relevant for this study are platform providers and the assessed influencing factors are network intensity, differentiation potential, multi-homing through switching costs and pricing strategies. In alignment with the described research methodology approach, it must be tried to understand the perspective of the platform owner and its knowledge. Since it has been shown that network intensity is not inherently given but rather managed, the platform provider is the constructor of the network intensity of its platform in a network market. The need for an installed user base as well as the need for complementors is depending on the initial design of the transactions between the user groups which the network market is facilitating. Also, this group is responsible for the creation of same-side network effects in the form of information exchange in between user groups. In order to understand the same-side and cross-side network effect of a market and derive a network intensity, data needs to be gathered from the platform providers. Furthermore, this group is making decisions regarding the openness of boundary resources, both for the interoperability between rivaling platforms as well as the inclusion of outside service providers on the platform. This decision is influencing the network intensity as well as the differentiation potential in terms of functional exclusivity. Furthermore, other differentiation potentials are a direct effect of the strategies of the platform providers. Moreover, although switching costs are typically measured from the perspective of the users, they are an outcome of design decisions made by the platform provider. An argument can also be made that this stakeholder group is more aware of switching costs for both user groups than the actual users. Therefore, this study will include this factor in the questioning of platform providers. Regarding the pricing strategy, this influencing factor is clearly an outcome of strategic



decision making by the stakeholder group of platform provider and based on their knowledge about rivaling platforms. Also, they can provide information regarding available functionalities, marketing expenses, pricing options as well as exclusive users on their platforms.

Concluding, this group can be used as a data source for all identified influencing factors. Since network effects, differentiation potential, switching costs and pricing strategies are not the same for every platform in the same industry, each platform provider needs to be evaluated individually. In the process of contacting potential interview partners, the objective was to not only win market leaders for an interview but rather a mix of market leaders and market players which are not claiming the largest market share. By only interviewing one type of market players, competition and the established framework could not have been analyzed holistically.

#### 4.4.1 Conducting document analysis

Document analysis does not exclusively describe documents in written form. Documentary analysis may also be applied to a wider range of artifacts, understood as documents of practice or activities. This method allows us to go beyond the perspectives of members in the field of platform businesses. Researchers analyze documents as communicative devices rather than as containers of contents. We therefore utilize this approach as very instructive addition to interviews.

Specifically, the document analysis started by us signing up for the investigated platforms in order to get initial hands-on experience of what the platform offers in terms of functionalities, pricing and exclusive users. The data collected provided first insights of what functionalities and users are exclusively present on the platform and which side is being charged. Also, functionalities were explored on multiple competing platforms to establish exclusively offered functionalities which might represent the reason for a competitive advantage in the market. The document analysis allows not only to be better prepared for the interviews but also to formulate and ask more targeted and purposeful questions. The interviews then helped to confirm or adjust certain first impressions of the platform while leaving space to uncover unforeseeable influencing competition factors.

#### 4.4.2 Conducting semi-structured interviews

Performing semi-structured interviews in the correct way will enhance the accuracy, validity, and reliability of this study. The semi-structured in semi-structured interviews speaks to the amount of control the interviewer has over the interaction. It lies in between unstructured interviews, where the interviewer has the lowest level of control, and structured interviews, where the interviewer exercises a high level of control. The advantage of using semi-structured interviews is that while questions are still standardized and respondents will be asked

identical questions which allows the answers to be compared, it also allows for a deep dive into a topic to understand the answers thoroughly. Interviewers can also choose to change the order of the questions based on the flow of the conversation. (Harrell & Bradley, 2009)

Following the guide for semi-structured Interviews by the national defense research institute (RAND) when structuring an interview the following steps have to be fulfilled: framing the research, sampling, designing questions and probes, developing the protocol, preparing for the interview, conducting the interview and lastly capturing the data. (Harrell & Bradley, 2009)

On the other hand, Kaiser (2014) identifies five steps: Developing the interview guide, pre-testing, identifying interview partners, performing & recording the interview and finally content analysis. Because of its focus on the core process, the interview design process is based mainly on Kaiser. This process is however enriched by combining it with some of the steps and concepts identified by RAND (see Figure 9).

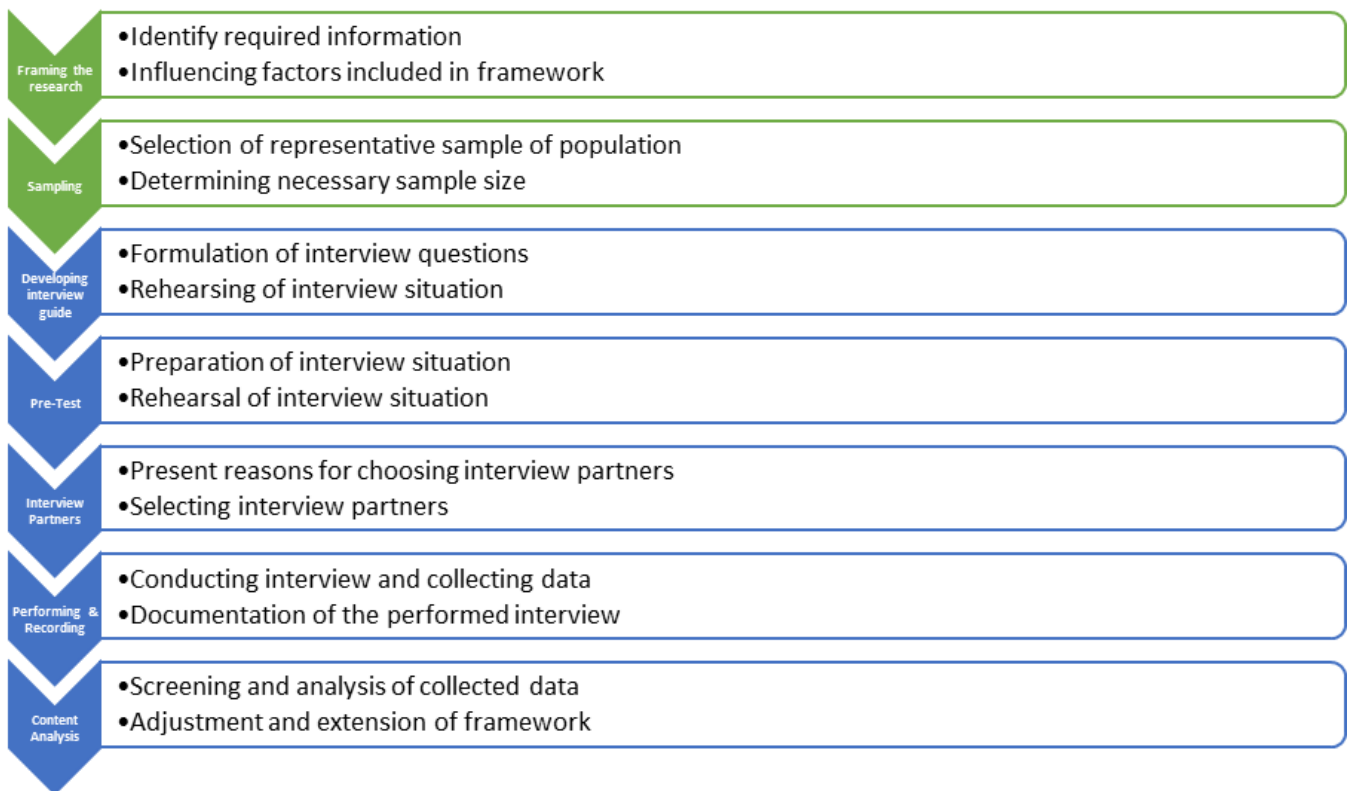


Figure 9: Interview process adopted from Kaiser (2014) and Harrell and Bradley (2009)

In the first step, framing the research, the researchers need to identify what information they hope to gather from the interviews (Harrell & Bradley, 2009). In this research the questions will be following the outlined framework presented in an earlier section. While the interviewers are following the language of the academic discipline of network markets in form of e.g. network intensity or homing costs, the interviewees might not be familiar with such terminology. This gap must be closed when performing an interview by adapting the question formulations in a way it is understandable to both parties. Framing the research also includes how the interviewee is perceived by the interviewer. Interviewees can either be seen as actors in an environment which will be observed, as subjects used to test predetermined hypotheses, as respondents responding to questions which are framed based in the researcher's semantics or as informants where the researcher learns from the interviewee how things are defined and categorized. This study sees them as respondents speaking to the importance of the identified influencing factors represented in the framework. However, this study is also receptive to being informed about other influencing factors not already represented in the framework.

While multiple sampling methods exist, this study is using a method identified as judgement sampling, where entities whose knowledge or opinion is important for the research are specifically selected to participate. The inclusion criteria for platform organizations were declared in the framework section and are followed by the search for data sources. Only platform provider fulfilling those outlined criteria were contracted for interviews. It was decided to contact as many industries as possible to compare the influencing factors with as many environments as possible.

In the following step, the interview guide is developed based on the deducted view of the interviewee as well as an adjustment of the used terminology towards the understanding of the interviewee. As a first step the question categories were selected. They are company purpose, network intensity, differentiation efforts, pricing options and user churning. While the category company purposes aim is to ease into the conversation and gather data about the company context, the other categories are in alignment with the presented framework. Then the questions were formulated carefully following a terminology expected to be understood by the interviewees. The questions represent the in the framework outlined subcategories of the influencing factors necessary to assess them relatively to their competitors. It was ensured that questions were formulated with the use of neutral language to prevent biased answers. In the same way it was avoided to use double-barred questions, questions which are made up of two questions. Also, leading questions were sidestepped, and simple language was used whenever possible. If during the interview the conversation stops or a respondent's statement is unclear to the interviewer, probing phrases were prepared which would lead both parties towards the necessary

understanding. These probing phrases can be found in the detail column of the interview guides (see Appendix B – F). In semi-structured interviews probing phrases are used to lead interviewees towards following up on a delivered statement in case the original response does not cover the required information sufficiently. Another reason for probing is if the researcher wants to dive deeper into a topic and suggests the interviewee has not told everything he or she can. In order to probe successfully, the interviewer must have an understanding of the purpose of the original question and be very attentive towards the given answers. (Harrell & Bradley, 2009; Kaiser, 2014)

In the pre-testing step the created interview guide was simulated to be applied to a case where one scholar represented the interviewer and another one the interviewee. Based on the best judgement answers given in the simulation the interview guide was adjusted slightly. (Kaiser, 2014) The selection of the interview team is an important part of a successful interview process. Because of the nature of this research, the interviewers are the authors of this study. Nevertheless, the interviewers were made to understand the necessity to stay neutral, build professional rapport with the interviewee, the importance to probe at the correct time and listen closely. Since the role of note-taker was unnecessary because notes taking was replaced with recording the audio of the interview with the approval of the interviewee, both scholars were able to support each other in the role of the interviewer. (Harrell & Bradley, 2009)

Afterwards a variety of platform providers in different industries were contacted regarding the possibilities of an interview. Contacting possible platform providers was done via email. This way many companies could be contacted with the available resources. Almost always the initial request was processed by a gatekeeper, controlling access to the required respondents. Since the internal organization of the platform provider was unclear to the interviewers, this was taken as a chance to be directed to the correct people. Therefore, the initial request specified the purpose and intent of the project, the context of the research and the required data which was hoped to be attained through the interview (see Appendix G for example of initial email). The request was also made while keeping in mind the limited time available to interviewees wherefore the interview time was limited to 45 minutes. For the positive responses, the offered interview partners were screened based on the following criteria. Interview partners must be members of the platform provider with a reasonable degree of seniority and a deep knowledge of the analyzed industry. Since multiple individuals within these organizations fulfill the required criteria, after inquiring with the platform providers the available interview partners are assessed and chosen based on their fulfillment of these criteria. The selected interviewees were provided with a set of questions at least 24 hours before the interview. Because of this every respondent was provided with the

same description of the study which further ensures consistency across interviews. (Harrell & Bradley, 2009; Kaiser, 2014)

#### 4.4.3 Interview Partners

In total this paper identified 8 industries where network markets are dominant or play a significant role. Those markets are online food delivery, recruitment & job search, freelancer marketplaces with the submarket craftsmen marketplaces, peer-to-peer lending platforms, carsharing platforms, music streaming services as well as video streaming services. In the process of contacting potential interview partners, the objective was to not only win market leaders for an interview but rather a mix of market leaders and market players which are not claiming the largest market share. By only interviewing one type of market players, competition and the established framework could not have been analyzed holistically.

In total 35 platform providers were contacted regarding the possibilities of conducting an interview with an expert via email. Out of the 35 companies 22 organizations did not reply to our inquiry. 8 companies replied with a negative answer mostly due to the reason of limited resources for conducting research interviews. 5 organizations agreed to take part in this study and thus represent the data sources of this research study. The platform providers selected for interviews were Hungry.dk, Graduateland, Lendino, MyHammer and Fiverr.

Industry	Company	Response	Reason
Carsharing	Drivy	No Answer	
Carsharing	GoMore	Negative	Resources
Carsharing	Snappcar	No Answer	
Carsharing	Turo	No Answer	
Food Delivery	Hungry.dk	Positive	
Food Delivery	Just-Eat	Negative	Confidential Information
Food Delivery	Roomservice	Negative	Resources
Food Delivery	Wolt	Negative	Resources
Food Delivery	Marvin	No Answer	
Freelancer Marketplace	Fiverr	Positive	
Freelancer Marketplace	Upwork	No Answer	

Craftsmen Marketplace	MyHammer	Positive	
Craftsmen Marketplace	bluarbeit.de	No Answer	
Craftsmen Marketplace	TaskRabbit	Negative	Resources
Craftsmen Marketplace - Cleaning	Helpling	No Answer	
Music Streaming	Deezer	No Answer	
Music Streaming	DiMA	No Answer	
Music Streaming	IFPI	No Answer	
Music Streaming	Napster	No Answer	
Music Streaming	Qobuz	No Answer	
Music Streaming	Sirius XM / Pandora	No Answer	
Music Streaming	Tidal	No Answer	
Recruitment / Job Search	Glassdoor	Negative	Resources
Recruitment / Job Search	Graduateland	Positive	
Recruitment / Job Search	Indeed	No Answer	
Recruitment / Job Search	Xing	Negative	Resources
Recruitment / Job Search	Monster	No Answer	
Video Streaming	HBO Nordic	Negative	Resources
Video Streaming	TV2 (Denmark)	No Answer	
Video Streaming	TV2 (Norway)	No Answer	
Video Streaming	Viaplay	No Answer	
P2P lending	Auxmoney	No Answer	
P2P lending	Flex Funding	No Answer	
P2P lending	Lendino	Positive	
P2P lending	Better Rates	No Answer	

Table 5: Interview Set-up (own illustration)

Before agreeing to conduct an interview, Lendino and Graduateland inquired further insights into the research study. Lendino asked for further understanding of the research via email, and Graduateland inquired a phone call prior to the interview to get further understanding and evaluate if the research study would be mutually beneficial for both parties.

After the initial contact, most interviews were scheduled within the following two weeks. All interviews were conducted with one interview partner. All interview partners are employed in senior level in their respective organizations. At Hungry.dk we had the chance to talk to the CEO, at MyHammer we talked to the Head of Legal who is also responsible for communication of the digital strategy of MyHammer, at Lendino we talked to the Credit Officer, at Fiverr we talked to a Senior Manager from Public Relations and at Graduateland we interviewed the CMO. The interviews with Hungry.dk (Aarhus, Denmark), MyHammer (Berlin, Germany) and Fiverr (New York City, USA) were conducted via Skype due to the different locations of interviewer and interviewee. The interviews with Lendino and Graduateland were conducted at their respective offices in Copenhagen, Denmark.

On the date of the interview, all interviews were initiated by the interviewers providing a more specific overview of the research study and its goals. Besides this, the consent to record the interview was inquired. Afterwards, the first question of the interview guide followed and the interviewees gave a brief insight about their respective platform business they are working at. Questions were asked alternately, and the interviewer not asking the question was taking notes while listening to the answer. In the following, an open discussion evolved while ensuring to cover all pre-formulated interview questions. Not rigorously sticking to the order of the questions from the interview guide but following the flow of the conversation, enabled to have an open exchange of knowledge. Interviewees were constantly being engaged in the interview by providing insights in the research study and also disclosing certain interim results. By enabling a discussion rather than an interview, in-depth data could be collected. Every interview was closed with an acknowledgement towards the usefulness of the interview as well as an inquiry regarding the possibilities of follow-up contacts. All interviews took between 35 minutes and 1:30 hours.

## 4.5 Data Analysis

The qualitative data analysis was conducted in order to compare several cases and identify what they have in common and what differs. The ultimate goal was to explain platform competition based on the similarities and differences of the cases through the application of the developed framework.

To analyze the data collected through this study, a content analysis is conducted. In this way both the interviews and the documents can be analyzed. To perform a content analysis, prior to collecting data, categories will be derived from theoretical models. These categories are therefore applied to the empirical material and not developed from it, making it a deductive approach. To conclude, in qualitative analysis, an emphasis is put on developing codes and categories from the theory rather than from the data. The focus is on developing a coding frame, which is a well-defined system of mutually exclusive categories. The interview questions were created based on pre-defined categories. These categories are based on the created framework which was established based on theory. Therefore, coding in the approach of content analysis, is mainly oriented on developing concepts which can be used for labeling, sorting, and comparing excerpts of the empirical data (e.g. several statements). Through doing so the qualitative content analysis becomes more systematic. (Flick, 2010, p. 429)

Thus, the collected data was evaluated through the lens of the established analytical framework. More practically speaking, the interview questions targeted for each influencing factor were analyzed in isolation. First, the 3<sup>rd</sup> level, the drivers of each influencing factor were analyzed based on the collected data. Table 6 shows on the one hand the data which was provided to the interviewees (columns category & question) and on the other hand the data which the interview questions were matched to internally (columns influencing factor & influencing driver). For instance, Question number 2 aims to collect data describing the influencing driver “Need for installed base”. Question number 3, classified to the same category and influencing factor “Network Intensity” as question number 2, aims to describe the influencing driver “Need for complementor”. Table 6 represents an excerpt, the entire table can be seen in Appendix H.



Influencing Factor	Influencing Driver	Number	Category	Question (example)
Network Intensity	Need for installed base	2	Network Intensity	What are the groups of users you currently have on your platform?  How many users do you have in each of these groups?
Network Intensity	Need for complementor	3	Network Intensity	What companies are you cooperating with who provide functionalities on your platform?
...	...	...	...	...
Switching Costs	Financial, Procedural, Emotional	12	User Churning	What do you do to prevent churn, to keep users on your platform?
Switching Costs	Financial, Procedural, Emotional	14	User Churning	How successful are additional functionalities you are providing to your users?  Are most users engaged in using those functionalities?

Table 6: Content analysis excerpt

As a next step, by combining the results of the analyses of each driver an assessment of the 2<sup>nd</sup> level, the influencing factor, is made. Finally, the four analyses of the influencing factors are combined and an assessment of the overall platform competition on the 1<sup>st</sup> level, is made. No prior research study so far has integrated the influencing competition factors into one framework and has analysed the interrelational impact this can cause. Thus, the following paragraph describes how the reasoning of the competition outcome assesement in the result chapter can be comprehended.

The network intensity gives an indication about the self-referring feedback loops which exist on each platform. The platfrom with the higher network intensity has stronger self-referring feedback loops and will as a result grow faster. This makes this platform more likely to reach a winner-take-all market situtation. The advatage of a higher network intesity can be broken if platforms are able to differentiate themselves in the eyes of the users. If a user-side sees competing platforms as differentiated, they are willing to join different platforms or join the one they experience as having higher quality. Wheter users join one or multiple platforms is depending on multi-homing possibilities. If one of the user-sides singel-homes, this side will become the bottleneck and platform will compete over the monopoly access to this side. The decision which user-side to subsidize is affecting the growth

of the platform. If different platforms choose different subsidy- and money-sides they will experience different growth speeds affecting competition outcomes. In the end, the remaining data is scanned for further insights relevant to the competition outcome. The remaining data is potentially very valuable because it might reveal unforeseen competition factors and its drivers.

#### 4.6 Quality Criteria

The criticism when assessing the quality of qualitative research stems mainly from the observation of selective plausibilization. This criticism states that interpretations and results of a qualitative method are made transparent to the reader by showing quotes which are an excerpt of the overall collected data. This would mean that statements which contradict the findings, or they believe to be not illustrative of the findings, are not part of the representations to the reader. The resulting issue speaks to difficulty to assess the procedure and results of qualitative research as well as the ability to generalize the results. (Flick, 2010, p. 480)

In order to solve these issues, two prominent, alternative ways of assessing quality of qualitative research have emerged. The first is focused on the classic criteria of validity and reliability and objectivity in a revised form to fit the qualitative nature of the research. Flick (2010, p. 487) raises doubts regarding the applicability of classical criteria developed from quantitative research for the quality assessment of qualitative research. The criticism is based in the concern that qualitative research is unable to deliver the kind of numerical formalization these criteria are derived from (Marton, 2013). The second facilitated the development of methods which are appropriate to the research method. The variety of way in which to conduct qualitative research has led to a fragmentation of quality criteria specific to the approach and research focus. As a result, developed criteria only apply within the same tradition the criteria are complementing. (Marton, 2013)

Because of the reasons outlined above, the approach of functional equivalence is used in this study. This approach focuses on procedural communalities and sees qualitative research as cyclical process of exploring, describing or explaining. This cyclical process applies to research studies of all epistemologies and research strategies. In this approach, the two aspects of good practice and evaluation are both addressed. Good practice is ensured through process evaluation (Marton, 2013). It is suggested to evaluate the research by evaluating the fit between every step and the overall process. This means that the overall process and the soundness of the methods are evaluated in relation to its methodology, theoretical perspective and epistemology. Methods and their application are then not analyzed in isolation but as a process and its soundness regarding the asked research question and the targeted generalizability. (Flick, 2010, pp. 498–499) Therefore, in the context of this

study the design decisions were made step by step, following the suggested design procedures by Yin (1993) and Crotty (1998) while constantly considering the fit with the other parts of the overall process. It further allows for the evaluation through stakeholders by observing the differences between quantitative and qualitative methods. It recognizes both as equivalent to study social phenomena and derives from this the need to demonstrate quality in different but equivalent ways. To do so the criteria of credibility, transferability, dependability and confirmability were developed. In accordance with the principal of functional equivalence, those criteria are the counterparts of the criteria outlined in the traditional criteria of validity (internal & external), reliability and objectivity. Both credibility and internal validity are explaining the production of credible findings and interpretations. Transferability and external validity allow for the applicability of the findings in other contexts. Dependability and reliability verify the replicability of the study in a similar context. And confirmability and objectivity scrutinize the raw data and reconstruction of products, ergo the bias of the authors.

The credibility of this study is ensured using a multi-method approach. The results of the document analysis are verified through the semi-structured interviews and vice versa. Furthermore, the multi-case approach following a replication logic allows for the triangulation of results with multiple cases. The results are furthermore in the form of general concepts and derived from digital platforms in a variety of different industries and contexts. This will ensure that results are not industry specific but generally applicable. Also, because of the deductive approach of this study the general principles were derived from theory, and therefore scholars have already attempted to falsify them. All of the data was presented in full and the content analysis was made replicable through referencing to the raw data in the form of timestamps or referencing. The categorization is represented in the structure of the results. Regarding the theoretical contribution, the developmental steps of the framework were presented in the report. Also, all materials including the question catalogues are provided in the appendix. To ensure confirmability, the categories which was applied in data analysis was created before the data collection, which can be seen in the question catalogue in the appendix. The document analysis was conducted in the same way for both compared parties and the understanding of the results was critically discussed by the two authors which often represented differentiated viewpoints.

## 5 Results

### 5.1 Competition outcome analysis

This paper collected data about the identified influencing factors and its drivers affecting competition outcomes. In this section, for the selected cases, we explain the current competition situation based on the collected data. This process will allow for an assessment of the identified influencing factors and drivers, and their ability to explain current competition outcomes or if other factors not integrated in the developed framework need to be considered. To do so, two platform businesses competing within the same market are compared and evaluated critically.

### 5.2 Hungry.dk in online food delivery

#### 5.2.1 Market description

Hungry.dk is a Danish online food delivery platform established in 2013 [Appendix I; Speaker: Risom, Rune; Time stamp: 05:00 – 05:12 & 07:15 – 07:40]. As such the platform provider is connecting the user groups of restaurants with the user group of consumers which makes it a two-sided network market [I; Risom; 08:00 – 08:18]. The platform's facilitation of the transactions between these user groups is coordinating the connections between those user groups in a way which otherwise would not be possible. For restaurants, part of the value of participating in the network market is depending on the size of the user group of consumers with them being potential customers. For consumers, the more restaurants are available, the higher the selection possibilities. Even though consumers have a need for only a limited number of restaurant types (e.g. Pizza, Burger, Sushi, etc.) for both user groups some part of the overall value from using the platform derives from the user group sizes of the other side. Within the transactions between restaurants and consumers positive cross-sided network effects are created within the same transaction. Furthermore, the investment in tangible assets is limited to the development of a delivery service. Hungry.dk is mainly competing with JustEat which was founded in 2001 and held a winner-take-all position over the market for a long time. Because JustEat was under the first establishers of digitalization in the restaurant industry, in 2013 they found themselves in a position where 95% of the online food delivery market was controlled by them [I; Risom; 13:30 – 13:35]. At the same time around 50% of the overall turnover of restaurants was depending on online orders [I; Risom; 13:59 – 14:08]. Even though JustEat had such a dominant market position, from the perspective of Hungry.dk, JustEat did not establish entry barriers and did not react to counter Hungry.dk's market entry [I; Risom; 39:20 – 40:25]. According to Hungry.dk, JustEat did not feel vulnerable and believed that being a new market entrant would not be profitable [I; Risom; 40:25 –

40:35]. They did not build defenses or reacted to the market entry of their competitors. Now, other competitors including Hungry.dk and Wolt have been established for a reasonable amount of time and are having success in the market [I; Risom; 19:00 – 19:40]. By now, according to Rune Risom, Co-Founder and CEO of Hungry.dk, JustEat's market share measured in order volume decreased to around 70-75% (JustEat, 2019), Hungry.dk's market share increased to 20% and the remaining 5-10% is shared by multiple food delivery platforms [I; Risom; 19:00 – 19:40]. Therefore, competition has been taking place on this market for many years leading to a competition scenario. To conclude, the market fulfills the criteria of a multisided platform which were established in the framework as well as the criteria of this paper.

The goal of Hungry.dk is to compete with JustEat at a national level and to slowly gain market share in order to take over as the market leader at some point [I; Risom; 31:40 – 32:10]. To do so, Hungry.dk wants to differentiate through prices and preference [I; Risom; 41:00 – 41:45]. Currently Hungry.dk is slowly and constantly closing the market share gap to JustEat [I; Risom; 17:18 – 19:40]. Also, other competitors of JustEat are gaining market share which lead to the impression that the increase in market share from the competitors is gained from JustEat [I; Risom; 37:45 – 38:35].

According to Rune Risom, the supply and money side of the platform, the restaurants, were not happy with JustEat's increasing exertion of influence in the restaurant's operations and its overall service including increasing commissions [I; Risom; 04:00 – 04:39]. Due to its monopoly position and its increasing size, JustEat tried to shape the restaurants operations according to their preferences which made restaurants feel too controlled [I; Risom; 04:42 – 05:04]. Thus, with around ten years of background at JustEat, Rune Risom decided to start Hungry.dk and compete with JustEat [I; Risom; 02:42 – 02:56]. After Hungry.dk entered the market, JustEat did not manage or was not interested in building any entry barriers [I; Risom; 39:20 – 40:10]. Hungry.dk was therefore able to build a reasonable market share of 5-7% within the first 12-18 months of operation by starting with a rather low investment of only one million Euro [I; Risom; 42:00 – 42:10]. The comparison in this industry will be between Hungry.dk and the market leader JustEat.

#### *5.2.1.1 Network intensity*

The value created through intrinsic features is very low and comparable for all competitors. This makes the market a very pure network market [I; Risom; 43:47 – 43:58]. Therefore, the value creation is mainly based on network size. The cross-side network effects were established in the connection between the two user groups. While the platform started with about 200 restaurants in the beginning [I; Risom; 07:40 – 07:45], now the installed user base on the restaurants side equals their biggest rivals with roughly 1,500 restaurants [I; Risom;

08:20 – 08:25]. On the side of the consumers, Hungry.dk pockets around 20% market share while JustEat controls circa 70%. As a result, JustEat has a clear advantage on the side of consumers. While there are some social same-side effects on the consumer side in the ability to rate restaurants, this dynamic is available on all competing platforms of the market [I; Risom; 21:00 – 21:47]. Therefore, both competitors work in the same way to eliminate network clusters on the side of the consumers, equaling out this effect. At the same time, there is no need for complementors for either of the user groups [I; Risom; 21:46 – 22:09].

It is important to say that according to Hungry.dk the competition is not acting out on a national level but rather on a regional level [I; Risom; 16:35 – 17:10]. This means that restaurant variety and quality are dependent on the regionally available choices and that regional competition is bound to installed user bases of a specific area [I; Risom; 15:35 – 16:02]. Specifically, for online delivery, Hungry.dk is planning with one restaurant per 3000 inhabitants in an area and a variety measure of 5 different groups of restaurants also called kitchen types (Pizza, Burger, Sushi, Asian (Thai, Vietnamese, etc.), sandwiches/grill) [I; Risom; 17:45 – 18:50].

#### *5.2.1.2 Differentiation*

Next to the core functionality of connecting restaurants, the supply-side, to consumers, Hungry.dk offers restaurants the ability to analyze the purchases of their menu using descriptive statistical methods, these includes turnover rates, cancelled orders, regional distributions of orders and so on [I; Risom; 21:25 – 21:47 & 25:00 – 26:03]. While this functionality was not available on competitors' platforms in the beginning, currently some of these functionalities are available on all competing platforms [I; Risom; 22:28 – 23:20]. When Hungry.dk entered the market this however was a difference in platform quality which was now evened out by JustEat. Now, Hungry.dk is planning on building more powerful functionalities including business intelligence in order to differentiate themselves again from their competition [I; Risom; 25:00 – 26:03]. Also Hungry.dk is offering functionalities regarding the operational management of restaurants on the platform. This includes setting opening hours, setting menu items which are sold out offline and other similar functionalities, these functionalities are not offered by JustEat [I; Risom; 23:45 – 25:07].

On the side of the consumers, next to the core functionality Hungry.dk offers consumers the ability to take part in restaurant specific bonus programs, where a consumer collects a certain amount of meals in order to get a percentage or even free meal at the end [I; Risom; 09:40 – 09:55] (Hungry.dk, 2019c). Besides this, consumers can take part in charity programs, where a small markup is added to the price of a meal which is then collected by Hungry.dk and later used to fund local charity events [I; Risom; 59:38 – 1:00:01] (Hungry.dk, 2019a).

The next differentiation factor is brand awareness. Hungry.dk is profiting from positive word of mouth based on lower fees on the side of the restaurants [I; Risom; 45:00 – 45:55]. The installed user base for restaurants is at a comparable size compared to their competitor. For consumers, the marketing costs are significantly lower than the marketing costs of their biggest rival JustEat [I; Risom; 36:08 – 37:05]. This speaks to a bigger market awareness of JustEat. Even though it was not intended by Hungry.dk, the choice of green as the company color established a perception within consumers that Hungry.dk is aiming for more healthy restaurants [I; Risom; 59:00 – 59:29] (Hungry.dk, 2019b). Additionally, seven percent of users mention the give-away to charity functionality as a reason for using the platform over competitors [I; Risom; 1:01:03 – 1:01:27]. Also, when asking consumers, the perception is that Hungry.dk and JustEat are comparable in terms of size and market share [I; Risom; 34:40 – 34:50]. Unaided awareness of Hungry.dk is 72 percent while JustEat is 86 percent [I; Risom; 35:00 – 35:23]. So, the perceived gap is negligible, even though the marketing budget for Hungry.dk is at 11 million Danish Krone significantly lower than the estimated expenses of JustEat which are between 30 to 40 million [I; Risom; 36:08 – 37:05].

Pricing options wise, for restaurants Hungry.dk is taking a provision of 6 percent for legacy users and 7.95 percent for new users [I; Risom; 11:12 – 11:31]. JustEat is claiming 12 for legacy users and 14 percent for new users [I; Risom; 10:50 – 11:11]. This shows a large differentiation regarding pricing options for the user group of restaurants. For consumers the prices are comparable, and no differentiation could be recognized.

No exclusive user group members are present on neither Hungry.dk nor JustEat [I; Risom; 26:10 – 26:50]. But according to Hungry.dk, the competitor Wolt is aiming for differentiation by establishing an installed base of healthy and vegan restaurants, showing that some competitors are going into market niches [I; Risom; 33:00 – 33:30 & 57:40 – 58:50]. Another one of these platforms is Takeout.dk which is presenting itself as a premium takeaway platform.

According to Rune Risom, Hungry.dk's strategy goal is to grow healthy while building brand preference rather than brand awareness [I; Risom; 35:40 – 35:54]. This is seen as an attempt to differentiate themselves in the category of brand awareness.

### *5.2.1.3 Multi-homing & switching costs*

In the beginning, Hungry.dk was encouraging restaurants to multi-home [I; Risom; 14:10 – 14:40]. They were aware that because of the smaller installed userbase with the consumers they would not be able to replace the turnover restaurants were getting from JustEat. But because of the lower margin and very low multi-homing

costs, they quickly established multi-homing for restaurants. Hungry.dk is estimating an overlap of restaurants between them and JustEat of 95% [I; Risom; 20:38 – 20:52]. Even though restaurants multi-home, they have not abandoned JustEat completely because of their dependency of a large portion of turnover from JustEat, which is seen as financial switching costs.

On consumer side, no hard numbers are available regarding multi-homing. However, it is assumed that consumers who are not part of the core consumer group of hungry.dk are multihoming [I; Risom; 19:37 – 20:35]. Hungry.dk is attempting to create user retainment through modern marketing tools. For example, they are monitoring behavior of customers and try to reengage them if their behavior changes [I; Risom; 47:35 – 48:34]. Generally, they are trying to retain customers through their loyalty program [I; Risom; 08:35 – 09:40 & 46:35 – 46:47]. Another strategic goal of Hungry.dk is to personalize user experience to prevent churn [I; Risom; 48:34 – 48:51].

Generally, it can be said that for consumers Hungry.dk is aiming to build up emotional switching costs through their charity functionality resulting in a differentiated brand awareness. For restaurants, multi-homing will be encouraged by Hungry.dk until the turnover for restaurants on JustEat is small enough and the lock-in is weakened.

#### *5.2.1.4 Pricing side – who to price*

While the restaurants represent the money side of the network market the consumers represent the subsidy side [I; Risom; 11:12 – 11:31]. Therefore, both companies are using the 1<sup>st</sup> pricing structure strategy. In the early stages the growth of the money side was supported by a pricing differentiation where lower margins were demanded from the restaurants than by their competitors. After matching the size of the installed user base on the restaurant side of their biggest rival together with the regional requirements in terms of variety, the two sides now compete over the subsidy side, the consumers [I; Risom; 19:00 – 19:40].

#### **5.2.2 Explanation of competition outcome**

According to the collected data the situation in the online food delivery market is as follows. The network intensity of Hungry.dk is lower than the intensity of JustEat because of the smaller installed user base on the consumer side. Also, social dynamics are existing in the form of restaurant reviews but are universal to all competitors. No need for complementors is given.



Regarding differentiation, on the supply side, the restaurants, Hungry.dk is differentiating itself from its competitors through brand awareness and lower provisions. On the side of consumers, differentiation is done via the unaware “green” branding and the social functionality opportunity for consumers.

Multihoming is encouraged by Hungry.dk on the restaurant supply-side, while multi-homing exists on the consumer demand side but is fiercely combatted. Hungry.dk is actively trying to retain customers with varying success. The pricing sides are equal between Hungry.dk and JustEat. Both rivals are charging the restaurant as the money-side and are subsidizing the consumer side which is the bottleneck. The results of the data collection can be seen in Table 7.

Online Food Delivery		
Current competition outcome	Collaboration & Competition	
Market	Denmark	
Platform provider	Hungry.dk	JustEat
Market Position	Follower	Leader
Supply-side	Restaurants	
Demand-side	Consumer	
Competing-side	Consumer (Demand-side)	
<b>Network Intensity</b>	Lower	Higher
Installed base	1,500 suppliers   20% demand	1,500 suppliers   70% demand
Social dynamics	equal	equal
Complementors	equal	equal
<b>Differentiation (supply)</b>	Lower Provision & Brand Awareness	Marketing & Control
<b>Differentiation (demand)</b>	Social Functionality & Brand Awareness	Marketing
<b>Multi-Homing - Supply</b>	High	
<b>Switching Costs - Supply</b>	Medium	High
Switching Costs - Supply - Financial	Medium (Revenue)	High (Revenue)
Switching Costs - Supply - Procedural	Medium (Ratings)	Medium (Ratings)
Switching Costs - Supply - Relational	Low	Low
<b>Multi-Homing - Demand</b>	High	
<b>Switching Costs - Demand</b>	Low	Low
Switching Costs - Demand - Financial	Low	Low
Switching Costs - Demand - Procedural	Low	Low
Switching Costs - Demand - Relational	Low	Low
<b>Pricing model</b>	Supply (1st)	Supply (1st)

Table 7: Data collection results - Hungry.dk

Following the outlined theory in the theoretical grounding section the collected data speaks to an advantage for JustEat in the network intensity. Since the installed user base of JustEat is larger, which is the most important measurement since the market is a very pure network market, they should win the competition. However, since multi-homing costs for restaurants are very low, Hungry.dk was able to counter this disadvantage by offering lower provisions to the money-side restaurants which leads to an incentive for them to also join Hungry.dk. Even though many restaurants are dissatisfied with the control JustEat exerts on them and would prefer to switch completely, the restaurants are locked-in financially because of their reliance on the turnover provided by JustEat [I; Risom; 13:59 – 14:08]. This resulted in an almost identical installed user base in number and overlap on the restaurant side. Even though consumers also do multi-home, because of the existing differentiation potential, Hungry.dk was able to carve out a stable market share for themselves. This was done to some degree by adding the charity functionality [I; Risom; 1:01:03 – 1:01:27]. It was also achieved by building brand preferences as well as an unintentional differentiation in brand awareness as a healthy food delivery platform [I; Risom; 35:40 – 35:54].

Based on this analysis, it was found that the online food delivery market in Denmark moved away from a winner-take-all situation in 2012 and is now a collaboration and competition scenario. JustEat had and still has a clear advantage in network intensity. This advantage was broken by Hungry.dk through differentiation on both user sides. Because multi-homing is possible on both sides, no bottleneck emerged. Unless JustEat can mitigate the differentiation efforts from Hungry.dk, it is assumed that a winner-take-all situation will not emerge.

## 5.3 MyHammer in the craftsmen marketplace

### 5.3.1 Market description

MyHammer is a digital platform which enables the matching of craftsmen companies and consumers, making it a two-sided network market [Appendix J; Speaker: Matthias Niebuhr; Section: 4]. Services offered by the craftsmen companies range from easier jobs such as moving or installing electric devices to more sophisticated and highly individual jobs such as building a garden house or renovating entire houses [J; Niebuhr; 22]. MyHammer is the market leader in Germany and its main competitors are Blauarbeit.de and eBay Kleinanzeigen [J; Niebuhr; 10] (Myhammer AG, 2018). As such it has gained attention in the German media and politics as a platform, changing the traditional way for these two groups to perform transactions [J; Niebuhr; 14].

There are approximately 330,000 craftsmen companies in Germany of which around 21,000 have subscribed to MyHammer [J; Niebuhr; 22]. Even though this is only a small percentage of the overall craftsmen market,

according to Matthias Niebuhr, MyHammer's market position is secure and strong [J; Niebuhr; 10]. The strongest competitor, blauarbeit.de, has approximately 4,000 craftsmen companies on their platform [J; Niebuhr; 10 & 41]. Every year there are approximately 90,000 newly established craftsmen companies, 50% of these companies close again within the first three years [J; Niebuhr; 24]. The digitalization within the craft workshop market is very slow. For most companies, platforms such as MyHammer are the first step into the digital world [J; Niebuhr; 26]. As a result of these small lifecycles and the significantly higher demand, the platforms compete mainly over the supply-side, the craftsmen [J; Niebuhr; 14 & 21]. However, this is also to some degree depending on the service type, where some jobs like moving or painting, which are easily described, find more offers than complex work [J; Niebuhr; 33]. Demand for certain jobs is also seasonal, e.g. gardeners are needed in the summer and radiator repairs in winter [J; Niebuhr; 33 & 60].

The matching process works as follows: The consumer posts a tender including a small job description. MyHammer send these offers to qualified craftsmen via email. Craftsmen companies which would like to do the job write an offer. The consumer decides between all offers received. The consumer pays the company directly once the job is done and has the option to rate the company on the platform [J; Niebuhr; 31 (2)] (MyHammer, 2019). Craftsmen further have the ability to present themselves on the platform by giving a detailed description of themselves, revealing a level of personalization and a way to distinguish themselves on the same platform [J; Niebuhr; 8].

The market can be described as highly non-transparent regarding prices and quality of the services [J; Niebuhr; 31 (1)]. The market is furthermore somewhat regulated. Some jobs include services which are regulated which means that only certified suppliers can carry out these types of jobs others do not have this limitation [J; Niebuhr; 22]. The certification of jobs is required by German law and is overseen by the House of Craft [J; Niebuhr; 55]. Furthermore, due to the wide variety of offered services and the complexity of some of the services offered, Matthias Niebuhr, Head of Legal, describes the market to be separated into niches to some degree where some platforms are specializing on different service niches like e.g. kitchen and solar [J; Niebuhr; 10 & 53]. Currently, the success and speed of the matching of craftsmen and consumers highly depends on the type of job inquired by the consumer [J; Niebuhr; 33].

Due to the highly diverse and complex jobs inquired by consumers on the platform, this platform market cannot be compared to less sophisticated products and services offered on platforms in markets such as online food delivery or ride hailing [J; Niebuhr; 31 (1)]. Solely matching suppliers with consumers is therefore often not sufficient. In most cases, MyHammer must also manage and support the communication by categorizing the

requests into services and at the same time sorting these requests to qualified craftsmen [J; Niebuhr; 18]. In this sense they are a more active part in the transaction between both sides than just being a passive intermediary, although they try to avoid this fact and limit these interventions into the market [J; Niebuhr; 55]. The necessary understanding to create service categorizations and build upon those matching algorithms create entry barriers for new platforms [J; Niebuhr; 55].

Furthermore, the market is subject to very seasonal demand. Especially in bad weather periods, jobs often cannot be executed or must be paused [J; Niebuhr; 33 & 45]. Another aspect is the regional dependencies services succumb to. A craftsman will only offer its services within an individually set distance [J; Niebuhr; 34]

The two competitors compared in this analysis are MyHammer and bluarbeit.de.

#### *5.3.1.1 Network intensity*

The MyHammer market is also a very pure network market. The value a consumer derives from being part of the platform would be close to zero without the existence of a network of craftsmen and vice versa. The installed user base is therefore the most important driver of network intensity in this market. MyHammer has around 21.000 subscribed craftsmen compared to bluarbeit.de's 4.000 and while no numbers were available regarding installed bases on the consumer side, according to Matthias Niebuhr, MyHammer is leading against bluarbeit.de [J; Niebuhr; 10]. Consequently, this creates stronger self-referring feedback loops on MyHammer because of the need for an installed user base. The services provided on the platform can be separated into two categories. Services which are regulated and where craftsmen need a special license in order to fulfill the service and unregulated services [J; Niebuhr; 24]. For unregulated services, such as moving or wall painting, the availability of craftsmen is significantly higher than for regulated services [J; Niebuhr; 45]. For regulated services, according to MyHammer, the quality between different craftsmen is believed by consumers to be similar wherefore pricing plays a major role in the decision making and consumers are willing to pay a premium for quality [J; Niebuhr; 45]. Same-side information exchange in the form of ratings is therefore more important for unregulated services but still dependent on the installed user-base. In the non-digital marketplace, quality awareness is transmitted through word of mouth. The social dynamics are therefore different for the two types of services. Compared to bluarbeit.de however, the same-side information exchange is equal to their competitors wherefore the social dynamics are deemed equal. Both competitors have no need for complementors and are not cooperating with anyone providing external functionalities [J; Niebuhr; 18]. This results in a higher network intensity for MyHammer compared to bluarbeit.de.

### 5.3.1.2 *Differentiation*

Currently, differentiation between the two competing platforms in the German craftsmen marketplace does exist. MyHammer and bluarbeit.de have differences in the functionalities they provide to consumers and craftsmen. MyHammer is categorizing consumer requests into subtasks checks these for required licensing. Bluarbeit.de is not categorizing as much and is not checking for licensing which makes it vulnerable to illegal employment. Because of MyHammers efforts, they are beginning to standardize the marketplace and its services to some degree.

They also differ in their revenue schemes. Both are requesting monthly fees for craftsmen to take part on the platform, MyHammer also requests a contact fee [J; Niebuhr; 31 (3)]. This fee is included in the monthly fee of bluarbeit.de (bluarbeit.de, 2019).

MyHammer is focusing is craftsmen services around the house and garden [J; Niebuhr; 8]. Bluarbeit.de's services include not only craftsmen services but also other services such as tax services, event services, support and care services or tutoring and coaching services. Most of these services are unregulated. At the same time, while they do provide more variety for the consumer side, MyHammer is not providing these services and is therefore not competing for them.

In terms of marketing expenses and consequently branding, a slight differentiation between the platforms can be recognized. According to Matthias Niebuhr, Head of Legal, MyHammer sometimes undergoes large media campaigns [J; Niebuhr; 14]. However, both platforms are hurt by their reputation of offering backwards auctions to lower prices. This was the revenue scheme in the beginning but was discontinued since then [J; Niebuhr; 4]. Both platforms do not have exclusive users [J; Niebuhr; 31 (1)].

### 5.3.1.3 *Multi-homing through & costs*

According to Matthias Niebuhr, both sides are multi-homing. Matthias Niebuhr expects a large overlap of craftsmen companies and consumers between MyHammer and competing platform owners [J; Niebuhr; 43 & 45].

Since consumers are not being charged on any platform, financial switching costs do not exist for this side [J; Niebuhr; 20]. However, because of the monthly fees some financial switching costs exist for craftsmen. Also, only craftsmen are experiencing procedural switching costs, especially for non-regulated services where ratings of customers cannot be transferred to a new platform. Moreover, due to none existing loyalty programs and presumably low brand preferences in the market, also relational switching costs can be classified as low. When

talking to Matthias Niebuhr it becomes clear that offering an End-to-End product for the craftsmen companies represents a long-term goal of MyHammer [J; Niebuhr; 26]. This includes functions such as invoicing through the platform or other personalization efforts. Once more personalized experiences can be offered, especially procedural switching costs can be increased. If MyHammer continues this route, this would create procedural and relational switching costs. Currently however none of these functionalities are implemented. Because of the similarity between the two competitors, both platforms experience similar switching costs.

#### *5.3.1.4 Pricing side – who to price*

The craftsmen companies are representing the money side and the consumers are representing the subsidy side. MyHammer is therefore following the 1<sup>st</sup> of the four pricing strategies where the supply side is being charged and the demand side is being subsidized. Due to increased organizational efforts and governance issues, MyHammer switched their revenue model from transaction-based charges to a subscription based-model. With the transaction-based model they were not able to capture the positive prices on the money side since transactions could be performed cheaper when craftsmen and consumer met in person [J; Niebuhr; 6]. By charging a fixed fee every month from craftsmen companies for using the platform, MyHammer does not have to fear not getting paid when both sides make an agreement outside of the platform. Due to governance complexity, competitors also implemented a subscription-based model. Furthermore, MyHammer does not charge an allocation fee, if a craftsmen company successfully completed an order, but additionally charges a contact fee. Nevertheless, it must be questioned why the craftsmen companies and not the consumers are being charged in a market where the demand is much larger than the supply.

#### **5.3.2 Explanation of competition outcome**

Both MyHammer and bluarbeit.de were founded at approximately equally in times in 2005 and 2004. Currently, the market and the two competing platforms are experiencing slow growth on both, the craftsmen company and the consumer side [J; Niebuhr; 22]. As introduced earlier, the platforms are unbalanced meaning that the platforms are competing over craftsmen. MyHammer managed to win five times as many craftsmen companies for their platform and is therefore leading the market in part because of a higher network intensity.

Craftsmen Market		
Current competition outcome	Collaboration & Competition	
Market	Germany	
Platform provider	MyHammer	bluarbeit.de
Market Position	Leader	Follower
Supply-side	Craftsmen	
Demand-side	Consumer	
Competing-side	Craftsmen (Supply-side)	
<b>Network Intensity</b>	Higher	Lower
Installed base	21,000 Craftsmen   More	4,000 Craftsmen   Less
Social dynamics	Equal (Regulated vs. Non-regulated Services)	Equal (Regulated vs. Non-regulated Services)
Complementors	Equal	Equal
<b>Differentiation (supply)</b>	Reduced Complexity & Standardized Communication and Services	Breadth of Services
<b>Differentiation (demand)</b>	Reduced Complexity & Standardized Communication and Services	Breadth of Services
<b>Multi-Homing - Supply</b>	High	
<b>Switching Costs - Supply</b>	Medium	Medium
Switching Costs - Supply - Financial	Medium (Monthly fees)	-
Switching Costs - Supply - Procedural	Medium (Ratings)	-
Switching Costs - Supply - Relational	Low	-
<b>Multi-Homing - Demand</b>	High	
<b>Switching Costs - Demand</b>	Low	Low
Switching Costs - Demand - Financial	Low	-
Switching Costs - Demand - Procedural	Low	-
Switching Costs - Demand - Relational	Low	-
<b>Pricing model</b>	Supply (1st)	Supply (1st)

Table 8: Data collection results - MyHammer

Both competitors are applying the same pricing strategy in a market with medium switching costs for both sides and therefore supply and demand sides do multi-home. The differentiation is in a reduced complexity on the side of the craftsmen due to standardized communication and services, while bluarbeit.de offers a wider breadth of services.

In general, based on all four influencing factors, the competing platforms can be seen as very similar. However, MyHammer's current network intensity and its clearer focus on less but more specific services which reduces

complexity, gives MyHammer the competitive advantage in this market and will enable them to stay in this position in the long-term. The advantage has resulted in a stronger growth compared to their rivals. The analysis shows two reasons for this development.

First, MyHammer is better dealing with the high complexity of craftsmen services. The platform continues to combat the complexity of their services by trying to influence the market participants to standardize services. The success in regulated services which are somewhat standardized by the government, compared to unregulated services speaks to a need for standardization.

Second, the wrong assignment of money- and subsidy-side by both competitors. The reasons for this can be found in MyHammers history. When MyHammer was launched, the founder decided to match consumers with craftsmen companies by using reverse auctions. Consumers would post the work which had to be done on the platform and craftsmen companies then had the chance to send hidden offers in order to be awarded the contract. The cheapest offer made by any craftsmen company was automatically accepted and was awarded to complete the job and consequently receive the money. In this way, prices were depressed, and craftsmen companies were dissatisfied. When abolishing the reverse auction system, MyHammer experienced growth. Instead of automatically accepting the cheapest offered made by a craftsmen company, a consumer had the chance to pick their preferred choice among all offers. In this way, other criteria apart from the price such as ratings, availability or speed started to play a vital role in the selection process. By doing so, the supply side, the craftsmen companies, were placed in a better position while still representing the money side of the platform. The emerging growth of the platform after this strategic decision is not surprising when investigating and combining platform theory and the current craftsmen market situation. Currently, the demand in this market is much greater than the supply where consumers experience waiting times of several months. It is therefore surprising that the platform owner, MyHammer, keeps charging the supply side while subsidizing the demand side. When MyHammer started to slightly put the suppliers in a better position, the platform grew. It can therefore be argued that switching from the 1<sup>st</sup> pricing strategy to the 2<sup>nd</sup> pricing strategy where the demand side is being charged and the supply side is being subsidized, would enable and accelerate further growth. When asking MyHammer why the consumers can use the platform for free while the suppliers pay for it, Mathias Niebuhr stated that they have considered this option but the risk of losing customers and consequently weaken their platform is currently assessed greater than the opportunity of further growth [J; Niebuhr; 22]. More evidence that MyHammer is subsidizing the wrong user side can be found when considering pricing theory. Theory states that the side which would react more strongly to an increase of users on the other side should be



subsidized. In this case the side reacting more is the consumer side. Furthermore, the side creating the quality of the service on the platform should be charged which is clearly the craftsmen side which is providing the services. Theory states that the side demanding quality must be subsidized in order to grow and ensure quality providers that the costs of creating quality will be worth investing.

Based on the 2<sup>nd</sup> level of the framework, it can be concluded that MyHammer is a player in a collaboration and competition scenario with bluarbeit.de on the 1<sup>st</sup> level of the framework. Because of the advantage of MyHammer in network intensity, the ability for both user groups to multi-home, the equivalency in pricing side and the lack of effective differentiation by bluarbeit.de, it is expected that MyHammer will be more likely to emerge with a winner-take-all competition outcome. The issue which both market players are facing, is that the older nature of the industry slows the digitalization of this industry and consequently its market growth. It therefore can be argued that the industry characteristics has slowed down the development of the outcome scenario.

## 5.4 Lendino in the peer-to-peer Lending Market

### 5.4.1 Market description

Lendino is a peer-to-peer lending platform connecting borrowers and lenders. Lenders can be private people, professionals or companies lending or investing money. Borrowers are consisting of small and medium sized enterprises which try to raise funding. The companies must be registered organizations in Denmark. (Lendino, 2019a) Lendino facilitates loans between these two user groups, collecting money from multiple sources to fund the required loan amounts to the other side [Appendix K; Interview Partner: Frederiksen, Kristian; Time stamp: 01:36 – 01:44]. Part of the facilitation activities includes the rating of the credit worthiness of loan applicants. Depending on this assessment as well as the required loan amount, the duration and other factors, different interest rates are set for each loan. (Lendino, 2019b) Even though loans differ, the service is described as very standardized through existing regulations and industry standards in risk assessments [K; Frederiksen; 37:40 – 39:34]. The value generated for both borrowers and lenders is dependent on the size of the installed user bases. Borrowers need to reach enough investors willing to fund their loan. Investors value many investment opportunities: The more options they have to invest in, the more variety regarding risk aversion, diversification, duration and other characteristics of the investment are available.

The peer-to-peer lending market is a small submarket of the overall lending market [K; Frederiksen; 04:20 – 04:32]. However, there has been a steady competition between Lendino and its biggest rival, Flex Funding.

According to Kristian M. Frederiksen Lendino and FlexFunding are very similar businesses in terms of their core functionality and size of installed user base. [K; Frederiksen; 04:50 – 05:18] Lendino was established in 2014 while Flex Funding exists since 2013. Both platform providers are very equal in terms of transaction value, with Lendino having facilitated loans of 105,072,500 DKK and FlexFunding being close to that with 157,409,096 DKK. The total size of registered lenders is 5,759 where only around 1,841 were able to invest so far into 357 loans. (FlexFunding, 2019a; Lendino, 2019b) Both platform providers are heavily competing for the user side of borrowers, where besides their platform rivals, they are also competing with non-platform loan providers. Currently both platforms have problems with attracting potential borrowers, leaving most investors unable to find projects to invest in [K; Frederiksen; 06:50 – 07:45 & 08:07 – 08:25].

Due to the large size of the loan market, Lendino and FlexFunding are not only competing with each other but also with other organizations having different business models. One of them being FerratumBusiness a company providing loans very quickly with very high interest rates. [K; Frederiksen; 15:55 – 16:40]

Contrary to the existing competition and the shortness in available borrowers, the current goal of both platform providers is to grow the submarket of peer-to-peer lending by increasing their share in the overall lending market [K; Frederiksen; 06:00 – 06:30].

#### *5.4.1.1 Network intensity*

The need for an installed user base of this platform makes it a very pure network market. Some intrinsic value of being part of the platform is provided by a forum functionality where information can be exchanged. Users have the chance to not just get informed about their current investment portfolio but also to ask questions and make comments in forums regarding their investments and exchange information with the cross-side. The installed user bases for both user sides are comparable and there is no competitive advantage for either platform regarding the installed base. However, in contrary to FlexFunding, Lendino is managing their network intensity by hosting events where same-side information exchange is facilitated, creating positive same-side network effects. Also, they are hosting events where investors and borrowers can meet each other and exchange information. It is mentionable that in those events the conversations are held on a personal level and not through technology. [K; Frederiksen; 11:30 – 12:45 & 13:49 – 14:25] Beside this, a forum on the platform exists where same- and cross-side communication observed by Lendino can take place [K; Frederiksen; 14:26 – 14:59].

Ultimately, no complementors are currently available who provide additional functionalities next to the core functionality on either platform.

In conclusion, this market is a very pure network market where same-side and cross-side information exchange exists, but since the installed user base is the most important factor, the network intensity of the rivals is equal.

#### *5.4.1.2 Differentiation*

Both platform owners do not provide exclusive functionalities or a differentiated brand awareness which could propel their success in specific market segments. The pricing model is fundamentally the same for borrowers, with both platforms demanding a minimum service amount with an additional fee in percentage. On Lendino, the fee is dependent on the assigned risk category of the loans varies between two and four percent. With FlexFunding it is dependent the loan amount charging three percent for loans between 200,000 and 1,999,999 and two percent for loans above that up to their maximum of 15,000,000 DKK. As a result, the pricing is more beneficial depending on different characteristics and therefore very loan specific. On the investor side, no fees apply for lenders on Lendino, while on FlexFunding lenders pay a fee of one percent. (FlexFunding, 2019b; Lendino, 2019c)

Investments in push-marketing are not considered helpful. In this way, Lendino and competitors would only attract more and more not credit-worthy businesses [K; Frederiksen; 17:04 – 18:45 & 19:38 – 19:55].

The argument can be made, that since the available investment opportunities are specific to a provider, they would be able to differentiate themselves with exclusive investment opportunities, but since the current portfolio of borrowers is very small, this effect has not created any differentiation, yet. Nevertheless, exclusive users on the borrower side, the demand-side, hypothetically do exist. Investors with local knowledge who want to invest in a certain company will sign-up for the platform which the company is using as well.

#### *5.4.1.3 Multi-homing & switching costs*

When examining the drivers of the switching costs influencing factor, it can be concluded that switching costs are very low. On the demand side, Lendino expects many investors to multi-home. Investors want to spread their risk by not just holding a diverse portfolio on one platform but rather try and spread their risk by using different platforms [K; Frederiksen; 22:42 – 23:17]. The analysis of the collected data through the lens of the created framework underpins Lendino's assumption. For the investors there are no financial switching costs since sign-up fees or similar fees do not exist [K; Frederiksen; 22:42 – 23:17]. Also, relational switching costs can be considered as rather low. Investors are more connected to and interested in the supply side, the companies they are investing in. Lendino tries to increase this type of switching cost by creating events where the investors can meet Lendino in order to get to know them better as a platform provider. They are thereby trying to build long-

term relationships and increase relational switching costs. [K; Frederiksen; 11:30 – 12:45 & 13:49 – 14:25] Procedural switching costs exist to a certain extent but can be considered as rather low since the competing platform are designed and structured very similarly. Getting to know new procedures or learning new functions is not required when switching to another platform.

On the other hand, even though switching costs for companies which are seeking funding are also rather low, most companies do not multi-home. In general, according to Kristian Frederiksen, discovering companies which are using their platform and another Peer-to-Peer Lending platform is considered as “*a bad sign*”. It indicates in most cases that the lending company is in a difficult financial situation and might not be able to fully pay back their loan. Multi-homing on the borrower side is therefore actively prevented by both platforms. [K; Frederiksen; 20:30 – 21:15 & 22:20 – 22:40]

#### 5.4.1.4 Pricing side – who to price

Comparing the main competitors in the Danish Peer-to-Peer Lending market, it can be identified that Lendino charges solely the demand-side, the borrowers, and therefore follows the 2<sup>nd</sup> pricing strategy while the major competitor, FlexFunding, charges both sides and therefore follows the 4<sup>th</sup> pricing strategy where no side is subsidized. FlexFunding deducts investors 1% provision per year of the offered interest rate. This yearly fee is not being charged by Lendino. However, it can be questioned if Lendino, which claims to not charge investors at all, might offer lower interest rates for the investors in the first place [K; Frederiksen; 23:29 – 24:10] (FlexFunding, 2019b; Lendino, 2019c).

#### 5.4.2 Explaining the competition outcome

Currently, both platforms are struggling to attract enough borrowers. It is therefore the bottleneck of this market, creating a need to grow this side of the network market. Similar to the case of MyHammer, Lendino is not able to grow its platform because of the imbalance on the platform. Therefore, an argument can be made for switching the money- and subsidy-sides and using the 2<sup>nd</sup> pricing strategy. As a result, the borrower-side would be incentivized to grow. At the same time, this would also be increasing the ability of Lendino to offer competitive loan interest rates compared to non-platform competition. Even though in the short-term, due to low switching costs and decreased investment interest rates, investors might leave Lendino, the existence of more borrower-side users will bring them back. This is because FlexFunding is also unable to lock-in investors. Again, this strategy is supported by pricing theory, stating that the quality creating side, the borrowing-side, should be subsidized. In this case however, a major reason for not being able to attract borrowers is also

competition by non-platform competitors. Kristian M. Frederiksen explained that some companies do not accept their loan offers since the companies can get better rates elsewhere [K; Frederiksen; 07:45 – 07:58]. Moving the mark-up away from borrowers would make platform providers more competitive with their interest rates.

In certain cases, exclusive users can be the competitive advantage. Due to local knowledge, investors choose their platform solely based on their target company. This aspect, however, can be neglect since there is currently no need to attract more investors.

P2P Lending Market		
Current competition outcome	Collaboration & Competition	
Market	Denmark	
Platform provider	Lendino	FlexFunding
Market Position	Leader/Follower	Leader/Follower
Supply-side	Investors	
Demand-side	Borrowers	
Competing-side	Borrowers (Demand-side)	
<b>Network Intensity</b>	Equal	Equal
Installed base	Equal   Equal	Equal   Equal
Social dynamics	Higher	Lower
Complementors	Equal	Equal
<b>Differentiation (supply)</b>	Physical Meetings	N/A
<b>Differentiation (demand)</b>	Physical Meetings, Exclusive Users	Exclusive Users
<b>Multi-Homing - Supply</b>	High	
<b>Switching Costs - Supply</b>	Low	Low
Switching Costs - Supply - Financial	Low	Low
Switching Costs - Supply - Procedural	Low	Low
Switching Costs - Supply - Relational	Medium (Events)	Low
<b>Multi-Homing - Demand</b>	Low	
<b>Switching Costs - Demand</b>	Low	Low
Switching Costs - Demand - Financial	Low	Low
Switching Costs - Demand - Procedural	Low	Low
Switching Costs - Demand - Relational	Medium (Events)	Low
<b>Pricing model</b>	Demand (2nd)	Supply & Demand (4th)

Table 9: Data collection results - Lendino

Following the analysis of the 2<sup>nd</sup> and 3<sup>rd</sup> level, the identified competition outcome for this market is a collaboration and competition scenario. Both platforms are having trouble attracting enough users on the

demand-side which leads to the platforms being unbalanced. No clear advantage in network intensity has emerged. Differentiation in this market does not cause a competitive advantage. Since the bottleneck side, the demand-side, is single-homing, whoever will win the battle between the platform providers on that side will reach a monopoly position by controlling access to the borrowers. This platform has potential to create a winner-take-all market situation.

## 5.5 Fiverr in the Freelancer Marketplace

### 5.5.1 Market description

Fiverr is a marketplace for digital freelancer services, connecting service providers to businesses as a two-sided network market. Currently, Fiverr is offering over 200 different service categories in more than 160 countries which include a variety of different services, called gigs [Appendix L; Interview Partner: Forman, Abby; Time stamp: 02:00 – 02:20]. The two big players in this market are Fiverr and Upwork which are competing on a global level. Both players are competing on equal terms meaning that a clear market leader cannot be identified.

The core service of Fiverr is to facilitate the exchange between freelancers offering solely digital services such as graphics & design, programming, writing & translation or video & animation, among other things, and consumers. Consumers can be private people or companies in need of specialist labor or flexible upscaling. The mutually beneficial relationship between these two user groups makes this a two-sided network market. Currently, the players in the market are competing for consumers meaning a sufficient number of freelancers is available on each platform and therefore consumers drive the growth in this market. [L; Forman; 04:55 – 05:00]

The complexity of projects ranges from very easy and standardized to highly individual and more complex projects. Consumers actively approach selected freelancers. Prices are made transparent by Fiverr meaning that they are available to consumers before reaching out to freelancers for the first time. Thus, the selection criteria of consumers in order to find the right freelancer lay on price, skills, ratings and the freelancer's time zone. The time zone is especially valuable when consumers must have projects done when in their own time zone no one is available for instance due to night times. [L; Forman; 29:10 – 29:49]

The market is a very pure digital market. In contrary to the case of MyHammer, provided services are digital and physical interaction or physical objects are not part of the exchange. Fiverr is therefore able to trap the conversation and value exchange between user groups on the platform.

### 5.5.1.1 *Network intensity*

As stated above, this industry is a very pure network market. The value creation is mostly dependent on the network size. Both companies do not provide exact numbers in terms of installed user bases which makes it difficult to assess this driver.

Regarding social dynamics, the ability to provide ratings is seen as a same-side information exchange on the side of the consumer. No such functionality exists for freelancers. User ratings and information exchange exist on both platforms. Consequently, social dynamics can be considered as equal.

A strong competition driver in this case is the availability of complementors. Multiple functionalities are provided for freelancers, including learning courses, tax services, healthcare and even loan functionalities. Upwork is also providing comparable functionalities through complementors (Carter, 2010).

### 5.5.1.2 *Differentiation*

The two largest players try to differentiate on many levels. In terms of providing exclusive functionalities, Fiverr accomplishes to differentiate by providing free learning tools to freelancers. Freelancers get the opportunity to learn how to be more successful using Fiverr as a platform. According to Abby Forman, Senior Manager Public Relations, many freelancers are using their platform due to the provided training and learning sessions not provided by competitors to freelancers. [L; Forman; 06:30 – 07:30] Furthermore, invoicing, tax services, healthcare opportunities or even loan possibilities are provided to freelancers in order to win this side for their platform [L; Forman; 05:35 – 06:15]. Fiverr also tries to personalize the experience of both sides and sees big potential regarding further growth by doing so [L; Forman; 20:22 – 21:06].

Both players are investing in marketing efforts through different channels where no particular advantage can be established.

The pricing models can be considered as similar. Both players charge both sides transaction based. However, Upwork introduced a subscription-based model on the consumer side as add-on to their transaction-based charges. When choosing a subscription-based model, the transaction-based charges are not ceased, instead further services and exclusive support from Upwork in order to find the perfect freelancer is offered. (Upwork, 2019a)

Initially, exclusive users on either platform or either side cannot be identified. However, Fiverr is trying to produce their own exclusive users on the freelancer side by offering FiverrPro to offer high-quality freelancers,

who went through a tough application process, to consumers. FiverrPro freelancers are freelancers who underwent a specific verification process by Fiverr and by successful verification are allowed to sell their services as “Pro Service” to consumers. [L; Forman; 18:50 – 20:20] Fiverr emphasizes on their website that *“only 1% Of Applicants Earn Pro Status. Our rigorous application process ensures that every Pro you connect with has the highest level of quality and service.”* (Fiverr, 2019a) Fiverr tries thereby to segment their product offering just as, for instance, Airbnb does by offering Airbnb Plus apartments. These higher classed freelancers are offering high-quality service, charge a minimum of 100 US Dollars an hour thereby create larger provisions for Fiverr [L; Forman; 19:45 – 20:20].

### 5.5.1.3 Multi-homing & switching costs

According to Fiverr, approximately 40% of all freelancer multi-home [L; Forman; 12:20 – 13:06]. Switching costs for freelancer can be seen as medium meaning that some costs would occur when switching. Thereby no statement can be made about relational switching costs. Financial switching costs are low since freelancers are only charged on a transaction-base and are not paying a monthly fee or similar. Procedural switching costs can be assessed as medium. This is due to the rating system, among other things. Freelancers cannot bring their presumably positive ratings from one platform to the other which might keep them from switching. Also, the service slightly differs in their use so that a certain learning effort is needed in order to get familiar with the new platform. This also includes provided invoicing and tax services or the FiverrPro functionality where freelancers put extra effort to receive the higher classed status.

No data for the number of consumers who multi-home was provided. Due to low switching costs it can be assumed that multi-homing on the demand side is rather high. Fiverr is especially trying to prevent churn by monitoring consumers usage behavior. If a consumer, for instance, has not been using their service or their platform in a while, he or she might receive a promo code via email for their next purchase on the platform. [L; Forman; 14:00 – 14:40] Part of Fiverr’s retention strategy is also to offer slowly but gradually more and more freelancer services on their platform [L; Forman; 24:12 – 25:39 & 26:05 – 26:51]. Since switching is negatively correlated with breadth of offerings as established in the theoretical grounding section (Chen and Hitt, 2002), this might be an effective consumer retention tool.

Fiverr further tries to lock-in consumers by personalization efforts and increasing their share of wallet. Fiverr is trying to more and more reach decision makers in various companies. Since companies usually have larger budgets than private people and usually require multiple different service, Fiverr tries to cross-sell their services to these decision makers and thereby increase their share of wallet in terms of consumer’s digital service needs



such as graphics & designs, digital marketing or programming and database skills. [L; Forman; 27:35 – 28:40 & 29:10 – 29:49]

#### 5.5.1.4 Pricing side – who to price

Both players are competing for the demand side, the consumers [L; Forman; 04:55 – 05:00]. Nevertheless, they both apply the 4<sup>th</sup> pricing strategy where both sides are being charged. It can be argued that the consumers are being subsidized since they pay less than the freelancers do. Upwork can be considered as financially more attractive to freelancers since the costs range from 5% to 20% of the project fees whereas Fiverr charges a fixed fee of 20%. While Upwork is using a tiered pricing system for freelancers and a fixed price of 3% for consumers, Fiverr uses a fixed fee for freelancers and applies a tiered pricing system for consumers. Consumers pay \$2 on purchases up to \$40 and 5% on purchases above \$40. Since the average project costs are more than \$40, also consumers are financially better off when choosing Upwork. (Fiverr, 2019b; Upwork, 2019b)

#### 5.5.2 Explaining the competition outcome

It becomes clear that this market is a very mature market when analyzing the collected data in connection with the established framework. The pricing models of the two competitors can be assessed as very similar and no statement can be made regarding the comparison of the network intensity. The main competition factors seem to be differentiation, standardization and creating a lock-in.

The goal is to standardize the core functionality, the facilitation of exchange between digital freelancers and consumers of these services, in order to create a sustainable, competitive advantage. Fiverr does not allow any negotiation or pitching from neither side. The objective is to reduce complexity by standardizing processes and productizing the services. Fiverr tries to position themselves as a traditional e-commerce platform such as Amazon rather than an online staffing or service platform. [L; Forman; 03:17 – 03:33 & 03:35 – 04:05] Through different strategies and tools both players are trying to offer more and more functionalities to both sides aiming to especially increase procedural switching costs of freelancers in order to prevent switching and to create a lock-in. For instance, Upwork offers additionally to the transaction-based revenue scheme, subscription-based models to presumably hinder their consumers from multi-homing. Fiverr, for instance, does not allow to share private phone numbers or email addresses to ensure that the entire communication and value exchange between freelancer and consumer does take place on the platform. [L; Forman; 15:13 – 15:39] Fiverr is also using exclusive and high-quality freelancers in their FiverrPro offering to differentiate themselves from the competition by “creating” exclusive users. [L; Forman; 18:50 – 20:20]

Freelancer Market for Digital Services		
Current competition outcome	N/A	
Market	Global	
Platform provider	Fiverr	Upwork
Market Position	Leader/Follower	Leader/Follower
Supply-side	Freelancer	
Demand-side	Consumer	
Competing-side	Consumer (Demand-side)	
<b>Network Intensity</b>	N/A	N/A
Installed base	N/A	N/A
Social dynamics	Medium (Ratings)	Medium (Ratings)
Complementors	High	High
<b>Differentiation (supply)</b>	Exclusive Functionalities & Personalization & Exclusive Users & (Brand Awareness)	N/A
<b>Differentiation (demand)</b>	Pricing Scheme (unit pay)	Exclusive Support (Functionality) & Pricing Scheme (hourly pay)
<b>Multi-Homing - Supply</b>	Medium	
<b>Switching Costs - Supply</b>	Medium	Medium
Switching Costs - Supply - Financial	Low	Low
Switching Costs - Supply - Procedural	Medium (Ratings, FiverrPro)	Medium (Ratings)
Switching Costs - Supply - Relational	N/A	N/A
<b>Multi-Homing - Demand</b>	High	
<b>Switching Costs - Demand</b>	Low	N/A
Switching Costs - Demand - Financial	Low	N/A
Switching Costs - Demand - Procedural	Low	N/A
Switching Costs - Demand - Relational	Low	N/A
<b>Pricing model</b>	Supply & Demand (4th)	Supply & Demand (4th)

Table 10: Data collection results - Fiverr

From time to time, niche players are entering the market focusing on only one single job type. According to Fiverr, some of them are successful by providing only this one service, some leave the market again after a few years. [L; Forman; 22:07 – 23:05 & 23:39 – 24:10] Fiverr aims to become winner-take-all. Abby Forman believes that by gradually increasing their offering horizontally, Fiverr can create a seamless experience for customers, such as Amazon does, and eventually be the only big player in the market. [L; Forman; 24:12 – 25:39 & 26:05 – 26:51] To do so, Fiverr's plan is to target not only small companies from 1-5 employees but also decision-makers within larger companies who have spending power. Fiverr aims to provide these decision-makers with not just

one service but multiple and thereby increase their share of wallet. [L; Forman; 27:35 – 28:40] This is also in accordance to Chen and Hitt (2002) who argue that switching is negatively correlated with breadth of offerings meaning that consumers can fulfil all their needs with one single service-provider.

Fiverr is also looking into adding physical craftsmen services to their portfolio [L; Forman; 24:12 – 25:39]. This would make them a direct competitor to MyHammer. When comparing Fiverr and MyHammer, the main difference is that in this market all services are provided digitally whereas in the craft workshop market both sides of the platform must meet each other in the physical world in order to complete a project. The fact that on Fiverr's platform only digital services are offered implies that all platform participants obtain a certain level of tech-savviness and familiarity with the digital world. On the contrary, for the craft workshops a platform such as MyHammer usually is the first step of a workshop's digitalization process. Due to its long existence, this industry lacks digitalization efforts and young career-starters.

Due to this, MyHammer is mainly competing for supply whereas Fiverr is competing for demand. Thus, MyHammer's advantage in its installed base and its success in offering more standardized and less complex service, provides MyHammer with a clear competitive advantage. In the freelancer market, however, the network intensity between the competitors is rather equal. The focus therefore lays on differentiation, standardization and creating a lock-in.

In this market the market share was not revealed to us and a determination of the network intensity could not be made. Both platforms are competing through providing exclusive functionalities to both sides of the platform. How those functionalities are resulting in differentiation was not assessible. Because of the multi-homing on both sides and the equality in pricing model, if users see the platforms as differentiated, a collaboration and competition scenario will emerge. If differentiation efforts fail, both sides will compete over both user groups and the leader in network intensity is more likely to emerge in a winner-take-all situation.

## 5.6 Graduateland in the job marketplace

### 5.6.1 Market description

Graduateland is a two-sided network market connecting the user groups of university students and graduates with companies posting job opportunities. The platform was founded in 2010 and operates in Europe, Scandinavian countries, Benelux states and the German speaking markets. The transactions are focused on finding cross-country jobs and is further limited to entry level jobs and student jobs. Effectively, this makes the level of operation of Graduateland a submarket of the overall job searching market. Because of the cross-country

aspect of the transactions, competitors of Graduateland are all job platforms who are operating in a given country. [Appendix M; Interview Partner: Beck, Julian; Time stamp: 02:00 – 04:12] The main source of value for the user side of jobs lie in the connection to qualified candidates. For graduates the main value lies in the connection to job offers, although the platform is currently developing functionalities creating intrinsic value. One of those intrinsic generating functionalities which already exists is the option to create and export resumes at any time [M; Beck; 41:32 – 41:58]. In conclusion, this still makes the market a very pure network market with a high network intensity. The positive network effects for both sides are created directly in the transaction between the two user groups.

Also, Graduateland cooperates with universities as additional layer in the platform thinking but not as another user group [M; Beck; 07:55 – 08:11]. Universities can either use the standard platform solution or integrate a plug-in version of the platform into their own intranet. An example for such a case is the job platform of Copenhagen Business School called Careergate. Both the plug-in and the standard solution are using the same job database. From the perspective of the universities, having employed graduates carries a positive marketing message for both attracting students as well as creating connections with companies. This stakeholder group is not defined as a user group in the context of this study because of the detachment from the original transaction. [M; Beck; 04:14 – 06:15] While the platform is matching job offers to graduates based on very personal skills, the positive network effects for universities is only a side product not a core component. Graduateland is using universities as a marketing tool to gain access to students and project the availability of high value students to corporations.

Currently, Graduateland's platform is balanced and is therefore trying to grow both sides of the platforms in terms of user base size [M; Beck; 13:23 – 14:00]. However, they admit that they are looking more targeted for students with specific skills. This is attributed to a certain demand requested by companies. [M; Beck; 13:50 – 14:15] Due to that differentiated approach, the bottleneck user side is changing depending on the job type.

Graduateland is competing with a variety of different job platforms. In each country, they have different local competitors, focusing on different sub-markets. While some of these, such as JobTeaser are direct competition, which is also focusing on students and graduates, other platforms are regular job boards which are not just targeting students. Another competition are traditional job postings by companies. [M; Beck; 02:00 – 04:12]

This makes it very difficult to assess the overall competition [M; Beck; 02:00 – 04:12]. Therefore, this comparison will focus on the submarket of students in the Danish market where Graduateland is the market leader according

to the installed user base [M; Beck; 29:20 – 29:46]. The relational comparison will be performed with Jobindex, one of the leading job platforms in Denmark.

#### *5.6.1.1 Network intensity*

As already established, this market is a very pure network market. The main driver is the need for an installed user base. [M; Beck; 16:45 – 17:35] About 1.2 million students are currently registered on Graduateland [M; Beck; 26:42 – 27:05]. On average over 150,000 job offers are posted on the platform at any time by roughly 15,000 organizations [M; Beck; 28:15 – 28:23]. Examining Graduateland's website, it can be identified that 4,501 jobs are currently offered in Denmark (Graduateland, 2019a). According to Julian Beck, Chief Marketing Officer at Graduateland, one of their biggest competitors in Denmark is Jobindex which currently offers 22,600 jobs from 15,059 job ads (Jobindex, 2019). Of those jobs, 2,502 are declared as trainee or student jobs. In total 136,742 job seekers are currently being brokered on Jobindex. No information is available on how many of those job seekers are students. According to the interview, Graduateland is leading the market in terms of installed user base within their market segment of the job platform industry. They are therefore declared as market leaders.

By introducing more and more to offers which are not dependent on the network size, Graduateland is trying to increase the platform's intrinsic value and thereby mitigate the pure value proposition based on the network size [M; Beck; 15:20 – 16:10 & 41:32 – 41:58].

Regarding social dynamics, on Graduateland no functionalities for same-side information exchange are available. According to Julian Beck, installing information exchange functionalities is also not planned in the long-term. [M; Beck; 34:44 – 35:32]

Complementors do not exist on either platform [M; Beck; 11:18 – 11:25].

#### *5.6.1.2 Differentiation*

Graduateland is constantly introducing new ways for students to communicate with job posters and vice versa in new and innovative ways. Both user groups can communicate via live chats even before applying to a job. Another way is the newly introduced virtual job fair. These functionalities are new to the market and are a clear differentiating factor. Another important functionality not common in the marketplace are the algorithms matching students with potential jobs. For these algorithms metadata is used from both jobs and students. All these initiatives show Graduateland's efforts to differentiate themselves from the numerous competitions via a clear advantage in platform quality. Besides these functionalities increasing the quality of the core functionality, another functionality increasing the intrinsic value of the platform is the possibility to create resumes. Another

one of these functionalities is provided through a cooperation in Germany providing trainings to increase the skills of students. [M; Beck; 12:55 – 13:17 & 18:55 – 19:15]

Their brand awareness is constructed around the platform quality. They present themselves as the organization finding the most appropriate matches out of a pool of highly qualified students. Their marketing through top-tier universities adds to this perception. In general, Graduateland is intensifying marketing efforts [M; Beck; 42:36 – 43:40] (Graduateland, 2019b).

Companies pay for job postings which are manually posted on the site by purchasing single job posts or several job posts at once. For specific services, universities pay as well. [M; Beck; 37:15 – 38:30]

Qualified employees in the fields of information technology or engineering are the most valuable users on the side of the job applicants. These job types are currently mostly searched for by employers and therefore can be considered as exclusive users. [M; Beck; 13:50 – 14:15] Furthermore, Graduateland tries to keep universities exclusively on their platform, especially in Denmark and Sweden, so that all students can be retained on their platform. [M; Beck; 25:49 – 26:35]

### *5.6.1.3 Multi-homing & switching costs*

There are two types of jobs on Graduateland, crawled jobs and manually posted jobs. Crawled jobs are automatically retrieved from company websites and represent the majority of the available jobs. Such jobs are, by definition, posted on company websites. Also, many other job platforms are using crawling algorithms to boost job post numbers. For manually posted jobs, many of them are also posted on different job platforms. The job side is therefore multi-homing and this practice is difficult to combat. [M; Beck; 23:10 – 23:37]

The same must be assumed for students which are actively looking for jobs and are therefore exploring their options on a variety of different platforms.

On the side of the companies posting jobs, retention is a big emphasis for Graduateland. User behavior is tracked, and companies are engaged based on their behavior and use of the platform. [M; Beck; 24:06 – 24:43] Their value proposition to regain customers is however mainly based on the quality of their service.

After being matched with a job, students are usually staying in their positions for a longer period of time. While some of the intrinsic functionalities are introduced to retain customers, processed students are moved to another platform called Careerland. Careerland is a platform for non-entry level jobs. [M; Beck; 08:22 – 09:35 & 17:35 – 18:13]

#### 5.6.1.4 Pricing side – who to price

Just as it is widely common in the industry, businesses are paying for the service while students or job seekers are the subsidy side for this platform provider. For crawled jobs, companies do not have to pay, but for manually posted jobs they do. For crawled jobs many of the features including all the functionalities of information exchange with students provided by Graduateland are not available to the companies. [M; Beck; 37:15 – 38:30]

Some platforms such as LinkedIn offer premium services for job seekers and therefore partially charge both sides.

#### 5.6.2 Explanation of competition outcome

The market is a very pure network market. The network intensity is highly dependent on the inquired job type and the region. Therefore, it is very difficult to assess and make general strategic decisions based on it. Instead, Graduateland is aiming at improving the quality of their core functionality, the matching algorithms. They are manipulating the influencing driver of exclusive functionalities to differentiate themselves from their competition. Also, they try to increase the intrinsic value of the platform which will decrease the overall network intensity. Moreover, Graduateland use the quality of their matching algorithms to retain the money-side of the platform, the companies posting jobs. This explains their lack of focus on preventing multi-homing since they are convinced that the quality of applicants, they can provide, is superior compared to their competitors. If these efforts are successful, it is probable that in the Danish market they will solidify their position as market leader.

According to Julian Beck, Graduateland is aiming to reduce complexity and uncertainty from the application process by enabling cross-side information exchange. Graduateland's further focuses on standardizing their product and offering a more user-friendly experience to its customers than Jobindex. Further, they try to be more innovative and continuously improve their job matching algorithms so that eventually the perfect job-applicant prediction will be perfectly accurate. By not just representing a job marketplace but proactively taking part in the communication between companies and applicants, Graduateland tries to reduce the complexity in the application process for both sides of the platform.

Student & Graduate Job Market		
Current competition outcome	Collaboration & Competition	
Market	Denmark	
Platform provider	Graduateland	Jobindex
Market Position	Follower	Leader
Supply-side	Organizations (Jobs)	
Demand-side	Applicants	
Competing-side	Supply & Demand (depending on Job Type)	
<b>Network Intensity</b>	Higher	Lower
Installed base	4,501 Jobs   1.2 million Students	~2,502 jobs   less Students
Social dynamics	Equal	Equal
Complementors	Equal	Equal
<b>Differentiation (supply)</b>	Reduce Complexity, Remove Uncertainty	N/A
<b>Differentiation (demand)</b>	Intrinsic Value, University Partnerships	N/A
<b>Multi-Homing - Supply</b>	High	
<b>Switching Costs - Supply</b>	Low	Low
Switching Costs - Supply - Financial	Low	Low
Switching Costs - Supply - Procedural	Low	Low
Switching Costs - Supply - Relational	Low	Low
<b>Multi-Homing - Demand</b>	High	
<b>Switching Costs - Demand</b>	Low	Low
Switching Costs - Demand - financial	Low	Low
Switching Costs - Demand - Procedural	Low	Low
Switching Costs - Demand - relational	Low	Low
<b>Pricing model</b>	Supply (1st)	Supply (1st)

Table 11: Data collection results - Graduateland

Jobindex is the incumbent in the job marketplace in Denmark. Due to the segmented market entry only targeting students, Graduateland managed to successfully enter and build a sustainable user base. By now, Graduateland has surpassed Jobindex in this submarket as the market leader. By adding universities as exclusive user and as another layer to the platform, Graduateland managed to utilize universities as gateway to accelerate the growth of the student side and thereby attracting further employers. At the same time, they are building functionalities increasing the intrinsic value to retain and attract customers. In this market both sides multi-home and switching costs are very low. Differentiation efforts by Graduateland to reduce complexity and remove uncertainty are focused on the core functionality of the platform, increasing the platform quality. Therefore, differentiation is not strong enough to stop the advantage in network intensity. The current collaboration & competition market situation might therefore move closer to a winner-take-all situation.



## 6 Discussion

### 6.1 1<sup>st</sup> level of framework– Potential competition outcomes

The potential outcome scenarios in the framework are fragmented development, collaboration & competition scenario and the winner-take-all outcome. It is important to clearly distinguish the winner-take-all outcome from the other scenarios as it is the outcome mostly aimed for by market participants. Without a clear definition, it is impossible to act towards that outcome. Therefore, in the coming section, the winner-take-all outcome will be discussed further based on the insights gained throughout the research study.

#### 6.1.1 Winner-take-all situations are not necessarily stable

Ruutu, Casey and Kotovirta's (2017) recognize the fact that the winner-take-all situation might not be stable and is dependent on the innovation speed in the industry. With this study we delivered further evidence for this assumption. The analysis of the online food delivery market with the case of Hungry.dk on the Danish market showed that before the market entry of Hungry.dk, JustEat was presumably in a winner-take-all situation. Not only was JustEat controlling 95% of the market share on the side of the consumers, but as a first mover restaurants were highly dependent since they generated 50% of their revenue through JustEat's platform [I; Risom; 13:30 – 13:35 & 13:59 – 14:08]. Therefore, restaurants were financially locked-in by JustEat. Due to the lock-in, they increased their provision on the money-side, disgruntling restaurants [I; Risom; 11:12 – 11:31]. Together with the very low multi-homing costs for both restaurants and consumers, Hungry.dk was able to storm into the market by growing quickly on the restaurant side [I; Risom; 08:20 – 08:25]. They offered a pricing advantage as well as exclusive functionalities to restaurants by offering descriptive analytical functionalities. At the same time, Hungry.dk was able to take advantage of differentiation in brand awareness and functionalities for consumers, resulting in a gain in market share. JustEat did not react to the differentiation efforts by Hungry.dk on the consumer side but only partially by adding descriptive statistical functionalities for restaurants [I; Risom; 22:28 – 23:20]. This shows, that even in very pure network markets where network intensity is largely based on installed user bases, a winner take-all situation can be broken if differentiation potential exists and multi-homing costs are low for both the money- and the subsidy-side. It also showed that after breaking this outcome, it can be profitable to be a clear number two in a market dominated by a different platform provider. According to Rune Risom, CEO of Hungry.dk and ten years of experience from JustEat, JustEat did not believe that there could be a profitable number two in the market and therefore did not take any action to prevent the entry of Hungry.dk [I; Risom; 39:20 – 40:25].

Based on our findings, we believe that in network markets the market position is more volatile due to network effects and self-reinforcing feedback loops. In consequence, this means that a winner-take-all situation can more easily occur in a platform competition than in a traditional competition. At the same time however, it can also be broken just as easily.

### 6.1.2 Multiple local winner-take-all outcomes

Furthermore, it is unclear how geographical coverage plays a role when classifying a platform business as winner-take-all. Can a platform be winner-take-all in one market while competing on equal terms in another market?

We believe that in certain cases winner-take-all situations are limited by regional dependencies and therefore several local winner-take-all situations might emerge. The case of Hungry.dk, for example, showed that the competition is depending on the breadth of offering within a specific area. Similar results were found in the case of MyHammer. In both cases, the supply-side is limited in their reach when fulfilling service requests. Those two cases also show that regional dependencies are inherent to the industry and can differ between industries. They also show that regional dependencies can differ between user in the same industry. Because of this insight, the competition between platforms is tied to a region which consequently also applies to the competition outcomes. Another good example to support this assumption is Graduateland, which find itself in different market positions and dealing with different competitors depending on the country they are operating in.

This regional dependency can also be tied to the tangibility of the product or service. While tangible products and services like food and craftsmen services are somewhat tied to a location, digital services like those provided by Fiverr are not necessarily limited like that. Their regional dependencies can however be created through regulatory intervention through governmental bodies. An example for this is the requirement to file taxes in different countries when providing services internationally.

Regional dependencies are network clusters which are bound to an area. It can be understood as an expansion of the theory of network structure and local bias as presented in the theoretical grounding section. Instead of the existence of local biases based on tie strengths between acquaintances, this tie strength is dependent on a regional bias. The more a network is fragmented into local clusters, the more vulnerable a business is to challenges. To explain this scenario, MyHammer and Fiverr will be briefly compared. Craftsmen companies and their customers in Berlin care mostly about the number of its counterpart in their hometown, Berlin. They do not care much about the number of craftsmen companies and their customers in Hamburg or Cologne. This allows other local digital craftsmen platforms to reach a critical mass in the local market and be profitable by

differentiating through, for instance, lower prices. When comparing MyHammer with Fiverr the fundamental issue becomes apparent. Consumers of digital services on Fiverr do not care much about the number of freelancers in their hometown, instead, they care about the availability and skills of freelancers at any given time on the platform. Thus, the network is more or less one large cluster and a potential new market entrant must compete with Fiverr on a global scale. MyHammer, instead, must manage many local clusters and is dependent on the network intensity of each local cluster.

Zhu and Iansiti (2019) suggests that it is possible to strengthen a network by building global cluster on top of local cluster or by connecting the local clusters. Facebook, for instance, tries to connect local clusters by offering online games where platform users play with other users on the platform which can be outside of their usual local cluster. Therefore, one strategical implication for MyHammer in order to achieve a winner-take-outcome would be to allow not solely craftsmen work but also digital service on their platform. By doing so, a potential global cluster would be established, creating a denser and more integrated network.

We argue that the framework does not have to be adjusted to serve this finding. It rather must be decided in what context it must be applied to. For instance, Graduateland faces different competition scenarios depending on the country it operates in. But also, Hungry.dk faces different competition scenarios in different cities and even in different city districts. Managers of Graduateland and Hungry.dk must apply the framework for all markets they compete in to identify reasonable strategic decisions for each market. The decision must be made whether to analyze competition of an entire market or multiple times within a region. In each region the competition situation will be different in all influencing factors of the framework.

### 6.1.3 Defining winner-take-all market outcomes

Multiple authors have defined winner-take-all situations in a digital platform market. However, no consensus on a definition exists. Hence, the question remains how a winner-take-all market situation can be defined. The Cambridge Dictionary defines a winner-take-all situation as a competition outcome “*resulting in the entire prize going to the one competitor who wins*” (Cambridge Dictionary, 2019). This definition raises further questions as well and leaves space for interpretation. From an economic perspective, the question remains if winner-take-all can be measured by only evaluating market share or the size of the installed user base. Until now existing definitions are limited to a subsection of the influencing factors defined in the established framework. Eisenmann, Parker and Alstyn (2006) simply define a winner-take-all situation as one competition participant taking almost all the market using the influencing factors of multi-homing, network effect strength and

differentiation as variables. According to Ruutu, Casey and Kotovirta's (2017), a winner-take-all situation is seen as a competition outcome where, due to superior resource allocation, one platform can lock-in customers and is able to drive competitors out of the market. Superior resource allocation in their definition speaks to platform quality which manifests itself in developmental effort. These definitions of a winner-take-all situation are not going far enough. No research study so far has acknowledged all influencing competition factors in combination when defining a winner-take-all market scenario. Prior research also does not take the drivers of these factors into account. Based on the recognition of these gaps, the current understanding of a winner-take-all situation is incomplete and needs to be extended.

In our understanding, a winner-take-all market cannot be defined and identified by solely looking at specific characteristics of the platform business or the market through financial figures such as the market share, but by how platform businesses are strategically managing the factors influencing competition. The current market share of a platform can be seen as a base requirement, however, not as the defining factor to achieve a competitive advantage which eventually leads to a winner-take-all position. Thus, only if a platform business manages to excel in all four described factors, a winner-take-all situation can be achieved temporarily.

After combining all the factors in one framework it can be said that winner-take-all outcomes cannot be predicted only based on installed user bases or market share but rather as a combination of all four influencing factors. Following the created framework, a winner-take-all platform provider must first have a clear advantage in network intensity. As it was shown, network intensity is creating self-referring feedback loops which positively affect the growth of the installed user base. It was shown, that these feedback loops are firm specific and can be managed, wherefore platform providers must actively influence the drivers of network intensity. This is a task which needs constant attention from management. Also, platform providers must have picked the correct pricing structure. The correct pricing structure is defining the subsidy-side as the side which is currently the bottleneck side of the competition. The money-side is inverse to the bottleneck side. As a result, they are vulnerable to losing their leader status in the competition or at least allowing serious competition on the market by impeding platform growth. Furthermore, it is important to distinguish that lock-in of only one of the user sides is not enough to defend a winner-take-all position. As it was shown by JustEat, the lock-in of the supply-side was broken because of the incentivization and availability of multi-homing strategies. Instead, a platform provider must prevent multi-homing on at least one user side. As stated in theory, this creates a monopoly position over allowing access to single-homing side users. Lock-in, which is an extreme outcome of switching costs does not necessarily result in a prevention of multi-homing, as it was shown earlier. Thus, the decision whether a user

multi-homes is not just impacted by switching costs and multi-homing costs, but also influenced by differentiation. Market leaders can prevent multihoming by either increasing multi-homing costs for users or by stopping differentiation efforts by competitors. With high multi-homing costs users will be more likely to only join one platform. And when no differentiated competing platform is available, users have no incentive to multi-home. Even if both sides are locked-in, this situation can be broken if multi-homing costs are very low and enough incentives are given. This shows the importance of innovation on platform competition. Innovation directly affects the available functionalities provided to user sides and therefore the platform quality. Innovation does not necessarily have to come from inside the organization but can be facilitated through complementors. It therefore also influences the network intensity through the complementary driver. We second Ruutu, Casey and Kotovirta's (2017) insight about the innovation speed of the industry. The ability to differentiate is dependent on how quickly the industry rivals are innovating. The innovation speed is understood as industry specific, wherefore online food delivery platforms might have a different innovation speed than mobile operating systems. If a platform provider is unable to create high multi-homing costs, multi-homing can be avoided if the market leader keeps up with market innovation and minimizes the differentiation potential of competitors.

Defining winner-take-all markets also depends on the level of analysis. Competition between digital platforms can play out within an entire industry, within a specific customer segment or within a specific region. It all comes down to on what micro-level the analysis is conducted. Once a level of analysis is identified by a platform business, our framework can be utilized.

## 6.2 2<sup>nd</sup> level of framework – Effectiveness of the identified influencing factors

Through the application of the created framework it was shown that the already identified influencing factors are valid for the explanation of the outcome of the competition between digital platforms. It was further demonstrated that these factors must be analyzed in combination rather than in isolation to gain a comprehensive understanding of the current outcome scenario. This is because of the interconnectedness of these influencing factors. The data collection however also revealed that some influencing factors need to be adapted.

### 6.2.1 Network intensity

In markets which rely on social dynamics in the form of same-side information exchange through rating functionalities, a problem arises between established users and new users. Users which adopted the platform at an early stage and proved their quality by collecting a high number of positive ratings are at advantage against

users which newly entered the platform. New users do not have sufficient references in the form of ratings to have proven their quality. In such cases mechanisms must be developed to allow new users to prove themselves to counter the risk of losing them. Without these mechanisms, the growth of installed user bases and therefore the influencing driver of need for an installed base will be affected. This problem was experienced by MyHammer when multiple craftsmen offer their services to a consumer and mostly the one with the most positive ratings is chosen [J; Niebuhr; 31 (3)]. Another example for this is Airbnb, who suggest to new supply-side users, renting out their private accommodations at lower the prices below the average for the location to receive first bookings.

The framework does not manage to acknowledge this issue clearly enough. By the nature of a digital platform cross-side user differ and represent distinct user groups. Users within one side, however, also differ in their characteristics, preferences and actions. The relation between the users within the same side must be examined more properly to derive the right actions. On the one hand, platforms must do this to attract enough users from the same side by proactively managing their “same-side competition” and thereby enable platform growth and on the other hand to rate users in their importance to the platform. For instance, a user who orders through Hungry.dk 30 times a year is much more valuable to the sustainability of the platform than a user who orders only once a year. Also, Graduateland describes its platform as balanced between job offers from organizations and applicants. However, the job offers on the one side are unbalanced in itself. Graduateland lacks IT and engineering job postings and therefore must actively try to increase these specific job types in order to achieve not just an overall platform balance but also a balance within this user side. The same holds true for MyHammer. MyHammer also describes its platform as rather balanced, however, lacks craftsmen for more complex tasks. Easy tasks such as moving or painting wider areas in a single color posted by consumers usually receive more than 20 offers by craftsmen, more complex tasks in certain cases do not receive any due to availability.

Users abandon the platform if the matching process takes too much time or is not provided at all. Disregarding the unbalance within one user side can lead to a steady decrease of the platform’s installed users base and thereby decreasing the overall value of the platform for any user.

### 6.2.2 Differentiation vs. niche

The differentiation factor addresses the potential of market players to differentiate themselves through, for instance, offering functionalities or revenue schemes not available on competing platforms. Market players use differentiation strategies to outcompete other market players while targeting the entire market. Niche players, instead, differentiate while not targeting the entire market but a specific customer segment of the market. It is

important to acknowledge the difference in light of platform competition since both strategies lead to different market outcomes.

First, as mentioned earlier, Fiverr explained that from time to time new platform businesses enter the freelancer market specializing in one service with the goal of connecting freelancer of this type with consumers. Abby Forman, Senior Manager Public Relation at Fiverr, explained that “*a dozen*” platforms enter successfully and remain in the market while others fail. [L; Forman; 22:07 – 23:05 & 23:39 – 24:10] For instance, Airbnb can be considered as winner-take-all in the peer-to-peer private accommodation rental market while niche players might specialize in i.e. private luxury cabins on a specific island. This means that a sustainable winner-take-all market situation can exist while leaving space for niche players not strongly competing with the market leader.

Second, Hungry.dk entered the online food delivery market with the clear goal to not serve a niche but compete for the entire market [I; Risom; 30:00 – 33:30]. Even though, a part of the market considers Hungry.dk as the healthier food delivery service due to its green logo according to Rune Risom, CEO of Hungry.dk, they do not aim to serve a niche and therefore do not attempt to build on the unconsciously created image [I; Risom; 59:00 – 59:29]. Thus, Hungry.dk tries to differentiate from JustEat by offering a different revenue scheme and exclusive functionalities and thereby break the winner-take-all market in the same segment and force the collaboration and competition outcome. Ultimately, Hungry.dk just as JustEat aims to be the only player in the market.

Based on the collected data, it could therefore be concluded that it is important to acknowledge and evaluate the differentiation efforts of each market player when analyzing platform competition and attempting to predict its outcome.

### 6.2.3 Defining the relationship between switching costs & multi-homing

In the developed analytical framework, we defined one influencing factor as “Multi-homing through Switching Costs”. Combining the results of all five cases, we can discover that in eight out of ten times (five demand-sides plus five supply-sides) multi-homing is ranked as high, one time it is ranked as medium and one time it is ranked as low. This means that in the examined cases most platform users are using multiple platforms simultaneously. This finding aligns with the level of switching costs. In most cases, switching costs were low and therefore allowed multi-homing.

Nevertheless, analyzing the collected data showed that multi-homing does not solely depend on switching costs. Even when switching costs are ranked as medium or high, platform users are multi-homing. For instance, in the competition between Hungry.dk and JustEat. Restaurants are generating in average 50% of their revenue

through JustEat and have therefore high switching costs [I; Risom; 13:59 – 14:08]. These restaurants cannot leave JustEat's platform even though they could earn a higher margin at Hungry.dk. The restaurants therefore decided to be present on both platforms and enabled Hungry.dk to enter the market and to be profitable.

In our understanding, "switching" can be defined as leaving one platform in favor of another platform. The user "switches". Multi-homing instead can be defined as a platform user actively using multiple platforms at the same time. Consequently, if a platform user switches from one platform to another, he or she is not multi-homing since he or she has left the other platform. The platform user is only multi-homing if he or she uses both platforms without leaving the other platform and therefore does not "switch". All in all, a lock-in, as the ultimate form of switching costs, does not necessarily prevent users from multi-homing. Hence, in contrary to our framework, multi-homing cannot be evaluated by solely examining switching costs and therefore other factors must be considered when analyzing multi-homing scenarios. Other factors might be the cost occurring when multi-homing, strong brand and ecosystem loyalty or availability of supply.

### **6.3 3<sup>rd</sup> level of framework – Identification of additional influencing drivers**

As the data was analyzed, it came to our attention that, compelled through the open nature of the semi-structured interview format, some drivers, which were not part of the framework, were repeatedly mentioned by practitioners. It was therefore decided to include this chapter as an inductive process of deriving principles, in this case influencing drivers, from specific observations made during this study.

#### **6.3.1 Standardization as an influencing driver of differentiation**

Some investigated platforms offer services where physical objects are involved or physical interactions are required, other platforms are purely digital. Some of these platforms offer highly individual products with higher margins whereas others sell simple and easily scalable products with lower margins and higher volumes. Even though these platforms differ, three out of five interview partners emphasized that increased product standardization and the reduction of complexity can lead to increased network intensity through platform growth.

By starting with offering only core functionalities and services, users are not overwhelmed and must not spend much effort to get familiar with the offered service. Once users are familiar with the core service, further service can be gradually introduced on the platform. A prime example in this case is represented by Fiverr. Fiverr successfully managed to grow its user base by first exclusively offering specific digital services such as graphics and design and has now been slowly broadening their offerings while constantly growing their network.



MyHammer tries to follow this route. MyHammer's general value proposition is comparable to Fiverr's product, however, possess greater complexity. The two platforms both facilitate the exchange between the service offered by a specialist and its consumers having individual project requirements. Fiverr, however, offers a purely digital product meaning all services provided do not require physical interaction. The users from both sides of MyHammer's platform must meet in the physical world in order to fulfil the transaction. For MyHammer, it is not possible to get around the physical meeting. Thus, MyHammer tries to standardize the process and service offerings in order to offer a less complex product and thereby increase the user base. MyHammer therefore offers more accurate templates which must be filled out by the consumer in order to be matched with a craftsmen company. By creating more transparent and clear projects, it becomes easier for craftsmen company to assess price and time needed to conduct the project. Scheduling for craftsmen companies becomes easier and the number of first meetings only for the purpose of clarifying project descriptions and goals at the site can be reduced. By providing a more standardized service, MyHammer managed to further increase its network and became clear market leader in Germany. blauarbeit.de instead, MyHammer's main competitor, offers a very broad range of service on their platform which go far beyond craftsmen services. Its installed base is currently five times as small.

Platforms such as Hungry.dk which already in the first-place deal with a less complex product and already offer a very standardized service, do not necessarily compete over this competition driver. To offer a general applicable framework, however, which can be applied by various platforms from different industries, this competition must be taken into consideration.

Standardization and the reduction of product complexity has been one major applied mechanism throughout the qualitative data collected to accelerate network growth. We therefore integrate the concept of standardization as new driver under the differentiation influencing factor into the framework.

### **6.3.2 Personalization as an influencing driver of switching costs**

Every interview partner mentioned their increasing personalization efforts as one major strategic objective. Based on the conducted interviews, it can be concluded that by providing a more personalized user experience to any platform user, procedural and relational switching costs can be increased and consequently help preventing churn.

For instance, Lendino as peer-to-peer lending platform plans on implementing a recommender system once enough borrowers are on the platform [K; Frederiksen; 27:20 – 28:16]. By using an algorithm, Lendino tries to

recommend potential investments to users which are similar to previously made investments by the respective user. Fiverr has started to offer a personal learn functionality on the platform which gives the freelancers the opportunity to market and sell their services more effectively [L; Forman; 20:22 – 21:06]. Using these technologies should help to increase user retention and ultimately help creating a greater lock-in.

It can therefore be argued that switching is negatively correlated with personalization and that it influences the competition outcome. Due to the omnipresence of personalization efforts throughout the collected data, it can be argued that personalization as user retention tool is rather a requirement than an advantage. Personalization will therefore be integrated into the framework as new influencing driver within the influencing factor of switching costs.

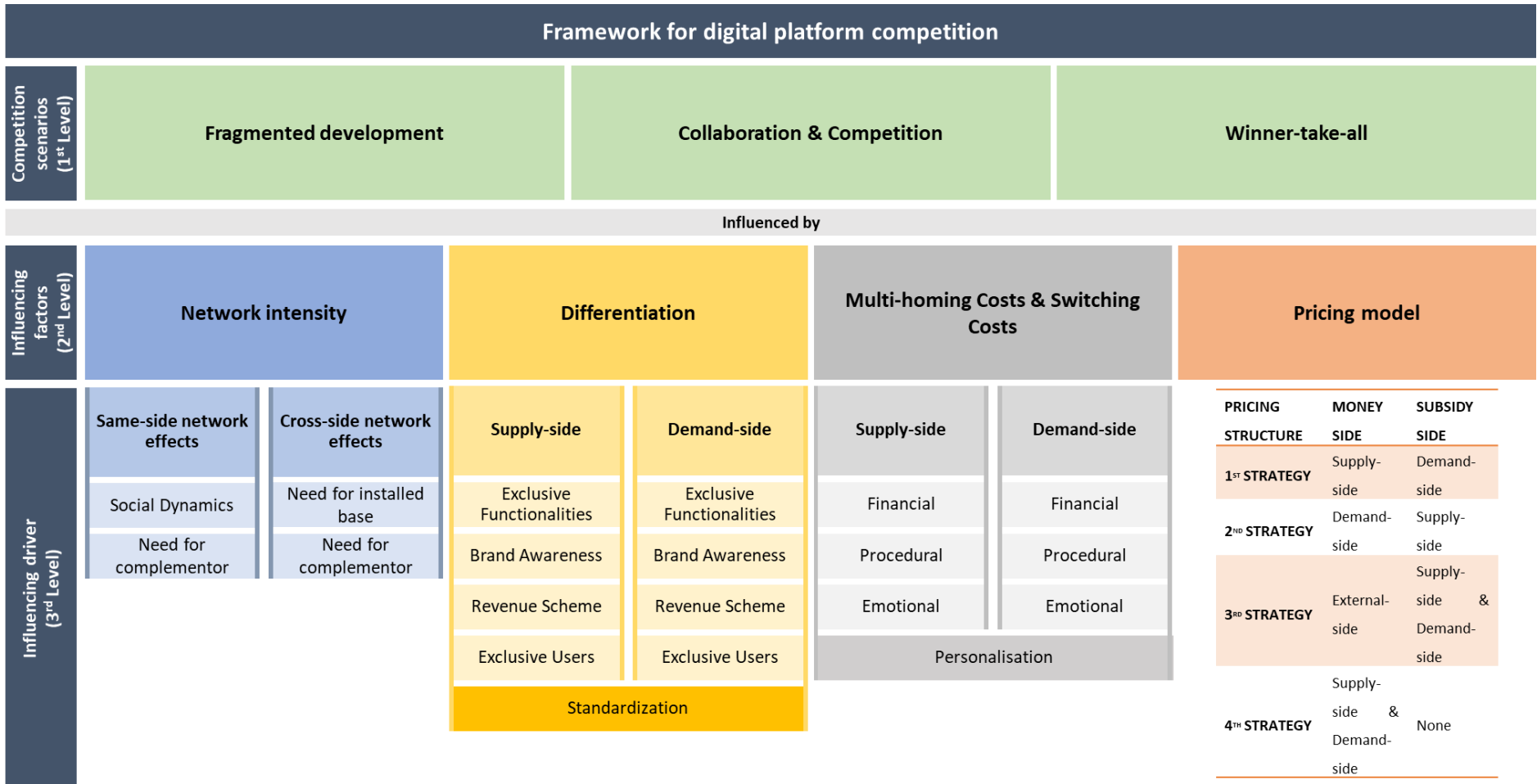


Figure 10: Analytical framework adapted after results of the study (own illustration)

## 6.4 General implications

Besides the strategic implications presented in the results chapter addressed to strategist and managers, general implications can be drawn from the framework where theory is compared with empirical findings. The general implications are partially addressed to practitioners within platform businesses and partially addressed to public regulatory authorities.

### 6.4.1 Reduce the risk of disintermediation

First, fundamental requirements must be met. One of these fundamental requirements is to reduce the risk of disintermediation. Risk of disintermediation describes the situation where platform users bypass the platform and connect directly outside of the platform. It is therefore necessary to implement control mechanisms ensuring that the intermediate, the platform owner, does not become irrelevant. One effective mechanism is to not allow the publishing of any private contact information such as email or phone numbers. Consequently, users are forced to communicate through and solely on the platform. However, this might be effective for platforms such as Airbnb where both sides usually have only single transactions or platforms such as Fiverr where users are exclusively communicating digitally. Platform business who connect parties who must physically meet in order to complete the transaction are limited in their way of preventing to become irrelevant once trust has been built between the different platform sides. To at least partially overcome the financial threat of this, MyHammer, for instance, introduced a contact fee which is charged before the transaction is actually completed. Another way of reducing the risk of becoming irrelevant is to offer further value when conducting business through them. Practically speaking, this can be done by offering insurances, taking over the responsibility of correct financial transactions or resolving disputes.

### 6.4.2 Technological view & Innovation

#### 6.4.2.1 *Competition and innovation*

The previously presented explanations for competition outcomes are informed by and based on the economical view of platforms. However, recently scholars are starting to combine this stream with the engineering design stream assessing the interaction between platform innovation and platform competition (Gawer, 2014). Gawer (2014) bridges the gap between these two research streams by defining platforms as *“evolving organizations or meta- organizations that: (1) federate and coordinate constitutive agents who can innovate and compete; (2) create value by generating and harnessing economies of scope in supply or/and in demand; and (3) entail a technological architecture that is modular and composed of a core and a periphery.”* This definition incorporates

the two views by giving platforms the set of coherent attributes of organizational form, interfaces, set of accessible capabilities and governance. These attributes are not discrete but rather set on a continuous scale and can change during the lifetime of a platform. Based on this view she describes how “[d]esign decisions on technological interfaces, as well as governance decisions, can be expected to have an effect on the platform agents’ incentives to collaborate, to innovate, and/or to compete” (Gawer, 2014). She further states that the greater the openness of the platform interfaces, the larger the set of complementary innovation will be that follows.

We are now combining this view with Ruutu, Casey and Kotovirta (2017), who also see this openness influencing the competition outcome as well. They find that the degree of cooperation between platforms manifested in openness of boundary resources and transferability of data across platforms is defined as a factor influencing the development and outcome of the competition scenario. To understand this one must understand the term platform quality. “The quality of the platform refers to the value of the platform without accounting for network effects [...]” (Ruutu et al., 2017). When platform development stops, this can lead to an erosion of platform quality of the market leader which will even out competition. When now thinking about the definition by Gawer (2014) where platforms are defined as being composed by core and periphery components, innovation can be taking place in either one of them. Combining the views of the two authors, it can be stated that the openness of boundary resources is influencing the innovativeness of the development of the core and periphery components of a platform. And if the development ceases, the competition between the market leader and its competitors is evened out.

#### 6.4.2.2 *Ambidexterity of exploration & exploitation*

In this context another theory is applicable, the organizational ambidexterity. According to Andriopoulos and Lewis (2009), when innovating a digital platform the strategic challenge for organizations is to how to explore and identify innovative ideas and how to utilize and exploit them to create better products and services. Within this strategic challenge a tension is created between incremental innovation based on existing products and services and radical innovation founded in newly discovered knowledge and new ideas. This tension is however not seen as an either-or dilemma. So instead of having to choose one way of innovating over the other, organizations must deal with this challenge as a paradox where synergies between the two ways exist and they are interwoven with each other. As a result it falls upon firms to excel at both incremental and radical innovation by managing this paradox as a such that both innovation speeds to not contradict each other. (Andriopoulos & Lewis, 2009)

Part of this uncontradictory management is the decision on how to govern a platform's periphery components as provided by complementors. This speaks to the management, availability and openness of boundary resources influencing the participation of complementors.

#### *6.4.2.3 Including openness of boundary resources & innovation in the framework*

As stated above, by combining the economical view with the technological view of platforms, an assessment of the effect of innovation on competition can be made. While the influencing factors presented in this framework are based on the economical view, innovation and therefore indirectly openness of boundary resources are influencing some of the drivers of these influencing factors (see Figure 11).

For network intensity, the need for complementors is more likely to be satisfied if open interfaces allow for more innovative participation from outside the platform organization. The more open the platform boundaries, the more complementors can contribute. In the influencing factor of differentiation, innovation will have impact in the form of functional exclusivities which other platform providers do not offer. Especially radical innovation but also incremental innovation through complementor contributions will increase the likelihood of exclusive functionalities. Through that the differentiation between platforms can be increased.

Innovation therefore plays a major part in the construction of this framework, even though it is not visually represented as a separate influencing factor. In the visualization in Figure 11, the influencing factors and drivers which are affected directly by innovation are highlighted. By understanding this, if a platform provider aims to manipulate the drivers of exclusive functionalities or need for complementor, management can use innovation from outside sources through openness of boundary resources as a strategic tool.

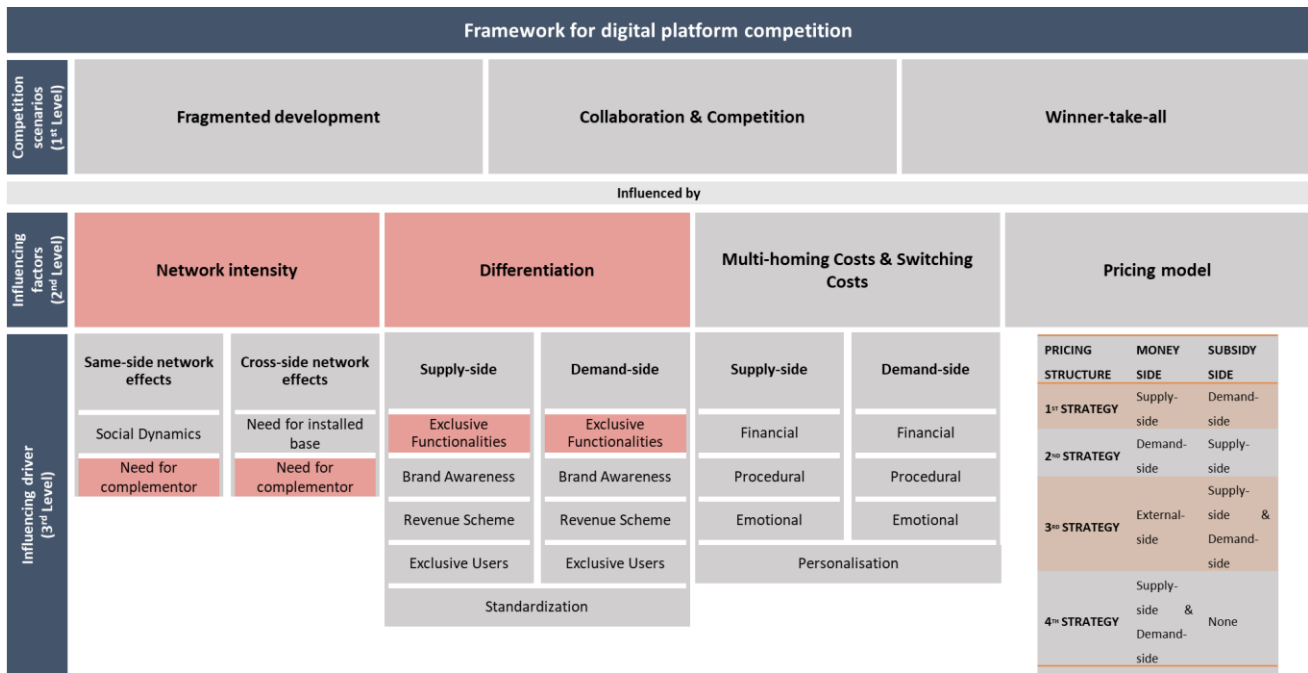


Figure 11: Analytical framework through the innovation lens (own illustration)

### 6.4.3 Evaluating platform competition and its need for regulatory practices

The competition between digital platforms is increasingly shaping the industries they are competing in. The most successful platforms such as Amazon or Alibaba are offering increasingly more services and thereby tying together more and more industries. Both platforms moved beyond offering traditional e-commerce services by adding entertainment or financial services. This strategy has been named an envelopment strategy, where platform providers use the overlap of their existing user base with the user base of a different industry to offer a multi-platform bundle (T. Eisenmann et al., 2011). The biggest difference between traditional business models and platforms as a business model is that platforms are positively influenced by network effects. Each new user enhances the value of the network exponentially, leading to a snowball effect. This holds especially true for very pure network markets not or only marginally relying on intrinsic product value and these characteristics potentially favor a winner-take-all outcome. This begs the questions if this means the end for effective competition.

Since platforms are taking on gigantic proportions in the global economy, they require a critical assessment. On the one hand, platforms offering products and services across markets enable consumer a seamless and streamlined user experience. Costs for time and effort to compare and get used to new platforms is not necessary. On the other hand, a few winner-take-all market situations across industries run by three or four different digital platforms clearly leading the world's economy and pushing other competitors out of the market, entails many risks. Single organizations running entire markets have the power to shape this market and its consumers at will. They thereby are capable of controlling not just how users consume in these markets but also how consumers behave by inscribing politics into their technologies. By doing so, users of these technologies can be influenced in their behavior without even realizing and have little to no market power left to initiate change if the market winner is becoming more and more dominant. Besides this, winner-take-all situations might slow down innovation if "winners" become too comfortable or even proactively prevent innovation to capitalize on existing resources first.

We have now clarified that a winner-take-all situation entails several risks. The question remains until what point this does not violate any competition laws and when the organization is abusing its power. Examples of abusive practices typically include predatory pricing, tying and bundling, refusals to deal or margin squeeze.

A platform's ability to increase its prices is usually constrained by competitors and consumer's ability to switch to another provider to source the supply. If these constraints are weak, a platform is said to have market power



and if this market power is great enough, to be in a position of dominance. It is important that digital platforms such as Uber, are subject to clear regulations, otherwise a fair competition, as in this case with traditional taxi organizations, cannot be granted. These considerations are especially important for industries representing public interest like banking, telecommunication and media. The Organisation for Economic Co-operation and Development (OECD) states *“While mere possession of monopoly power does not in itself constitute violation of competition laws, the abuse of such power - particularly if it is used to weaken competition further by excluding rivals - calls for intervention from competition authorities.”* The OECD further states that detecting the abuse of dominance is extremely complex and controversial since there are *“considerable divergence among jurisdictions about the precise definition of dominance, the range of practices and conducts that should be condemned as anti-competitive, and finally the choice of remedies that should be imposed.”*. (OECD, 2019) Therefore, the OECD needs a proper understanding of when an organization’s actions could be considered abusive. By an incorrect intervention, consumers and the economy could be harmed. (OECD, 2019)

We do not claim that our framework can be utilized as a tool to detect if a platform’s actions can be considered as abusive or not. However, we argue that the framework can be utilized to provide insights for the OECD Competition Committee, which promotes regular exchanges of views and analysis on competition policy issues, on how platforms compete and therefore might be helpful to derive reasonable competition policies by knowing how and where to intervene and how this might affect competition.

## 6.5 Limitations

### 6.5.1 Methodology & research design

Besides the limitations of this research study mentioned throughout the discussion chapter, two further explicit limitations regarding methodology and research design, and the framework as a whole will be discussed.

The primary data source of this study are platform providers which are an important data source in the context of this research study. Thus, the research was dependent on the willingness of platform providers to participate. Even though, the majority of platform providers was not willing to participate, a comprehensive research study could be conducted delivering valuable and profound research results. Further information was collected through document analysis to create trust in the research results. However, other stakeholders like platform users or complementors have other perspectives worth considering. We encourage future researchers to test the framework by applying it using other research methods and stakeholder groups. Valuable insights could be gained by including platform users in the research method. For instance, it would be of great valuable knowing

how platform users perceive certain functionalities or exclusive users present on different platform businesses to evaluate the current competition scenario better. Other examples where the assessment of platform users is necessary are the user interface and the user experience of the respective digital platforms. Data could be collected through surveys or focus group interviews. We encourage future scholars to build upon the framework and thereby improve its existing structure.

### 6.5.2 The framework and its explanatory power

The single components of the framework have been discussed in detail. In this part of the research study, we discuss the explanatory power of the framework without looking into the specifics of the framework.

First, we encourage future scholars to test our framework in different contexts to challenge its stability and applicability and thereby either confirm the existing structure of the framework or propose ways of improvement.

The developed framework allows for a relative comparison between platform businesses competing in the same market. Valuable theoretical and practical conclusions can be drawn when applying the framework. However, the framework is limited to relative comparisons. A statement regarding the absolute difference between the platform businesses cannot be made. A quantified comparison, however, would be of high value. It would allow to draw even more specific conclusions when evaluating the competition in the market. A good starting point for future researchers would be to measure the influencing drivers of the framework and thereby create a 4<sup>th</sup> framework layer. Developing and integrating specific metrics into the framework would be of high value especially for strategists within platform businesses and would allow a further theoretical improvement of the framework.

Furthermore, the framework cannot be utilized to compare digital platforms with competing organizations not using a platform business model. This would be for instance valuable for Lendino which is mainly competing with traditional business models such as banks.

Besides this, the framework does not acknowledge the different importance of the influencing factors based on varying contexts it is applied to. We encourage future scholars to identify clusters emphasizing the relative importance of influencing factors based on different industry characteristics. By providing a more specific and structured approach, the framework can be made more attractive to potential applying digital platforms.

## 7 Conclusion

The purpose of this research study was to demonstrate how digital platforms compete and what outcome scenarios might emerge. Further, we wanted to demonstrate what factors specifically influence the competition outcomes and what drives these factors.

Digital platforms are disrupting a variety of different industries from the mobile telecommunication industry, the financial industry to the so-called “sharing economy”. Within these industries it becomes increasingly common that digital platforms are pocketing a growing share of the overall market. Martin Kenney and John Zysman (2016, p. 2) argue that *“we are in the midst of a reorganization of our economy in which the platform owners are seemingly developing power that may be even more formidable than was that of the factory owners in the early industrial revolution.”* The biggest difference between traditional business models and platforms as a business model is that platforms are positively influenced by network effects. Each new user on the platform enhances the value of the network exponentially, leading to a snowball effect. This raises the question if digital platforms as a business model especially favor winner-take-all outcomes. Rather than assuming that winner-take-all outcomes are unavoidable in all platform markets, it is important to critically examine their relevance and applicability in specific contexts (Gandhok, 2018). To the present day, researchers have only examined competition based on specific influences in isolation. There is a need to further examine and understand digital platform competition.

Within this research study we examined what factors are influencing the competition between digital platforms. Further, we discovered drivers behind the influencing factors which allow for a relative comparison between a platform provider and its competitors. Within the theoretical grounding the two research streams of the technological view of platforms and the economical view of platforms were presented and a clear differentiation between the two was established. Then, based on the economical view, the foundations were given to understand platforms as network markets. Afterwards, based on this understanding the existing literature was synthesized regarding the factors influencing competition.

We established that to gain a comprehensive understanding of outcome scenarios, the influencing factors, identified by scholars as relevant for determining competition outcomes, must be analyzed in combination rather than in isolation. Research currently lacks the acknowledgement of the interrelations of these factors. It further does not consider all possible competition outcomes. This research gap was closed by this study so that a more complete understanding of competition between digital platform can be established and used by practitioner’s

for strategic decision making. The ever-rising importance of platforms as an overall business model and within their respective industry underlines the importance of this study. The theoretic contribution of this paper was the development of a framework including the possible outcome scenarios on the first level, influencing factors on the second level and influencing drivers affecting these influencing factors on the third level. Through this a more in-depth analysis of the presented research questions was enabled. The multi-layer framework will be available to practitioners as a tool which can be utilized to compare themselves with their specific competition.

The competition outcomes represented in the framework are fragmented development, collaboration and competition scenario, and winner-take-all outcome. The fragmented development describes a situation where no platform provider can achieve a critical mass in installed user base, leading to an eventual decrease in participating users on all platforms and results in the failure of the platform market. Collaboration and competition scenarios describe a balanced market outcome where multiple platforms coexist. In a winner-take-all outcome one platform is ultimately able to accumulate enough resources to lock-in customers and achieve a monopoly position over the market, driving other competitors out of the market completely.

The identified influencing factors are network intensity, differentiation, multi-homing costs & switching costs and pricing model. The network intensity is the ratio between the value a user derives from intrinsic product characteristics and the value generated by a network of installed users. The drivers of network intensity are the need to interact with an installed base of users, the availability and scope of available complementary products or services and the frequency and depth of interactions among users. The network intensity is measured on a firm level and is manageable by the platform provider. Market players use differentiation strategies to outcompete other market players while targeting the entire market. Differentiation strategies such as providing exclusive functionalities or exclusive user can support platform business in their attempt to grow their installed user base. The factor of multi-homing describes the decision of users to participate in the market by joining multiple platforms. This decision has a profound impact on the competition outcome since it determines on how many sides the platforms compete. Single-homing and multi-homing decision are closely related to switching costs. Switching costs can be further divided into and are measured as financial, procedural and relational switching costs. The final influencing factor, pricing model, takes into account which user side of a platform is the subsidy-side and which side is the money-side. This decision is made based on a joint set of demand elasticities and marginal cost considerations on each side. Because of the special nature of platform markets, a platform provider might even go so far as to accept negative prices on one of the platform sides. When designing the pricing model correctly, the entire business ecosystem is growing continuously while at the same time

producing profits. For each of the influencing factors influencing drivers were identified which allow for a relative comparison between platform providers. These drivers were assessed on both platform sides if necessary. Based on the assessment of these influencing drivers and influencing factors it was made possible to derive an explanation regarding the competition outcome of an industry.

The research is founded in post-positivism and is designed as an explanatory multi-case study, using qualitative methods. Through the methods of semi-structured interviews and document analysis a deductive approach is conducted where the content analysis is based on categories which were developed with theory and then later applied to the data. The cases analyzed by this study are Hungry.dk for the online food delivery market, MyHammer for the craftsmen market, Lendino as representative of P2P lending platforms, Fiverr as a platform within the freelancer market for digital services and Graduateland for the student & graduate job market. For each of the cases, the influencing factors were assessed compared to a competitor. Based on this assessment the platform competition outcome is defined, then explained in detail and implications are drawn regarding possible developments.

In the case of Hungry.dk, it was discovered that the market moved from a winner-take-all situation, in which their rival JustEat dominated the market, towards a collaboration and competition scenario. This was because of the ability of Hungry.dk to differentiate on both the restaurant and the consumer side while multi-homing was happening on both sides. For MyHammer, the collaboration and competition scenario emerged despite their advantage in network intensity. This was due to the multi-homing on both sides and the lack of differentiation. Further it was discovered that both competitors are having trouble growing their installed user bases due to a lack of digitalization in the industry. MyHammer is furthermore more likely to reach a winner-take-all situation because of these circumstances. Since the demand in this market is much larger than the supply, it can be argued that MyHammer charges the wrong side of the platform and thereby does not exploit its full potential. Lendino and its competitors are experiencing problems in growing the demand-side of the platform, leading to unbalanced user bases. It was inferred that whoever wins the battle over the bottleneck side will emerge in a winner-take-all outcome. When applying our framework, it could be concluded that Lendino charges the wrong user side of the platform and thereby hinders its growth. Fiverr and its competitors are competing through exclusive functionalities on both sides of the platform. Multiple possible scenarios were laid out for the further development of the market which is currently a collaboration and competition scenario. The incumbent Jobindex is the competitor of Graduateland in the job platform segment of graduates and students. Graduateland is the clear market leader using universities as marketing tool to gain access and create a superior brand awareness.

Because of the advantage in network intensity and the improvement regarding the core functionality of the platform, the current collaboration and competition scenario might move closer to a winner-take-all market situation.

By applying the framework to the cases mentioned above, we were able to explain digital platform competition outcomes and how they emerge based on the influencing factors of network intensity, differentiation, multi-homing costs & switching costs and pricing model and their drivers.

At the end of the study, the results were discussed, possible improvements of the framework were elucidated, and further implications deliberated. In contrary to the beginning of our research where we explained multi-homing solely through switching costs, we identified based on our research that multi-homing is not solely influenced by switching costs. In our understanding, “switching” can be defined as leaving one platform in favor of another platform. The user “switches”. Multi-homing instead can be defined as a platform user actively using multiple platforms at the same time. Consequently, if a platform user switches from one platform to another, he or she is not multi-homing since he or she has left the other platform. The platform user is only multi-homing if he or she uses both platforms without leaving the other platform and therefore does not “switch”. All in all, a lock-in, as the ultimate form of switching costs, does not necessarily prevent users from multi-homing. Hence, other factors must be considered when analyzing multi-homing scenarios. Other factors might be the cost occurring when multi-homing, strong brand and ecosystem loyalty or availability of supply.

By analyzing the collected data, for the 3<sup>rd</sup> level of our framework, we identified two further influencing competition drivers not considered when developing the framework. One of them being standardization as a differentiation driver and the other one being personalization efforts as driver of increased switching costs.

Furthermore, it was necessary to clearly define a winner-take-all market. The necessity arises because of the lack of consensus across scholars in defining this competition outcome. Without a clear definition, scholars cannot discuss the situation with a congruent understanding, and it is impossible for practitioners to define strategies for achieving a winner-take-all outcome if one does not know what a winner-take-all outcome means. We argue that a winner-take-all outcome cannot solely be defined by analyzing market share or installed user base but rather by how a platform provider is strategically managing the factors influencing competition. In a winner-take-all situation a platform provider has a clear advantage in network intensity, does not allow for differentiation by competitors, prevents multi-homing on at least one of the platform sides and has chosen the correct pricing model.

We pointed out that a winner-take-situation entails several socio-political risks affecting platform users. A platform's ability to increase its prices is usually constrained by competitors and consumer's ability to switch to another provider to source the supply. If these constraints are weak, a platform is said to have market power and if this market power is great enough, to be in a position of dominance. Detecting the abuse of the dominance through the winner-take-all is extremely complex. Therefore, international organizations such as the OECD need a proper understanding of when an organization's actions could be considered abusive. By an incorrect intervention, consumers and the economy could be harmed. (OECD, 2019) While we are not claiming that our framework can be utilized as a tool to detect if a platform's actions can be considered as abusive or not, we are arguing that the framework can be utilized to provide insights for the OECD Competition Committee, which promotes regular exchanges of views and analysis on competition policy issues, on how platforms compete and therefore might be helpful to derive reasonable competition policies by knowing how and where to intervene and how this might affect competition.

We encourage future scholars to extensively test our framework in different contexts to challenge its stability and applicability and thereby either confirm the existing structure of the framework or propose ways of improvement. Other opportunities for scholars building on the findings of this study were also presented. A good starting point for future researchers would be to measure the influencing drivers of the framework and thereby create a 4<sup>th</sup> framework layer. Developing and integrating specific metrics into the framework would be of high value especially for strategists within platform businesses by providing a tool to conduct not just qualitatively but also quantitatively comparisons to competing digital platforms.

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## 9 Appendix

### 9.1 A – Research typology and approach for the theoretical grounding

This theoretical grounding section follows the review typology proposed by Rowe (2014). Based on Schwarz *et al.* (2007), Rowe defines four major goals of literature reviews, first, “to summarize prior research”, second to “critically examine contributions of past research”, third, to “explain the results of prior research found within research streams” and lastly to “clarify alternative views of past research (not necessarily integrated together)” (Rowe, 2014; Schwarz *et al.*, 2007). However, Rowe adds the necessity to discover and point out “critical knowledge gaps” within the existing research (Rowe, 2014). This paper aims to fulfill all these goals.

Component	Description	Decision
Objective (goal w/ respect to theory)	Describing (a-theoretically), understanding or explaining	<p>Summarize the existing literature on network markets as well as research on the winner-take-all and other competition outcome scenarios in digital platform market competitions.</p> <p>Develop an understanding influencing factors explaining digital platform competition dynamics.</p>
Focal Point (breadth)	Problem, stream or theme, discipline	Phenomena of winner-take-all dynamics and other outcomes scenarios in digital platform market competitions.
Article Selection (systematicity)	Inclusion criteria (search process, type of source, period, discipline), coverage, quality assessment, sources description	Database driven approach, usage of different keyword combinations, additionally forward and backward snowballing for most relevant articles.



Analytical Approach (argumentative strategy)	'Logical structures in the argumentation enacted in the paper'...'the order of the components of the author's argument' (de Vaujany et al., 2011, p. 401)	Bottom up approach based on the domain of platform competition outcomes sub-topic are identified and further researched to identify emergent influencing factors.

Table 12: Research typology according to Rowe (2014)

Rowe calls for a “good and reasonable” coverage of all relevant and quality material rather than a comprehensive coverage as well as a systematic approach (Rowe, 2014). To do so, the author references seven tasks in order to identify relevant material, including searching, screening and selection of the used literature (Rowe, 2014). The seven identified tasks for this purpose are the following (Fink, 2010):

1. Selecting a research question.
2. Selecting bibliographic or article databases, websites and other sources.
3. Choosing search terms.
4. Applying practical screening criteria (e.g. language, funding, setting of a study).
5. Applying methodological screening criteria (adequacy of the study coverage and scientific quality).
6. Doing the review: reliable and valid reviews involve using a standardized form for abstracting data from articles, training reviewers (if more than one) to do the abstraction, monitoring the quality of the review, and pilot testing the process.
7. Synthesizing the results. Literature review results may be synthesized descriptively. Descriptive syntheses are interpretations of the review's findings based on the reviewers' experience and the quality and content of the available literature

The databases Google Scholar and CBS lib search were chosen. CBS lib search allows researchers to conduct searches across multiple different library holdings and selected databases and provides full access to all articles, while Google Scholar only provides limited access to referenced articles. Both databases however have snowballing functionalities which allow for the identification of articles referencing another article.

As a first step, an initial search was conducted with the keywords “platform economics”, “digital platform”, “network effects”, “two-sided market” as well as “multi-sided market” (see Table 13). The goal of this search was to identify prominent articles in the field as well as distinguished authors. Another goal was to identify sub-streams of the research. In a second step, a search regarding competition scenarios between digital platforms was conducted. The keywords “platform competition” and “winner-take-all” were used. (see Table 13).

Search phase	Database	Search queries or keywords	Applied filters	Articles found (without / with filters)	Articles used
Initial search	CBS lib search	Title contains <b>platform economics</b> OR Title contains <b>digital platform</b> OR Title contains <b>network effects</b> OR Title contains <b>two-sided network</b> OR Title contains <b>multi-sided network</b>	English; peer reviewed; first 100 papers (10 result pages)	2,554 / 2,303	3
Initial search	Google scholar	"platform economics"   "digital platform"   "network effects"   "two-sided network"   "multi-sided networks"	Articles	~ 19,700	7
Competition search	CBS lib search	Title contains <b>platform competition</b> OR Title contains <b>winner-take-all</b>	English; peer reviewed	245 / 240	5
Competition search	Google scholar	"platform competition"   "winner-takes-all"	Articles	~ 16,400	13

Table 13: Database driven approach (own illustration)

Afterwards, the identified articles will be checked based on the inclusion as well as exclusion criteria. To be included articles needed to be peer reviewed and written in English. If they fulfill the relevant criteria, they are furthermore checked for relevance based on their title and abstract. If the abstract signals relevance, the entire article was read in detail. *“Sometimes, enough information is provided in the abstract to know whether the study meets the inclusion criteria and does not meet any of the exclusion criteria. In other cases, full copies of the paper have to be obtained so that details such as the method, can be checked.”* (Briner & Deyner, 2012) As a next step, the selected studies were evaluated for their relevance to the research statement of this study.

The selected articles from the database driven approach were used as the foundation for backwards and forwards snowballing. This was necessary to find the most relevant and recent articles to deep dive into the identified topics. The papers which were found to be relevant through both the database driven approach and snowballing are forming the final dataset and are therefore the foundation of this study. This selected sample will be reviewed as part of a bottom-up approach to find emerging trends within the domain of network markets and specifically the sub-topic of platform competition. The results of the literature review were a collection of theories presented by scholars regarding the research question. These theories and articles will be presented in the following section.

## 9.2 B – Interview guide Hungry.dk

Interview Partner: Rune Risom – CEO – Hungry.dk

CATEGORY	QUESTIONS	DETAILS
1	<p><b>COMPANY PURPOSE</b></p> <p>Could you give us a <b>general overview</b> over Hungry.dk’s <b>activity</b> and <b>core functionality</b>?</p> <p>What is your current <b>market position</b>?</p>	<p>Activity scope (Vision, Mission, Objectives);</p> <p>Relevant user groups;</p> <p>Competitors</p> <p>Market share</p> <p>Leader; challenger; newcomer</p>
2	<p><b>NETWORK INTENSITY</b></p> <p>What are the <b>groups of users</b> you currently have on your platform?</p> <p><b>How many users</b> do you have in each of these groups?</p>	<p>Restaurants, consumers;</p> <p>Estimates are enough</p>
3	<p><b>NETWORK INTENSITY</b></p> <p>What <b>companies</b> are you <b>cooperating</b> with who provide <b>functionalities</b> on your platform?</p>	<p>Payment provider, ...</p> <p>How many in total (estimate)?</p> <p>What functionality could bring a competitive advantage?</p>

4	<b>NETWORK INTENSITY</b>	What kind of <b>social engagement</b> and <b>exchange</b> of <b>information</b> exists within user groups?	Consumers: rating of restaurants, ...
5	<b>DIFFERENTIATION EFFORTS</b>	What <b>functionalities</b> do you offer to restaurants other than the core functionality of connecting them with consumers?	Statistics about number of sales?
6	<b>DIFFERENTIATION EFFORTS</b>	What <b>functionalities</b> do you offer to consumers other than the core functionality of connecting them with restaurants?	Providing ratings of restaurants; quality assurance?
7	<b>DIFFERENTIATION EFFORTS</b>	Talk about the <b>marketing</b> efforts of your firm?  Do you market <b>differently</b> between your <b>user groups</b> ?	Marketing Expenses in comparison to competitors
8	<b>DIFFERENTIATION EFFORTS</b>	Do you <b>cooperate</b> with <b>exclusive</b> restaurants not present on competing platforms?	
9	<b>PRICING OPTIONS</b>	What <b>pricing options</b> do you offer for restaurants on your platform?	

10	<b>PRICING OPTIONS</b>	What <b>pricing options</b> do you offer for consumers on your platform?
11	<b>USER CHURNING</b>	What do you do to prevent churn, to keep users on your platform? Differentiation in functionalities, etc.?
12	<b>USER CHURNING</b>	Do you have estimates how many of your users also use a competitor's platform?  How do you deal with that?
13	<b>USER CHURNING</b>	How successful are additional functionalities you are providing to your users?  Are most users engaged in using those functionalities?
14	<b>USER CHURNING</b>	Is the effort to personalize user experiences part of the goal of preventing users to churn?

### 9.3 C – Interview guide MyHammer

**Interview Partner:** Matthias Niebuhr – Head of Legal – MyHammer

CATEGORY	QUESTIONS	DETAILS
1	<p><b>COMPANY PURPOSE</b></p> <p>Could you give us a <b>general overview</b> over MyHammer’s <b>activity</b> and <b>core functionality</b>?</p> <p>What is your current <b>market position</b>?</p>	<p>Activity scope (Vision, Mission, Objectives);</p> <p>Relevant user groups;</p> <p>Competitors</p> <p>Market share</p> <p>Leader; challenger; newcomer</p>
2	<p><b>NETWORK INTENSITY</b></p> <p>What are the <b>groups of users</b> you currently have on your platform?</p> <p><b>How many users</b> do you have in each of these groups?</p>	<p>freelancers, customers;</p> <p>Estimates are enough</p>
3	<p><b>NETWORK INTENSITY</b></p> <p>What <b>companies</b> are you <b>cooperating</b> with who provide <b>functionalities</b> on your platform?</p>	<p>How many in total (estimate)?</p> <p>What functionality could bring a competitive advantage?</p>

4	<b>NETWORK INTENSITY</b>	What kind of <b>social engagement</b> and <b>exchange of information</b> exists within user groups?	Exchange between customers or freelancers: rating of freelancers, etc.
5	<b>DIFFERENTIATION EFFORTS</b>	What <b>functionalities</b> do you offer to freelancers other than the core functionality of connecting them with customers?	
6	<b>DIFFERENTIATION EFFORTS</b>	What <b>functionalities</b> do you offer to customers other than the core functionality of connecting them with freelancers?	
7	<b>DIFFERENTIATION EFFORTS</b>	How much do you invest in <b>marketing</b> your platform to different user groups?  Do you market <b>differently</b> between your <b>user groups</b> ?	Marketing expenses in comparison to competitors
8	<b>DIFFERENTIATION EFFORTS</b>	Do you <b>cooperate</b> with <b>exclusive</b> freelancers not present on competing platforms?	
9	<b>PRICING OPTIONS</b>	What <b>pricing options</b> do you offer for freelancers on your platform?	



10	<b>PRICING OPTIONS</b> What <b>pricing options</b> do you offer for customers on your platform?
11	<b>USER CHURNING</b> What do you do to prevent churn, to keep users on your platform?
12	<b>USER CHURNING</b> Do you have estimates how many of your users also use a competitor's platform?  How do you deal with that?
13	<b>USER CHURNING</b> How successful are additional functionalities you are providing to your users?  Are most users engaged in using those functionalities?
14	<b>USER CHURNING</b> Is the effort to personalize user experiences part of the goal of preventing users to churn?

## 9.4 D – Interview guide Lendino

**Interview Partner:** Kristian M. Frederiksen – Credit Officer – Lendino

CATEGORY	QUESTIONS	DETAILS
1	<p><b>COMPANY PURPOSE</b></p> <p>Could you give us a <b>general overview</b> over Lendino’s <b>activity</b> and <b>core functionality</b>?</p> <p>What is your current <b>market position</b>?</p>	<p>Activity scope (Vision, Mission, Objectives);</p> <p>Relevant user groups;</p> <p>Competitors</p> <p>Market share</p> <p>Leader; challenger; newcomer</p>
2	<p><b>NETWORK INTENSITY</b></p> <p>What are the <b>groups of users</b> you currently have on your platform?</p> <p><b>How many users</b> do you have in each of these groups?</p>	<p>Companies, private investors, business investors;</p> <p>Estimates are enough</p>
3	<p><b>NETWORK INTENSITY</b></p> <p>What <b>companies</b> are you <b>cooperating</b> with who provide <b>functionalities</b> on your platform?</p>	<p>How many in total (estimate)?</p> <p>What functionality could bring a competitive advantage?</p>

4	<b>NETWORK INTENSITY</b>	What kind of <b>social engagement</b> and <b>exchange of information</b> exists within user groups?	Exchange between borrower or investors: rating of borrowers, etc.
5	<b>DIFFERENTIATION EFFORTS</b>	What <b>functionalities</b> do you offer to borrowers other than the core functionality of connecting them with investors?	
6	<b>DIFFERENTIATION EFFORTS</b>	What <b>functionalities</b> do you offer to investors other than the core functionality of connecting them with borrowers?	
7	<b>DIFFERENTIATION EFFORTS</b>	How much do you invest in <b>marketing</b> your platform to different user groups?  Do you market <b>differently</b> between your <b>user groups</b> ?	Marketing expenses in comparison to competitors
8	<b>DIFFERENTIATION EFFORTS</b>	Do you <b>cooperate</b> with <b>exclusive</b> borrowers not present on competing platforms?	
9	<b>PRICING OPTIONS</b>	What <b>pricing options</b> do you offer for borrowers on your platform?	

10	<b>PRICING OPTIONS</b>	What <b>pricing options</b> do you offer for investors on your platform?
11	<b>USER CHURNING</b>	What do you do to prevent churn, to keep users on your platform? <span style="float: right;">Differentiation in functionalities, etc.?</span>
12	<b>USER CHURNING</b>	Do you have estimates how many of your users also use a competitor's platform?  How do you deal with that?
13	<b>USER CHURNING</b>	How successful are additional functionalities you are providing to your users?  Are most users engaged in using those functionalities?
14	<b>USER CHURNING</b>	Is the effort to personalize user experiences part of the goal of preventing users to churn?

## 9.5 E – Interview guide Fiverr

**Interview Partner:** Abby Forman – Senior Manager Public Relations – Fiverr®

CATEGORY	QUESTIONS	DETAILS
1	<p><b>COMPANY PURPOSE</b></p> <p>Could you give us a <b>general overview</b> over Fiverr®'s <b>activity</b> and <b>core functionality</b>?</p> <p>What is your current <b>market position</b>?</p>	<p>Activity scope (Vision, Mission, Objectives);</p> <p>Relevant user groups;</p> <p>Competitors</p> <p>Market share</p> <p>Leader; challenger; newcomer</p>
2	<p><b>NETWORK INTENSITY</b></p> <p>What are the <b>groups of users</b> you currently have on your platform?</p> <p><b>How many users</b> do you have in each of these groups?</p>	<p>Freelancers, customers;</p> <p>Estimates are enough</p>
3	<p><b>NETWORK INTENSITY</b></p> <p>What <b>companies</b> are you <b>cooperating</b> with who provide <b>functionalities</b> on your platform?</p>	<p>How many in total (estimate)?</p> <p>What functionality could bring a competitive advantage?</p>

4	<b>NETWORK INTENSITY</b>	What kind of <b>social engagement</b> and <b>exchange of information</b> exists within user groups?	Exchange between customers or freelancers: rating of service freelancers, etc.
5	<b>DIFFERENTIATION EFFORTS</b>	What <b>functionalities</b> do you offer to freelancers other than the core functionality of connecting them with customers?	
6	<b>DIFFERENTIATION EFFORTS</b>	What <b>functionalities</b> do you offer to customers other than the core functionality of connecting them with freelancers?	
7	<b>DIFFERENTIATION EFFORTS</b>	How much do you invest in <b>marketing</b> your platform to different user groups?  Do you market <b>differently</b> between your <b>user groups</b> ?	Marketing expenses in comparison to competitors
8	<b>DIFFERENTIATION EFFORTS</b>	Do you <b>cooperate</b> with <b>exclusive</b> freelancers not present on competing platforms?	
9	<b>PRICING OPTIONS</b>	What <b>pricing options</b> do you offer for freelancers on your platform?	

10	<p><b>PRICING OPTIONS</b> What <b>pricing options</b> do you offer for customers on your platform?</p>
11	<p><b>USER CHURNING</b> What do you do to prevent churn, to keep users on your platform?      Differentiation in functionalities, etc.?</p>
12	<p><b>USER CHURNING</b> Do you have estimates how many of your users also use a competitor's platform?</p> <p>How do you deal with that?</p>
13	<p><b>USER CHURNING</b> How successful are additional functionalities you are providing to your users?</p> <p>Are most users engaged in using those functionalities?</p>
14	<p><b>USER CHURNING</b> Is the effort to personalize user experiences part of the goal of preventing users to churn?</p>

## 9.6 F – Interview guide Graduateland

**Interview Partner:** Julian Beck – CMO – Graduateland

CATEGORY	QUESTIONS	DETAILS
1	<p><b>COMPANY PURPOSE</b></p> <p>Could you give us a <b>general overview</b> over Graduateland’s <b>activity</b> and <b>core functionality</b>?</p> <p>What is your current <b>market position</b>?</p>	<p>Activity scope (Vision, Mission, Objectives);</p> <p>Relevant user groups; Students, Companies, Universities</p> <p>Competitors</p> <p>Market share</p> <p>Leader; challenger; newcomer</p>
2	<p><b>NETWORK INTENSITY</b></p> <p>What are the <b>groups of users</b> you currently have on your platform?</p> <p><b>How many users</b> do you have in each of these groups?</p>	<p>Job applicants, companies;</p> <p>Estimates are enough</p>
3	<p><b>NETWORK INTENSITY</b></p> <p>What <b>companies</b> are you <b>cooperating</b> with who provide <b>functionalities</b> on your platform?</p>	<p>Job trainings, ...</p> <p>How many in total (estimate)?</p>



			What functionality could bring a competitive advantage?
4	<b>NETWORK INTENSITY</b>	What kind of <b>social engagement</b> and <b>exchange</b> of <b>information</b> exists within user groups?	Exchange between job applicants: rating of companies, ...
5	<b>DIFFERENTIATION EFFORTS</b>	What <b>functionalities</b> do you offer to job applicants other than the core functionality of connecting them with companies?	
6	<b>DIFFERENTIATION EFFORTS</b>	What <b>functionalities</b> do you offer to companies other than the core functionality of connecting them with job applicants?	
7	<b>DIFFERENTIATION EFFORTS</b>	Talk about the <b>marketing</b> efforts of your firm?  Do you market <b>differently</b> between your <b>user groups</b> ?	Marketing Expenses in comparison to competitors
8	<b>DIFFERENTIATION EFFORTS</b>	Do you <b>cooperate</b> with <b>exclusive</b> companies not present on competing platforms?	

11	<b>PRICING OPTIONS</b>	What <b>pricing options</b> do you offer for companies on your platform?
12	<b>PRICING OPTIONS</b>	What <b>pricing options</b> do you offer for job applicants on your platform?
12	<b>USER CHURNING</b>	<p>What do you do to prevent churn, to keep users on your platform?</p> <p>Differentiation in functionalities, etc.?</p>
13	<b>USER CHURNING</b>	<p>Do you have estimates how many of your users also use a competitor's platform?</p> <p>How do you deal with that?</p>
14	<b>USER CHURNING</b>	<p>How successful are additional functionalities you are providing to your users?</p> <p>Are most users engaged in using those functionalities?</p>
15	<b>USER CHURNING</b>	Is the effort to personalize user experiences part of the goal of preventing users to churn?

## 9.7 G – Example email to potential case company

Dear Mattias,

We are two Master Students from Copenhagen Business School currently working on our Master-Thesis aiming to analyze digital platform strategies in different industries. The project is conducted in cooperation with the Department of Digitalization.

Taking into consideration Graduateland's scope of activity and our personal experience with Graduateland, we identified your company as a very interesting potential interview partner. Specifically, we would like to get insights about differentiation efforts, social dynamics on digital platforms, currently existing complementary services as well as switching costs.

It would be great if we get the chance to have a quick interview (max. 45 minutes) with you or one of the experts from Graduateland. Of course, all information will be handled confidential.

We would be happy to send the interview questions beforehand. We would suggest conducting the interview through Skype, phone or at your office in Copenhagen. We are very flexible regarding time and communication channel.

Please inform us, if you are interested in the collaboration.

We are looking forward to hearing from you.

Thank you very much in advance and best regards,

Christopher Ballmann & Jens Reichenbach

Copenhagen Business School

Master of Science in Business Administration and Information Systems

Department of Digitalization

## 9.8 H – Context analysis

Influencing Factor	Influencing Driver	Number	Category	Question (example)
Network Intensity	Need for installed base	2	Network Intensity	What are the groups of users you currently have on your platform?
				How many users do you have in each of these groups?
Network Intensity	Need for complementor	3	Network Intensity	What companies are you cooperating with who provide functionalities on your platform?
Network Intensity	Social dynamics	4	Network Intensity	What kind of social engagement and exchange of information exists within user groups?
Differentiation	Exclusive functionalities	5	Differentiation efforts	What functionalities do you offer to restaurants other than the core functionality of connecting them with consumers?
Differentiation	Exclusive functionalities	6	Differentiation efforts	What functionalities do you offer to consumers other than the core functionality of connecting them with restaurants?
Differentiation	Brand Awareness	7	Differentiation efforts	Talk about the marketing efforts of your firm?
				Do you market differently between your user groups?
Differentiation	Exclusive Users	8	Differentiation efforts	Do you cooperate with exclusive restaurants not present on competing platforms?
Pricing model & Differentiation	Revenue Scheme	9	Pricing options	What pricing options do you offer for restaurants on your platform?
Pricing model & Differentiation	Revenue Scheme	10	Pricing options	What pricing options do you offer for consumers on your platform?
Multi-homing through Switching Costs	Financial, Procedural, Emotional	11	User churning	What do you do to prevent churn, to keep users on your platform?
Multi-homing through Switching Costs	Financial, Procedural, Emotional	12	User churning	Do you have estimates how many of your users also use a competitor's platform?
				How do you deal with that?

Multi-homing through Switching Costs	Financial, Procedural, Emotional	13	User churning	How successful are additional functionalities you are providing to your users? Are most users engaged in using those functionalities?
Multi-homing through Switching Costs	Financial, Procedural, Emotional	14	User churning	Is the effort to personalize user experiences part of the goal of preventing users to churn?

## 9.9 I – Interview recording of Rune Risom of Hungry.dk

See video file: “01\_HungryDK-Risom, Rune”

## 9.10 J – Transcription of interview with Matthias Niebuhr from MyHammer

Speakers (C = Christopher Ballmann; M = Matthias Niebuhr; J = Jens Reichenbach)

Section	Speaker	Text
1	C	[indistinct chatter] C: So, should I open this document?
2	M	Yes, please do, there are some information in there and I would reference in part. It is useful because there is some general information in there which is in part what you inquire.
3	C	Should I give a short introduction? It is about MyHammer as a digital platform. We will translate the question into English really quick. You are a multi-sided platform connect the craftsmen with the user, who are using these services
4	M	Yes, we are a classic marketplace. Comparing to market ready business models, we are part of the earlies generation, which fits with the founding in 2005, which is the time of eBay. If I jump to the presentation, the founding myth is in summary the founder of MyHammer got rich during the DotCom bubble and bought a castle which he wanted to renovate. He was looking for craftsmen, but the offers were too expensive for him. What he made of this was an online market place with a backwards auction, the opposite of eBay model, for example painting and the cheapest offer gets the assignment automatically. And this was a maximally bad entry into the market. We are currently still received as a backwards auction market which we are not for a long time. But it is still a big topic. This was the idea which was created back then.  If you go to page 2 of the presentation you see how it looked back, then. You can see the button underbid. This was the model which MyHammer got started. Really retro the design of the website to underbid on tasks.
5	C	Ok, and how does it work now? Now you get different offers and chooses a fitting offer?
6	M	Yes, I will get to that. Let me flip through the presentation this will explain it. Since 2006 no more backwards auction. It was interesting for us to see how Uber entered

		<p>the market. If you come into conflict with one of the strongest lobby in Germany, the organized craftsmanship, an incredibly big part of the economy, highly regulated and then say backwards auction, the cheapest, this was also the time of the me-companies, greed is good, in conclusion a really exciting market entry. It was discovered really quickly that this is not working. On multiple aspects MyHammer started to change its ways. If you look at the timeline, 2007 expansion to Austria, later expansion to United Kingdom and tries to establish in USA. United Kingdom was recently closed, and USA never worked. The monetization was originally a surcharge model. Between 4 and 2 percent depending on the size of the project. This was the basic model. What MyHammer also had to learn very quickly, was that if you have a marketplace which's goal it is to decrease prices you have the problem that the craftsmen are not paying you. If this model is not profitable the craftsmen go bankrupt and then of course also won't pay MyHammer. In this time MyHammer had great and increasing revenue but also very high value adjustments. In the time until circa 2012 it was interesting, there were value adjustments cannibalizing around half of the revenue. In 2010 a subscription-based model was introduced which is the same model we do today. Craftsmen pay 60 Euro per month. And in 2011 the next big step was undertaken, the implementation of the German law, the regulated craftsmen laws. On the old MyHammer platform it did not matter if someone was a certified electrician or not. MyHammer was only a platform, from a legal perspective we did not care, the consumer had to verify certification. Besides the price competition this was resulting in aggravation with the House of Craft (House of Trade). The reaction was that MyHammer is now doing more than they have to do legally. They prequalify projects, e.g. they try to recognize if the task is for an electrician and then connect them to relevant craftsmen. We work on better qualification which I will talk about more later. We are recognizing if it is e.g. a task for an electrician which requires registration with the House of Craft. On the other side we are looking which registrations a craftsmen company has. This is a highly regulated field, if you let someone do the job which is not registered it is illegal employment. These steps</p>
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		cost a lot of revenue short term. But since this was done the revenue increases. Except for a short time period in between. We are still small. Currently we have around 100 employees around 90 FTE's (Full Time equivalents), and around 13.5 million yearly revenue.
7	C	What is this round about in market share?
8	M	<p>I will get to that. If you look at slide 7. We are a real marketplace connecting people. I like to call it online dating, since consumer looks for craftsmen. We are then like a dating marketplace, a channel allowing for people to meet. This is working mostly around larger city with the biggest competitor being word-of-mouth. Like 'hey I need a sanitary craftsman, do you know anyone?'. As you know, in cities like Berlin or Frankfurt, because many people moved there from somewhere else, it is not like in villages where everybody knew the one guy doing everything, you know carpenter 'Hinze'. So of course, you went there and if you didn't, you would risk that you would not get a casket afterwards. An on the other hand if 'Hinze' did not provide satisfying quality then the entire village knew about it. This principle is translated on our marketplace. I can search, the craftsmen present themselves and ratings exist. Ratings are very important. The problem, if you look at slide 8, the numbers are more estimates because it is difficult to isolate. MyHammer looks for craftsmen around the topics house and garden. We have large parts of the buildout craftsmen, speak bricklayer, painter, etc. And we have a lot of things which are not technically craftsmen. There are professions like putting in windows, etc. We are estimating our installed base as ca 330,000 craftsmen. It might as well be 500,000. And if you take revenue of these craftsmen you are in the multiple millions. This is an incredibly big industry. And this is only the market aiming for private consumers. We are primarily going for private consumers. In the public space it is different. In my opinion a reason for the failing of MyHammer was that if a silver bullet was found to slay the monster the super unicorn was there with which everyone would become rich, which I believe was the problem. MyHammer is partly an example for a very difficult market. It does not fail because of the economic size of the market. There are potentially 80 million consumers and 330,000 craftsmen probably even</p>

		<p>more and enormous revenues. But the challenges lay somewhere else. We have currently around 21,000 craftsmen. So, we have a homeopathic market share. It is difficult to assess what the market actually is in detail. Distinguish between private and public projects. We have of course public consumers on our side like property management large and small. Part of our services are given to sub providers. But the core is the consumer market.</p>
9	C	<p>To go into more detail about this. We understood it is difficult to assess market size. How does it look like in terms of competing platforms?</p>
10	M	<p>We are of course number one, you can count on that. But this is a difficult question. I was asked this question recently. There is something like Blauarbeit, which claims to be older, founded in 2004. According to their own claims they have around 3,000 to 4,000 craftsmen, so this is small. We have 21,000, measured compared to 300,000 this is still small. Then we have potential competitors like ebay Kleinanzeigen or google. Of course, we would respect if amazon or others would enter the market but on the other hand others have already tried. The House of Craft tried to establish an own platform which failed undoubtedly. Also, Axel Springer with Profis this was around the 2000s. Money was not an issue for those two. You can enter this market, but it is very difficult. And this is what we have learned. We needed more than 10 years to be successful in a market which is other than other online markets. We recognize eBay Kleinanzeigen as a real competitor because very small craftsmen offer their service there. There is something like check24.de or beko Käuferportal which is named differently now. But if you look for something like solar panels or kitchen things exist. So, there is competition, but we believe we are the only relevant player in the market. And this is the position that the House of Crafts currently holds. But it is very difficult to define market for this aspect, again.</p>
11	J	<p>Because you said that Axel Springer and others have tried, and you said that it was not about money. We already talked with an online food platform like Lieferando in Germany and they also said that money was not an issue. Do you agree with that for your market?</p>

12	M	<p>I don't really know. We are lucky in the sense that the loss carryovers are huge. We are still profiting from the fact that our investors spend a lot of money in traditional advertisement. They left us a brand which has a bad reputation in craftsmanship, which is changing right now, but is still large in the public perception. The building of a brand is very important and something that needs to be done. Like Liferando, they will entry with more than just pure online marketing, which will not work in isolation in the craftsmen industry.</p>
13	C	<p>Would you say to compete around the craftsmen or the consumer? Because usually on this kind of market if you attract one side the other side will come. It is about the interdependencies...</p>
14	M	<p>Yes, exactly it is about the interdependencies. A variety of aspects, I am not the marketing expert. What you are going for is a balance. Consumers are frustrated if they can't find craftsmen and vice versa. The challenge for us is to reach the craftsmen. We are aiming for a very small target group. The number of craftsmen is large but also very diverse. Different craftsmen do different things. We did a lot of things already, we did commercials in these publications for craftsmen, did not work. What did work is what you already mentioned, the bycatch, if you do consumer commercials you will also reach craftsmen. If you do it through the large channels like TV it is difficult to measure the effects. Yes, we are doing TV commercials again and it is working to some degree. Even to the contrary that the German craftsmen are overloaded with workload. One of our hope is radio commercials because craftsmen sit in the car going from jobsite to jobsite and they also listen while working. Then there is of course social media. We are trying to build a brand awareness within the craftsmen industry, combatting the bad reputation of the beginning. We are going for go into education, choosing the education program of the year and try to change our perception but the selling over this channel is more bycatch. They go to us because they know us, and the consumer awareness is large.</p> <p>If you look into the presentation, we are aiming for smaller craftsmen companies. Those are the ones relevant for the consumer market. So up to 5 employees. In the</p>

		<p>political sphere we are sorted into the category of temporary employment. A Frau Nahles compares us to Uber and blames us for the destruction of the welfare state. We are not that big. Interesting is that a couple of years ago when Mrs. Nahles was still a minister, she talked about us complimentary regarding the fight against illegal labor. This is stupid. Self-employment is a societal topic which is relevant in the entire craftsmen industry. In the craftsmen industry there is a trend towards self-employment. If you speak with the companies, they say they had around 15 people years ago and are now fed up with all the bureaucracy. So that companies are small and are becoming smaller is a societal issue.</p>
15	J	You said that you somewhat compared yourself on Uber?...
16	M	No! If Uber looked at MyHammer market entry, they would have learned that you don't enter the market with a huge bank. They would not ignore the mannerisms of the German market. This is not a smart way especially if the people who pay you are the craftsmen.
17	J	But does that mean that you did not compared yourself at all with other platform markets? Did you learn anything from them?
18	M	<p>Mm... We learned from other examples to some degree. But the market is very special. We decided to be a marketplace and not go deeper into the transactions. So, what is comparable? What do you want to learn from eBay? We are not amazon. What you can learn from is features. What we can learn is we were sold from Holzbrink to IAC. Do you know IAC? Interactive Corp? This is the normal reaction, no one knows about them. It a billion-dollar company which owns Tinder, OKCupid, also booking, Expedia, it's a mixture of internet companies. And part of this is a corporation called Angies home services, which MyHammer belongs to. They own equivalents of MyHammer in the USA. What they did is they sold different companies in the Netherlands and Italy, Instapro, MyBuilder in Great Britain and something in France. With those colleagues, information exchange takes place. We are a special market learning more from our market and customers than from other platforms. It is so special; we need to understand what these</p>

		companies need. How do you meet the need of those people? which is nothing you can learn from other platforms.
19	C	To go more into detail about things you said before. I have a couple of additional questions. You mentioned the fee craftsmen pay to be on the platform. Consumers pay nothing?
20	M	No. We implemented a feature similar to eBay Kleinanzeigen where you can push your request. Mark it as urgent but this is not important. In fact, considering the fact that it is so difficult for consumers it could be considered to charge consumers, but we are not there yet.
21	J	Yes, exactly. Because there is a shortage of craftsmen. It would make sense to charge consumers, so are you thinking about it?
22	M	Maybe sometime in the future but there is no serious consideration right now. There are so many things you can consider in this market. I believe we are successful since we started to solve our issues not with a silver bullet but rather how small steps can be improved. In fact, we are slowly growing like this already. I will talk about how we attempt to balance out at least to some degree the market imbalances or what we have already done, later. Slide 10, is statistics, 21,000 craftsmen, a third of this regulated services, number about what craftsmen we have, etc. There are a variety of services on our platform. What our platform is really good at is the connection of services which can be explained very easily. E.g. 200 cm <sup>2</sup> white will get you many offers. Because we abolished fees, more communication is taking place. It is about making people communicate and for the craftsmen it is important that they see the wall before they start painting. All of these things which cannot be implemented technically. When we talk about competitors there are such things as Helpling or Homebell, which is a reseller of these services. They make consumers an offer and then look for craftsmen in their service to fulfill the service. I believe this to be not very clever because as a lawyer this is not possible to do for all the services we offer. This is because we would be in court all the time because of the high risks because of the high complexity of all the services.

23	J	I have a question regarding governance mechanisms. If a transaction takes place and you connect a craftsman with a consumer. It does not matter to you if the meet outside of the platform since you moved away from the transaction-based pricing model. Is this right?
24	M	<p>Yes, with one exception because we did something last year. Let me go back to the presentation. Slide 11, a typical craftsman and his skills. This is a typical craftsman on our service. ....</p> <p>[chatter about the finding the slide]</p> <p>This is a standard craftsman user on our platform. You can find information regarding which services he is certified for; which department of the House of Crafts is responsible for these services, they can post pictures and of course the ratings and comments. He is very successful and all in all very happy with us. So, this is a very typical craftsmen user on our platform. And since he is a very qualified one, we like to show him. What is also very important for us craftsmen with at Meister (annotation: the highest certification in Germany showing exceptionally skill in a profession) are staying longer on the platform. Once upon a time a liberalization took place where a lot of services do not need a license anymore, which lead to a lot of establishments of craftsmen organization. The average lifetime of a company in this industry is 3 years. Many of them have a lack of education in business. That is why we are looking for Meister companies because they are better educated, and they exist longer than the average.</p>
25	C	Did you ever consider providing any additional functionalities on your platform for craftsmen? Like for example descriptive statistical functionalities measuring the number of projects they have and how many they got over MyHammer and other things? What do you already have and what are you planning to implement?
26	M	Yes! What we have is we do show how many people have seen my profile, how many projects and more. The main problem we see would be something helping with the business side. The problem with this is the complexity. We try to be only a marketplace which does not go into the transaction. Now if you would want to offer invoicing functionalities for all services from painter to saddler this would be

		<p>too difficult. We did cooperate with a software company called Moser which are the market leader for software in the craftsmen industry. But the software is highly complex and mainly used by larger companies. We couldn't implement that complexity. We are constantly thinking about it and it would be a great functionality, but it would be like an IT project for the Army with a similar success rate, being finished in 13 years after spending a billion without a successful result. The House of Craft acknowledges the usefulness of such a functionality, but it is too complex. Craftsmen companies currently are either not invoicing at all or use word or excel without using the sum function on excel. It is incredible. We focus exclusively on the facilitation of transactions.</p>
27	C	<p>The reasoning behind my question was to find out what functionalities you are offering your craftsmen and consumers which are different from your competition.</p>
28	J	<p>How you are differentiating yourself form the competition and in this find the competitive advantage.</p>
29	M	<p>Yes, currently we are at a point where there is no real competition and we are trying to make is as easy as possible to supply projects and to demand projects. We have an app for consumers and users in four different mobile operating systems. And we are trying to guide the consumer to demand reasonable projects. This is done by using input masks. And then the communication is facilitated between the two groups. For craftsmen it is more about them presenting themselves and being found. This in and of itself is difficult enough</p>
30	C	<p>Differentiation is possible via functionalities, brand awareness or marketing, which you talked about, pricing options like transactions based with food delivery with different provision etc. There also is exclusive user which I want to ask you about. Do you have exclusive users and try to get exclusive craftsmen services?</p>
31	M	<p>No, we put out testimonials, but they do not have a functionality for that. It's very simple, people are happy if they find a craftsman with us. There is no market pressure for that. We try to become more targeted in the sense of... It is difficult than online food delivery which has a very simple product: bring me food as quick as possible. For us, if they have everything from painters to saddler etc. the services</p>

are very diverse. To recognize what it means to build a carport, which can be the construction out of finished pieces, which the three of us could do tomorrow. WE would need three screwdrivers and register a company, done. But if there is a drawing, and this is something we need to recognize, and the parts need to be built first, this is a task for a carpenter which is a job requiring a license. Which is a good thing because we experienced the case that such a thing broke down. Mistakes happen. It's extremely complex. Part of what we are doing is the translation from consumer language into craftsmen language and back. They talk differently and they are a different kind of people. Because of that we are not focusing on other aspect because we must understand better what the people are doing with us. We have a new KI team which is doing the classification of services mainly to assess the differences in value.

Something else I did not mention before, if you go to slide 14 "a simple explanation of MyHammer". In principle it works like this. You put in a request, we try to classify it and send the craftsmen based on the qualifications of we allocated to them. As an example, if you only want to paint it is a different class of craftsmen than if you want the painting service to include varnishing. We send the craftsmen email with potential projects based on their qualifications and the radius they set for their services. This means that a major task of MyHammer was to break down a job into simple tasks and assign them to craftsmen. As a craftsman I can choose to answer to these tasks. We then make sure than they can actually perform the tasks. Afterwards craftsmen and consumer start talking. Step 3, the craftsman answers the request. They can do this in two ways. Either they define a price for the service, or they ask for more information. Now something becomes relevant which we implemented last year, a price label.

We have some companies which use MyHammer very well and who answer to all offers presented to them. This can be overwhelming for consumers. This happens e.g. for moving services or painting. There we have more than 20 craftsmen offering to fulfill the services. This is too much for consumers and they stop replying. We wanted to stop such craftsmen who act like this. Such craftsmen have



		<p>hundreds of ratings. New companies have no chance against this. This is also a very cheap marketing tool for craftsmen. Because we do not do things for charity, but we want to earn money we started to demand a contact fee. This works like this. Craftsmen contacts the consumer 'Hey I saw you want 100 m<sup>2</sup> painting, I can do this for you'. And the consumer responds with come over or yes here is some more information. Because we made the experience that a craftsman has around 6 contacts which generate around 2 to 3 transactions. On the entire platform. This is different according the specification of the service. We implemented this and were afraid that the craftsmen would leave the platform in large numbers because it leads to additional costs. But if the payoff is something like a roofer for 25,000 Euro then a contact fee for 50 Euro is acceptable. That is why the classification of the service was important in the beginning to distinguish between the potential payoff. This is because we are still working on the classification. We are not 100 percent happy with the classifications we have but we are on the right track. Craftsmen did not leave in large numbers. Some left but the majority understood the concept. The interesting thing is that we do not have transaction-based fees but be limited the contacting functionalities to some degree. Craftsmen also have the options to signal that they do not want to offer their services. The contact fee is dependent on the fact if the consumer responds and not the initial offer of the craftsman. The contact fee is between 3 and 50 Euro and dependent on the type of service.</p>
32	J	<p>Because we are interested in the network effects. The case where one consumer gets 10 to 20 offers, is that the usual case? Because we thought that the balance is towards the other side, with a shortage on the craftsmen side.</p>
33	M	<p>Like everything in life, it is more complicated. If you look for an electrician, it is more difficult. It is like online dating. It is like everything in life, I can talk from my personal experience, I am looking for 1,5 years for a special sanitary service in Berlin to fix my radiator, but I am unable to find one. It is exactly like online dating; it is just like real life you are just widening the circle. It is an old west-berlin installation of a one-pipe system. The radiator is rusted, the system is from the 60s, it is a little bit more complicated. It is very difficult to find a craftsman who is doing</p>

		<p>such a service. I found one a couple of months ago but then on the day he was supposed to show up he had a heart attack. Now I found another one and I hope he will show up. So, to find a sanitary service for radiators is complicated even with us, but you can find some. If you are looking for moving services, it is easy. So, it depends on the service which is a KI consideration. You also have seasons. E.g. the time after January is very important for us. In the beginning of January, the jobsites are still frozen, and craftsmen try to fill their project books. And then over the next couple of months we lose craftsmen. And then after a while the thing starts up against and we grow. But for example, radiator services are more important in November, October. Now is the time where gardeners are needed but none are available because they got their offers already and are better. On the other hand, moving is relevant the entire year.</p>
34	C	<p>I would suggest that something like regional dependencies exist. A sanitary service out of Berlin is not going to Munich.</p>
35	M	<p>Yes, the regions can be really big but that is true. So especially a roofer has e.g. a wider region like the Eifel or a state or something. They will drive to Berlin for a task.</p>
36	J	<p>But the market of MyHammer is Germany, right? Not just the cities?</p>
37	M	<p>Yes, that is correct, but the most common consumers are located in cities. My example of 'Hinze' with the coffin, in a village you go to the known craftsmen.</p>
38	C	<p>[personal anecdote]</p>
39	M	<p>So, to conclude, regions are important. We are relevant for consumers and craftsmen within a region.</p>
40	C	<p>I have another general question. You said the only competition which is relevant is Blauarbeit with 3000 craftsmen?</p>
41	M	<p>Yes 3,000 or 4,000 this is only an estimate. They are distinctly smaller than we are.</p>
42	C	<p>Ok, but how does it look like with users being on both platforms? How many users overlap?</p>
43	M	<p>I would say many are on both platforms, I have no exact number but yes there are many doing that. Blauarbeit wanted to buy us at one point. They are funded by a</p>

		big German regional publisher and in this context the question comes up the other way around: are they actually interesting for us. Therefore, actually yes there is a lot of overlap.
44	C	I would have suggested that if I am looking for a service which I cannot find on your platform I will look for it on another platform
45	M	Yes, of course. And we are competing with them for the same keywords. Now, if you take the slide before the last one, you can see who our consumers are. Something that we learned; our consumers are relatively old. The 35 is a relatively low estimation. Those are people which own a house or an apartment and this is something what the original approach of MyHammer as a backward auction was an assumption which was wrong. The people do not necessarily want to save money but instead they want, if they have a house, it to be done right. And I have no idea what it will cost. The consumer has no imagination what it will cost. It is a maximally not transparent market. And the suggestion was in the beginning we will make it transparent and everyone happy. But the craftsmen were not happy which is not necessarily something which is not in the interest of the consumer. In the end I will let someone in my house which is doing something. And I do want it to be done correctly and not break down in two years. This is why rating are a really really important factor, especially in the non-regulated areas, like tiling etc. Then this is an important issue or even a more important than the price when services are not regulated. When services are regulated, the price is the deciding factor because the people believe that an electrician can do what an electrician should do. Then the ratings are not as important. If one takes 200 euros and the other 150 then I take the cheaper one. That is based on the trust in the German education system. And the Meister certification. The people come back, there are always project. It is very seasonal. We are estimating the value of a project around 1600 Euro. The real number we don't know because many things happen in the direct conversation between the users. If we get billing functionalities at some point, then we will know what happens. But right now, we are flying blindly.

46	C	It must also be difficult to find an average when you have so many different kinds of services.
47	M	Yes exactly. We are trying to educate the consumers to give them a realistic expectation.
48	C	Is there any information exchange between user groups on the same way? Are there more ways for a customer to communicate with each other than writing ratings?
49	M	No, we don't have that. That is happening with the ratings. No, we don't have that.
50	C	The same question for the craftsmen?
51	M	No, we don't have that either.
52	J	The core functionality does not differ from your competitors like Blauarbeit does it?
53	M	No, they are doing the same thing. If you look at Blauarbeit as a real competitor. I mentioned homebell, which is doing the projects themselves, but they have around 600 craftsmen. And they only focus on a subset of services which they can calculate themselves. Like painting. All the things which can easily be priced and explained. We have a much wider area of services. And then Beko käuferportal which is called differently, they are doing kitchen services, solar panels and sell the leads to these tasks. The classify these services more distinctly and the services are in the higher price segment. They picked a market segment and are sticking to it. Another one who wants to enter the market is check24, we will see how that goes, it hasn't look at it in detail yet.
54	C	It is also interesting to see that many companies tried and failed which is an interesting aspect for us to consider regarding competition.
55	M	Yes, and especially the topic with the regulations. This is a large entry barrier at least into the German market. You have to try, blauarbeit is not doing this as much as we are. But from the perspective of the craftsmen, because they are so small, they don't view it as critically. But if tomorrow a platform provider would enter the market with incredibly deep pockets, he will still have the challenge of categorizing the services. This is a market entry barrier which is not small. And the craftsmen

		<p>are watching out themselves for this. For example, you have next to the German craftsmen laws, e.g. you have to be registered in the House of Crafts, you also have something like that not every electrician is allowed by the regional network operator to do certain tasks. If you do them anyway you will get fined. So, you can ask yourself, I have the discussion with craftsmen, why don't we control this issue. But if we do it with all services this will be even more complex. Then the garden services will address us regarding chainsaw certifications, which is an insurance issue. Should we implement this logic as well? I believe that the most relevant issue is with dangerous materials. Demolition companies have to deal with that. As soon as you have asbestos, it is dangerous, and the question is can we as a platform provider say this is not part of our responsibility? So, as you see we can go as deep into a topic as it pleases you. So started something like MyHammer in Germany from scratch...good luck.</p>
56	C	<p>We had the example in a lecture regarding Uber in Denmark where the taxi union was lobbying to create entry barriers through regulation. That is why it is interesting when you speak about regulation. This is a similar case; with you it is just more extreme.</p>
57	M	<p>Well, if you think about it, we do not have to deal with it at all. Well, if I think about it actually, we do because uber sees itself as a facilitator. But we do not own any craftsmen. This platform topic is my hobby. I go to events regarding platform regulations in a smart way etc. And in this case, I am sitting in between Uber and helping an I am saying: guys, you are all stupid. I am a jurist. We have to start with the word platform. This is a name which does not help at all. And the governments want to have a platform law. The issue is there is nothing like a platform. For example, what we do is we facilitate the conversation between two user groups so the business can take place. If you go back a couple of hundred years, on a market, it was the same thing. Now if you look at homebell oder helping or whatever, I need someone who is doing something for me, clean my apartment. Someone is coming, saying my people are doing this, this is also like it was 100 years ago. The only difference is that it has something to do with internet, today. One-time datev</p>

		<p>was present, they are older than the internet, they were founded before the internet existed. Now are they a platform? And now I have to listen to professors talk about one-sided and two-sided markets, this is stupid. There are topics which are so difficult to grasp. It has for sure something to do with market power. We do not have that we are a small part of the industry. In other industries we have platforms which have a lot of power and everyone is afraid of their algorithms. So, then we have to talk about data protection. But this is why we have data protection laws and consumer protection laws. But all of this has nothing to do with platforms. We have laws for that, but the problem is that the government is not willing to enforce them with platforms.</p>
58	C	[explaining platform theory and research question of the thesis]
59	M	[further explanation about German politics and trouble with regulation in German economy - not competition related]
60	M	<p>I have one more thing I want to talk about, the last slide which is about the value we are creating. This is very interesting. The consumers find value in finding a craftsman with a cheaper price or at all. For craftsmen, why should they come to us. When as a new company I do not have any brand in the market it makes sense to come to us and build a brand. But how can you do that without having ratings. So just for you to see what kind of a market we are dealing with. We are sending new craftsmen a package with postcards which they should give their customers so that we have some ratings for them to be presented on the platform. We are controlling those rating by checking for invoices. We are taking fake ratings very seriously. People who do that are most likely also defrauding our customers. This is a clear connection we see. Also, the craftsmen can use our platform to eliminate downtime when they have trouble to utilize their employees to capacity. This can be because of bad weather on a job site or because of seasonally low demand. This can also be done very short term with the app. This allows you to react. 10 minutes away an electric stove needs to be connected which will take half an hour. So, let's do this really quick. Many craftsmen have found this to be very useful and are using</p>

		us for that. Also, a private consumer pays more directly and quicker than what craftsmen have to deal with when doing public projects.
61	J	Ok, thank you very much. If we have any more questions if it is ok with you, we would send them per email. Other than that, thank you this was very helpful.
62	C	Yes, ok great. Thank you so much for taking the time for us

**9.11 K – Interview recording of Kristian Frederiksen of Lendino**

See audio file: “03\_Lendino-Frederiksen, Kristian”

**9.12 L – Interview recording of Abby Forman of Fiverr**

See video file: “04\_Fiverr-Forman, Abby”

**9.13 M – Interview recording of Julian Beck of Graduateland**

See audio file: “05\_Graduateland-Beck, Julian”

**9.14 N – Interview recording of Matthias Niebuhr of MyHammer**

See video file: “02\_MyHammer-Niebuhr, Matthias”



## 9.15 O – Document analysis

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