

MSc. in Economics & Business Administration
Management of Innovation & Business Development
Master Thesis

Platform competition in the German home sharing economy

*An investigation about the importance of network effects on single- and multi-homing
users*

9flats.com

 **airbnb**

WIMDU

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Abstract

Whilst numerous researchers have explored the field of platform competition and network effects, this dissertation examines whether or not single- and multi-homing users of online platforms attribute varying levels of importance to direct and indirect network effects respectively.

Specifically, this dissertation focuses on the German home sharing market and the users of online home sharing platforms, i.e. those renting a room on an online platform, e.g. AirBnB. The research was conducted with the help of a survey in the German market. The analysis focuses on the importance of direct and indirect network effects for single-homing, i.e. users who just use one platform, and multi-homing users, i.e. users who use more than one platform to book a room on a home-sharing platform.

The first part of the analysis concludes that direct network effects are more important for single-homing users than for multi-homing users when using a two-sided platform. The findings of the second part of the analysis show that indirect network effects are more important for multi- than for single-homing users when using a two-sided platform.

The above findings imply that said platforms should on the one hand increase focus on building on direct network effects in order to keep single-homing users on the platform, and on the other hand, foster the relationship with marquee users in order to strengthen the indirect network effects and attract more multi-homing users. Lastly, the findings offer important insights to platform owners that could support their competitiveness versus other platforms in the home-sharing market.

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1. Introduction

This chapter serves as an introduction to the research work presented in this dissertation. The researcher presents the background of the study and discusses the problem statement. Subsequently, the research question will be presented, which leads to an explanation of the practical and theoretical rationale of this research paper. The chapter is finalized by highlighting the structure of the dissertation.

1.1 Background of the study

Fundamentally, the research presented in this dissertation is driven by the fast growing body of consumer innovation in the 21st century, which has spawned many new products and services. Amongst them is the home-sharing economy, an ecosystem that offers customers short-term access to room or apartment rentals (PWC, 2015).

One of the central ideas of the sharing economy is the idea of resource optimisation. Bostman & Rogers (2010) argue that the sharing economy helps to minimize the over-consumption in today's society. There are many reasons why the sharing economy is experiencing such a boom nowadays, e.g. the financial crisis that led users to think about new ideas for income generation or the high population growth that led to a shortage of living room in large cities all over the world. Moreover, from a technical perspective, the rise of digitalisation via smartphones and internet simplified transactions further enabled the opportunity for such innovations.

A related academic field that has been of increasing interest concerns Platform Theory. Evans (2003) stated that the presence of online platforms has been increasing over the last century and continues to be on the rise. Given their relevance in the area of the shared economy, this research paper focuses on online home-sharing platforms such as AirBnb, Wimdu or 9flats. Those platforms are used as interfaces where value creation and consumption is taking place for users by users. As an example, AirBnB is using modern technologies to facilitate transactions between the people who rent an apartment and the people who want to rent an apartment on a short-notice. Especially in Germany there is an increase in the number of home-sharing platforms. However, as Eisenmann (2006) pointed out, a few large platforms tend to dominate two-sided network industries and smaller platforms are driven out. Looking at Germany, bigger platforms such as AirBnb, 9flats and Wimdu tend to be more successful. According to the German “Gesellschaft für Beteiligungen und Immobilienentwicklung” over 14.6 million nights were spent in apartments or rooms that were advertised on sharing platforms in 2015 (GBI, 2016). This means, that every 11th night that was spent by people travelling in Germany was booked via a home sharing platform (GBI, 2016). Despite the positive development of home-sharing platforms there is limited research on the usage preferences of site users. In particular, there is a lack of understanding of why users use one or more platforms when renting a room, which thus opens the topic of platform competition for further research in that area.

1.2 Problem Discussion

Home sharing platforms have been growing over the last years. AirBnB alone is expected to have over 129 million bookings for 2016 (Quartz, 2015). This large volume has especially been driven by the immense progress in technology, e.g. simplification of online transactions with unknown people online via a platform. Nevertheless, also the competition between platforms has increased, with users starting to use multiple platforms at once, i.e. multi-homing users. According to Tat Koon Kah et al. (2014), multi-homing tends to be the norm for most users in order to compare offers on platforms. Since travellers are only one click away from another marketplace and can easily sign up, multi-homing behaviour does not bear high cost that might convince them otherwise (Tat Koon Kah et al., 2014). Thus, the problem arises: what is important for travellers when choosing a platform? How could platforms ensure that users return to their platform and not keep switching between platforms. Or the other way around, how can they capture the interest of multi-homing users?

An important pathway to this discussion lies in the topic of network effects. Especially in the field of platform theory, network effects are extremely important. As travellers create value for travellers, i.e. direct network effects, or as homeowners create value for travellers, i.e. indirect network effects, network effects can be used to propel a cycle of self-sustained platform growth. Caillaud and Jullien (2003) stated that the typical “chicken-and-egg problem” arises, i.e. that you need home owners to attract travellers and you need travellers to attract home owners. Multi-homing users make this even more difficult.

However, even though platform competition has been widely discussed by researchers, only a few studies are concerned with the importance of network effects on the usage pattern of single- and multi-homing users. For example, VanHoose (2011) stated that multi-homing stimulates competition between platforms. Since the home-sharing economy is getting increasingly popular, it is of great interest to understand why some users exhibit single-homing usage patterns whilst others are avid multi-homing users. Especially in the light of network effects, the question arises on how important those are in influencing above user behaviour. However, so far the existing literature has not been able to provide an answer on how important direct and indirect network effects are for both user groups, i.e. single- and multi-homing users, and to which extent they influence user preferences.

1.3 Research question

The objective of this research paper is to empirically investigate whether or not single- and multi-homing users of online platforms attribute varying levels of importance to direct and indirect network effects respectively. The results of this research will allow the reader to better understand people's choice of a platform and offer possible strategic implications for competing platforms.

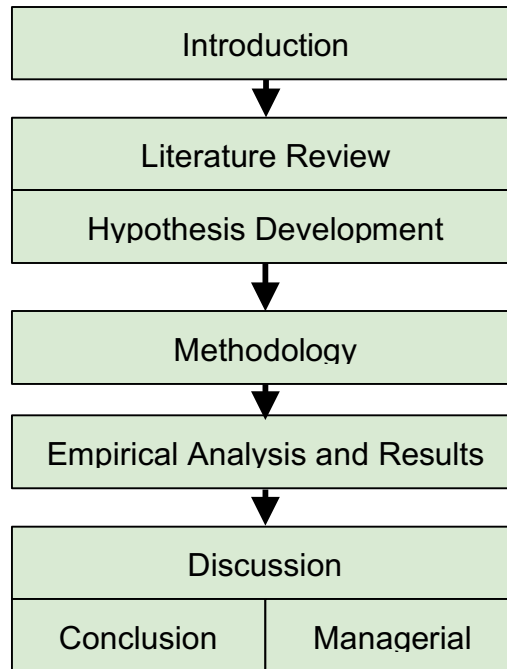
Accordingly, the corresponding research question of this research paper is phrased as follows:

"What is the importance of direct and indirect network effects for single- and multi-homing users of online home sharing platform?"

1.4 Structure

The dissertation is organised in several chapters. The structure is as follow:

Figure 1: Structure of the thesis



Source: Own analysis

2. Literature review

This chapter consists of a literature review and hypothesis development. The purpose is to examine the relevant existing theoretical literature in the context of platform competition, single- and multi-homing users. This material will build the crucial fundament for answering the research question stated in part 1.3.

The theoretical field of platform competition is very broad and thus only the relevant and most important findings will be discussed. On the basis of the literature review, relevant hypotheses are developed and will be addressed throughout the research and analysis part of this paper.

The literature review is divided into four major parts. Firstly, the relevant literature about the definition of two-sided platforms and the different types of two-sided platforms will be discussed. Secondly, platform effects, specifically network effects will be discussed. Thirdly, competition in platforms and the effect on multi-homing users will be reviewed. Fourth, the literature briefly touches on the topic of how to win the battle in competing platform markets and the current challenges in platform competition.

Afterwards, the author will identify a research gap in the current literature where the hypotheses are developed upon.

The examined literature in this paper was found via the libraries such as the CBS Database, Google Scholar or was previously discussed in classes and discussions throughout the author's MSc. program in Management of Innovation and Business Development.

2.1 Two-sided platforms

Rochet and Tirole (2003) pioneered the research on platform competition. Most markets across all industries with network externalities, also called network-effects, are characterized “by the presence of two distinct sides whose ultimate benefit is from interacting through a common platform” (Rochet and Tirole, 2003). The term, two-sided markets, was used by Rochet and Tirole to refer to “situations in which business were catering to two interdependent groups of customers”. The term two sided market can also be referred to as “two-side”.

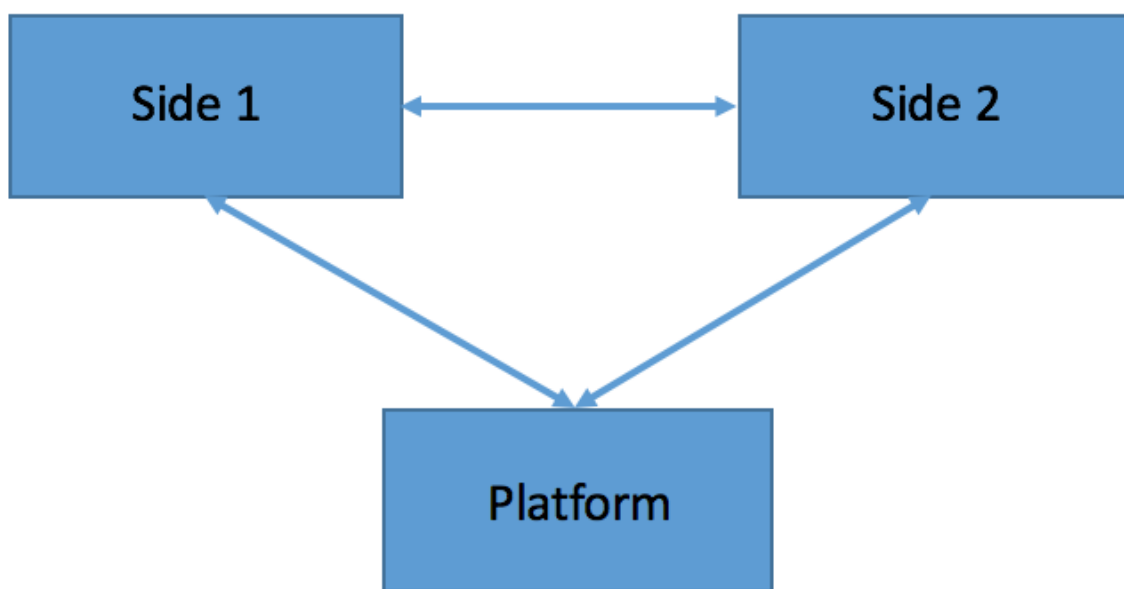
Based upon their initial findings, Rochet and Tirole (2006), continued their research on platforms. Their findings implied that there has to be a potential gain from “trade in an interaction between two end-users”, respectively a buyer and seller. A two-sided platform gives the buyer and seller the possibility to interact and communicate with each other. Further, a platform “enables or facilitates the interaction between the two sides” considering that they want to interact. This aligns with Rochet and Tirole’s (2003) statement, that platform owners have to solve the “chicken- and -egg problem”. In order for platforms to be successful they have to get both sides of the market on board, i.e. seller and buyer.

Based on this research, Eisenman (2006) further clarified a platform. According to Eisenman (2006), “products or services that bring together groups of users in two sided-networks are platforms”. A platform has to provide infrastructure and clear defined rules that enables transactions between the two groups.

Additionally, Eisenman (2006) states that platforms differ from traditional networks and particularly from the traditional value chain, with cost of the company on the left and

revenue on the right, and overall value moving from left to right. Contradictory, in two sided markets, revenue and cost are on both sides, left and right, as there are two relevant user groups on both sides. Eisenman (2006) states, that the “platform incurs costs in serving both groups and can collect revenue from each although one side is often subsidized”.

Figure 2.0 Two-sided Network



Source: Own model

Supporting this definition, Armstrong (2006) defined two-sided markets as a market that “involves two groups of agents who interact via platforms, where one group's benefit from joining a platform depends on the size of the other group that joins the platforms”.

Evans and Schmalensee (2008) contributed to the literature of platform competition by further refining the definition of a modern platform, stating that two sided platforms provide users a “real or virtual meeting place and facilitate the interactions between

members of these customer groups”. The authors further describe platforms as “intermediaries between two user groups”. In addition, Bhargava and Choudhary (2004) discussed two-sided platforms as intermediaries and stated that the expression “infomediary” is used for such “intermediaries since their roles is to capture, aggregate and exploit information about participating parties in order to facilitate the efficient allocation of goods or services”.

2.1.1 Types of two-sided platforms

Evans and Schmalensee (2008) identified 4 different types of two-sided platforms, a finding further validated by Tat Koon Kah et al. (2014), who state that in each of the four platforms, there are “distinct but interdependent types of users who derive value mainly by interacting with other users on the opposite side of the platform”. However, the interaction between users strongly differs between the four platform types.

2.1.1.1 Exchanges

A two sided platform is an exchange when it provides two groups of users, specifically buyers and sellers, with the possibility to search for users on the other side of the platform, offering the opportunity to match and interact with each other. In other words, Evans and Schmalensee (2008) describes the function of an exchange “to help buyers and sellers search for feasible contracts”. A feasible contract for the home-sharing economy is e.g. when a room is rented out. Tat Koon Kah et al. (2014) identified

competition on exchanges between users on the same side for “access to the opposite side”, e.g. when buyers on the platform compete for specific items that sellers are selling and vice versa when sellers are competing for the buyers’ bids. In terms of pricing, an exchange can charge both sides, e.g. take a percentage cut of the deal volume or charges the buyer with a transaction fee. Home-sharing platforms tend to only charge the renter with a flat fee of the booking value.

2.1.1.2 Advertisers supported media

Advertisers supported media can be categorized as two-sided platforms when the platform is creating content or buying content from others to attract more viewers or users, which are in turn used to attract advertisers. Evans and Schmalensee (2008) clearly identified an indirect network effect between advertisers and viewers since advertisers will value a platform more when it has more users and thus a higher base to show their ads. Contradictory to exchange type of platforms, in advertisers supported media platforms, the competition is rather on one side of the platform with a very neutral interaction on the other side (Tat Koon Kah). Dukes and Gal-or (2003) pointed out that those types of platforms compete for viewers’ attention but on the other side, viewers do not compete against each other when viewing advertisements. Further, according to the authors, platforms who follow an advertisers supported media approach earn most of their revenue or all of their revenue from advertisers.

2.1.1.3 Others

In addition to the above mentioned, there are several other types of platforms that should be highlighted. For example, there are platforms labelled transaction devices, which is a popular platform type in the financial industry. Furthermore, so called software platforms facilitate a marketplace for apps such as Apple's App store. As stated in the beginning, the literature review will only focus on the most relevant literature, therefore the author will not go more into detail on the "Other" section.

In this research paper, the researcher focused on exchange type platforms. Home Sharing platforms, such as Airbnb and 9Flats are exchange platforms that help to connect buyers, i.e. home seekers that look for a room or home to rent, and sellers, i.e. homeowners that want to rent out a room. The focus hence lies on exchange platforms and no further research on other platform types has been conducted.

2.2 Network effects

Katz and Shapiro (1985) are pioneers in the field of network effects, also called network externalities. The authors stated that "there are many products for which the utility that a user derives from consumption of the good increases with the number of other agents consuming the good". Specifically, the authors define network externalities as "when the

value of a product to a user depends on the total number of users". Eisenmann (2006), supports this definition by stating that "within two-sided networks, the platforms value to any given user largely depends on the number of users on the network's other side". Further, he clarifies that the value of the platform grows as demand is matched from both sides. In a similar vein, Asvanund et al. (2004) state, that "users attach higher values to technologies as the installed user bases increase". Eisenmann (2006) also states that network effects for "successful platforms lead to increasing return to scale. Users will pay more for access to a bigger network so margins improve as user bases grow." Based on this initial research, there are two types of Network effects that the author has chosen to study in more depth, i.e. direct network effects and indirect network effects. Both will receive further elaboration in the following section.

2.2.1 Direct Network effects

Klemperer (2005) distinguishes between direct and indirect network effects. Direct network effects arise if a "user's payoff from the adoption of a good, and his incentive to adopt it, increases as more others adopt it". Direct network effects can be positive and emerge in a snowball pattern, e.g. when users are using a given platform, their friends are less reluctant to join the same platform based on the fact that their friends are already using the platform. Thus, platform providers encourage both sides to grow (Eisenmann, 2006). Eisenmann (2006) uses the term same "side network effects" synonymous with direct network effects. According to his work, same side network effects are created when "drawing users to one side helps attract even more users to

that side”. Across the literature there are additional synonyms for direct network effect, e.g. Tat Koon Kah et al. (2014) uses the term Intra-network externalities to describe how the affect users located on the same side of a platform have.

Shapiro and Varian (1988) define direct network effects as when “consumers may value a product more if similar customers use that product as well”. Positive network effects can arise either because it is easier to connect to people using the same product or service or because there are the so called “knowledge spillovers” among users from the same product or service. Gawer (2011) also states that direct network effects can “act as an accelerate to a catalytic reaction”, meaning that the value of the product or service is higher for each user that uses it.

Direct network effects for users can also have negative externalities for the user, e.g. congestions, user overflow, and diseconomies of scale (Tat Koon Kah et al., 2010).

Gawer (2009) argue that negative direct network effects happen because users may use a product or service less when similar users use it as well. Tat Koon Kah et al. (2010) argues that two-sided platforms can bear an enormously high amount of fixed cost providing and maintaining the platform and only the scale of economy actually only works on one side which leads to further congestions. Tucker and Zhang (2010) also indicated in their study that multiple sellers on a platform can have a negative network effect on potential new sellers in terms presenting a potential barrier of entry.

2.2 Indirect Network effects

Besides direct network effects, there also exist indirect network effects. According to (Klemperer 2005), indirect network effects arise if “adoption is complementary because of its effect on a related market”. Eisenmann (2006) refers to indirect network effects as cross side network effects. The author states that if a platform provider can attract enough users on one side, e.g. the buyer side, the seller-side will pay more to be reach users and be part of the platform.

Evans and Schmalensee (2008) support that argument stating that the economic value increases by how many agents on one side can reach on the other side and vice versa.

Gawer (2009) defines the occurrence of indirect network effects as the situation where “one type of economic agent may value a product more if more of another group of economic agents uses that product as well”. Shapiro and Varian (1998) call this definition a positive indirect network effect. For example, in the context of the home-sharing economy, a home-seeker would value a platform higher the more offers are available.

Tat Koon Kah et al. (2010) argues that indirect network effects would promote competition for two-sided platforms. Caillaud and Julie (2003) point out that indirect network effects are related to a “chicken & egg problem”, i.e. in order to attract sellers to a platform, there should be an already established user base of potential buyers, however, buyers will only use the platform if there is an established user base of sellers.

Contradictory, Parker and van Alstyne (2005) argue that the “chicken & egg” problem is the reason why platforms offer their product for free for each or both sides and in many cases only charge transaction costs. Tat Koon Kah et al. (2010) further contributes to the literature of indirect network effects by stating that “platforms with more customers of each group are more valuable to the other group”. This would mean that indirect network effects would increase the competition between two-sided platforms that are competing in the same market.

2.3 Multi-homing Users on competing two-sided platforms

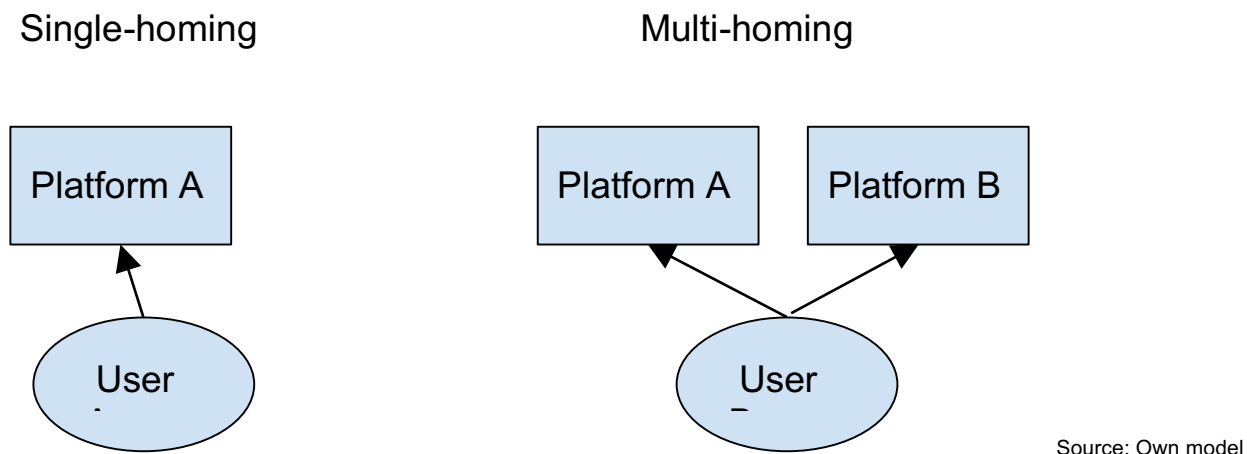
Eisenmann (2006) states that mature two-sided network industries tend to be dominated by a few large platforms and that competition can be strong in those markets, leading to the fact that smaller/weaker platforms will be driven out by larger platforms. Furthermore, according to Eisenmann (2011), positive and strong network effects will influence users in the way that they will choose fewer platforms to use. A small platform is only able to compete if it provides an exclusive interaction with specific partners. While those arguments point to a consolidation of platforms in mature markets, it is important to note that in less mature markets where different users have varying preferences and no single platform is able to fulfil those needs, then a market is more likely to have several rival platforms.

Acknowledging the inherent competition between platforms, Rochet and Tirole (2006) argue that “many consumers satisfy their content needs on multiple platforms”. This

behaviour is referred to as multi-homing. To date there has been limited research on the behaviour of multi-homing users for two-sided platforms.

Rochet and Tirole (2003) defined the behaviour multi-homing users as “a fraction of end users on one or the two sides that connect to several platforms”. Further, VanHoose (2011) states that multi-homing represents a “choice by an end user to interact with more than one platform in a two-sided market.” On the other end, single-homing refers to an individual using only one platform, e.g. only AirBnB and no other platform.

Figure 3: Single- and multi-homing Users Concept



“Nowadays, multi-homing tends to be the norm” according to the research of Tat Koon Kah et al. (2014). Based on Caillaud and Julien (2003) this can be considered as particularly true when switching costs are low, as users generally tend to “multihome” out of convenience.

2.4 Strategies for competing platforms

Gawer and Cusamano (2008) argue that for a platform to have potential to dominate the market two conditions need to be met. First, a platform should be easily connectable to or it should be easy to build upon, opening up the opportunity to lead to new and in some cases even unintended use cases. Second, a platform should either solve an “essential technological problem within an industry” or it should “perform at least one essential function in the system of uses”.

Gawer and Cusamano (2008) found two strategies related to the above factors that can be employed for platforms to win in a given market.

First, “coring” is considered when the “platforms open the overall system in which they operate to new usage possibilities”. Subsequently, those new opportunities can lead to the growth of an installed user base. As the question arises of who will develop those new users of a platform, the platform needs to create an economic incentive for users to invest and build complementary use cases over time for the platform.

The second competitive strategy for a platform is referred to as “tipping”, which aims at winning “platform battles by building market momentum” (Gawer and Cusamano, 2008). Underlying this strategy is the reality that battles between platforms often manifest in competition of technical standards and sometimes even incompatible technologies. In order for a winner, i.e. a dominant standard of a platform, to emerge, the market environment has to “tip” towards a certain technology. Tipping is defined by Gawer and

Cusamano (2008) as a set of “activities or strategic moves that companies can use to shape market dynamics and win platform wars”.

Further, the problems associated with tipping and coring are, that none of these strategies have to disdain current antitrust laws.

For platforms to become market leader, company size can be important, especially when pursuing a tipping strategy (Gawer and Cusamano,2008). On the other side, coring is a possible move for every company size as “technological leadership is not directly depending on the size of a company” (Caillaud & Julie, 2003).

In addition, Caillaud and Julie would like to point out that there is a divide and conquer strategy amongst competing intermediation in two-sided markets. This definite strategy implies “that one side of the market is subsidized and profits are made on the other side” (Caillaud & Julie,2003).

A really important point is the effect of users’ brand value. Users in two-sided networks are not created equally i.e. some users are easier to attract or worth more. The involvement and participation of the so called “marquee users” can be important for platforms due to the high potential to attract more users to the other side of the network. According to Gawer (2011), some users are more valued by customers than other users. Rochet and Tirole (2003) defined these customers as marquee customers.

2.5 Knowledge gap

In summary, the topic of competition between two-sided platforms has been dealt with in the academic literature and is getting more and more relevant and important to research. In the past decade there has clearly been an increasing interest in platform competition and its multiple facets. Platforms have been emerging all over the world, mostly due to the fast rise of the internet that has significantly increased in coverage over the last few years.

However, the current research on platform competition in relation to multi-homing users is still limited and many aspects have not yet been studied in depth and only some studies have touched upon the influence of direct and indirect network effects on users. It would be of great interest from a marketer and researcher perspective to further deepen the research on platform competition. Especially, to look at the influence of network effects on single- and multi-homing users.

The knowledge gap for this study refers to the fact that even though the behaviour and preferences of multi-homing users have been discussed in two-sided networks research for some time (Armstrong, 2006; Rochet and Tirole, 2006), there is very little empirical works that compares the behaviours and preferences of single- and multi-homing users.

In the literature review above, the author has argued that direct and indirect network effects can have a positive or negative influence on platform users' decision making in terms of using a platform, both for single- and multi-homing users. However, there is

little to no existing research that looks at the correlation between direct and indirect network effects and a user's platform usage pattern, i.e. a being single- or multi-homing user. Thus, this research is contributing to the field of platform competition by analysing the importance of network effects for single- and multi-homing users.

2.6 Hypotheses development

Based on the literature, it has become evident that direct and indirect network effects can have a positive effect on single- and multi-homing users. However, there has been limited prior research on the topic of which type of network effect, direct or indirect, is stronger, i.e. more important, for single- and multi-homing users.

In order to answer the given research question, i.e. "What is the importance of direct and indirect effects for single- and multi-homing users of online home sharing platform?", the author builds his research on two hypotheses, one concerning direct network effects and the other concerning indirect network effects.

2.6.1 Hypothesis1: Direct network effects

Shapiro and Varian (1988) defined direct network effects occurring in a situation where users may value a product more if similar consumers use the product as well.

Klemperer (2005) argues that direct network effects can be positive and emerge in a snowball pattern, e.g. when users are using the platform, their friends are less reluctant to join based on the fact that their friends are already using the platform. Thus, positive direct network effects on a platform can influence other users to use the platform. The author assumes that direct network effects are positive unless noted otherwise. Caillaud and Julien (2003) argue that when a new user decides which platform to join, they are more likely to choose between platforms with high direct network effects.

Therefore, the author hypothesizes that:

Hypothesis 1: Direct network effects are more important for single-homing users than for multi-homing users when using a two-sided platform

2.6.2 Hypothesis 2: Indirect network effects

Davis (1989) points out that users join a platform for the expected benefits they may perceive from the transaction, specifically the interaction, with users from the other side. Rochet and Tirole (2006) stated that multi-homing users “satisfy their content needs on multiple platforms” and that indirect network benefits play an important role for multi-homing users. Multi-homing users have limited resources such as time and attention and thus the chance is higher that they choose platforms where they perceive a benefit. Thus, multi-homing users will use a platform less, if it does not give them any benefits. Concluding from this, the effect of indirect network effects may affect multi-homing users and choice of a platform stronger Therefore, we hypothesize that:

Hypothesis 2: Indirect network effects are more important for multi-homing users than single-homing users when using a two-sided platform

3.0 Methodology

The main objective of this thesis is to create a relevant contribution to the existing academic literature relating to platform competition and to further promote the interest in this topic. This paper will look at the ongoing platform competition in the German home sharing market in order to gain an increasing understanding how network effects influence usage patterns in two-sided markets.

The methodology part of this thesis covers all information that will help the reader to replicate the study. Furthermore, it provides an understanding of all the steps that were taken by the researcher to ensure validity and reliability. This chapter consists of three parts, namely the research design, the survey design, and lastly the analysis method.

3.1 Research design

According to Saunders et al. (2012), the research design is the general plan of how the research question will be answered. The methodological basis of this research project is a survey, that allowed the researcher to collect the data, which was used to evaluate the two central hypotheses. In the context of this paper's research question, and given the aim to investigate and explain the relationship between network effects and single-multi-homing users, it becomes evident, that the nature of the research is explanatory. Further, since the time horizon for this study can be considered as rather limited, the author saw it fit to conduct a cross-sectional study rather than a longitudinal study.

In order to support the analysis, both primary and secondary data will be used. Whereas the secondary data was necessary to form the basis for the hypotheses, the collection of primary data was instrumental in testing the developed hypotheses. The questionnaire used to collect the primary data was set up in a way that delivered measurable and clear data

3.2 Research procedure

The procedure to gather primary data for this research study was divided into two different phases. First, the researcher conducted a focus group discussion to collect qualitative data about why users of two-sided home sharing platforms use those platforms. The results and data that was gathered in this group discussion was used to develop a questionnaire. Second, the researcher conducted a quantitative study with the results from a questionnaire in order to test the hypotheses and determine if significant relations among the relevant variables exist.

3.2.1 Focus Group Discussion and Survey

Krueger and Casey (2009) argue that a focused group discussion on a specific topic encourages the discussion amongst participants and the sharing of the perception of

that particular topic. Participants of the discussions are to be selected based on certain criteria and can relate to the topic being discussed. They are encouraged to share their point of view and most importantly to discuss the topic without any pressure (Krueger et al. 2009). Considering the research setting, an electronic group discussion in real-time, also referred as synchronous, was chosen. The author chooses Skype as tool to facilitate the interview. Saunders et al (2012) confirm that this is a valid approach to do synchronous group discussion.

The participants of the study were all born in Germany and have lived there in the past 3 years for a reasonable amount of time. The participants further represented different levels of gender and income. Most importantly, all participants used at least one home sharing platform within the last 12 months. The research sample for this discussion was 6, also referred as a convenience sample ($n=6$). Additionally, 3 participants only used one sharing platform, whereas 3 participants used more than one platform in the last 12 months. This split was necessary in order to have both groups, single- and multi-homing users, presented in the discussion.

Throughout the group discussion several arguments were named that were important for single- and multi-homing participants. Later, those arguments were categorised if they are related to direct or indirect network effects. Within that categorisation the researcher substituted explicitly stated home-sharing platforms such as Airbnb or Wimdu with the word “platform”.

All arguments are stated below that can be related to direct network and indirect network effect according to the theory discussed.

The results of this discussion were formed into selective questions that were used in the survey. The selective statements were formed based on the theory discussed earlier.

For direct network effects the researcher combined the given answers from the focus group discussion into the three following questions:

Question 1: It is important to me that my friends use the platform

Question 2: I like the platform that I use because I know people that use the same platform.

Question 3: It is important to me that there are other users with the same interest on the platform.

For indirect network effects the researcher combined the given answers from the focus group discussion into the three following statements:

Question 4: It is important to me that there are a lot of offers on the platform.

Question 5: I prefer using a platform when there are more offers on it.

Question 6: I prefer to use a platform when i can browse between more listings

After the questions based on the discussions were formed, a questionnaire was developed that was distributed via the internet to potential home sharing platform users.

3.3 Survey Design and measurement

The structure of the questionnaire is divided into the following parts: Home sharing platform explanation, question to identify home sharing users, sociodemographics, direct network effects and indirect network effects. The layout of the survey can be seen in Appendix 8.1. Saunders et al. (2012) argue that questionnaires are a suitable method for data collection for exploratory research.

In addition to Saunders et al.'s statement, Brace (2008) stated that it is useful to ask questions in different ways. The reason behind it is, that the questions are thereby expressed with different words and are therefore more likely to be fully understood by the participants. Further, to avoid misunderstandings in this questionnaire, technical terms were avoided and the researcher tried to keep the wording as simple as possible.

3.3.1 Explanation of a Home sharing platform

Before the participants starts with the survey, the researcher decided to explain what home sharing means by giving a short introduction on the topic. The header was named with "What is a home sharing platform?" and the following description was given:

"Home sharing platforms, such as Airbnb, 9Flats or Wimdu, are websites for people where they can either list or find a private place to rent. It is a trusted marketplace for people to either discover private accommodation to rent such as a spare room or the entire apartment or to list their own place in order to rent it out. It is important to note that a hotel website where you can book a hotel room is not a home sharing website. For this particular research project, we are looking for people who have used such platform within the last 12 months only to find accommodation and not to rent their own accommodation."

3.3.2 Filter question

In the next section the participants were asked if they have rented an accommodation on a home sharing platform within the last 12 months. This question was important in

order to generate a sample for the ensuing analysis. Ultimately, the question was instrumental in eliminating participants that did not use a home sharing platform, hence the survey ended for them at this point with a “Thank you for participating” note.

3.3.2 Socio Demographics

In this section, broad and general questions were asked about the gender, the age group and lastly the nationality of the participant.

3.3.3 Direct and indirect network effects

This section of the survey was focused on the two key variables, indirect and direct network effects, to test the two hypothesis. In order to measure the importance of direct and indirect network effects on single- and multi-homing users, the researcher had a focus group discussion about this topic. During this discussion, arguments from the participants for the use of a platform were collected. The findings in this discussion were analysed and formulated into questions. A total of 6 questions were developed for direct and indirect network effects and the participants were asked to evaluate them. The researcher chose a 5 point likert scale for this section. Burns and Bush (2006) argue this is a “scaled-response form in which respondents are asked to indicate their degree of agreement or disagreement on a symmetric scale for each of a series of statements.” Furthermore, it is a common technique used by marketing researchers. All items in this

section were rated on a five-point intensity scale ranging from 1 which meant “not important at all” to 5 which was “very important”.

All three questions under question 6, that we refer to as Q5, Q6 and Q7 are related to direct network effects. All three questions under question 7, that we refer to as Q8, Q9 and Q10 are related to indirect network effects.

3.3.4 “Thank you”

The last section expressed the researcher’s thanks to the participant for taking part in this research study and provides the participant with a contact to get in touch with the researcher in case of further questions.

3.3.5 Measurement

The questionnaire that was used in this research used mainly opinion variables. Opinion variables ask the participants how they feel about something (Saunders et al., 2012). All questions were closed-ended, meaning that the participant had to choose one of the predefined answers. In addition, Saunders et al. (2012) state that rating questions are very recommended to collect opinion data from participants. Thus, the used closed ended questions consisted of rating questions. Furthermore, likert scales are mostly recommended when asking those type of questions. All questions used a 5-point likert scale thus providing the survey participant with the possibility to have a neutral answer. The scale of the ratings reached from 1-not important, 2-less important to 3-neutral, to

4-important to 5-very important. Saunders et al (2012) pointed out that it is important to use a neutral option in order to not force the participant to rate every question either positive or negative.

4.0 Data analysis methods

Before the final analysis was conducted, the survey was screened with Excel to make sure, that there are no coding errors or missing values. After ensuring that the data was clean it was uploaded to SPSS to make an accurate analysis. Saunders (2012) argues that a researcher can reduce the possibility of receiving wrong results by looking at the reliability and validity of the data. Subsequently, the researcher made sure that the data was examined with regards to their reliability by choosing a Cronbach's alpha analysis on the data. Validity of the survey was tested with the discussion group.

4.1 Descriptive Statistics

Descriptive statistics are used to describe the main features from the underlying data set. Factors such as the mean, standard deviation and the number of respondents were evaluated. Saunders (2012) states that the mean is the average of the answers from all respondents. Further, Field (2005) states that the standard deviation is the square root of the variance and it is used to measure how well the mean represents the used data. The number of respondents, also known as the collected sample size (n) points out the number of respondents per question.

4.2 Cronbach's Alpha

According to Field (2005), the Cronbach's alpha is the most common measure to ensure the scale's reliability. In this case, reliability means that a scale should consistently reflect the construct it is measuring. Field (2005) argues that "individual items or sets of items should produce results consistent with the overall questionnaire". Between researchers an alpha value of larger than 0.7 is considered to be acceptable (Field, 2005). Some researchers tend to accept an alpha of larger than 0.6 but on some even argue that an alpha should be at least larger than 0.8 to be considered as reliable. This paper assumes that an alpha value of ≥ 0.7 is an acceptable value to validate the internal reliability of the data. Furthermore, and most importantly for this study, the cronbach's analysis was necessary to decide whether it was possible to group the variables belonging to the same category, specifically direct and indirect network effects, in order to reduce to data complexity and to be able to run an independent sample t-test.

4.3 Independent sample t-test

In order to test whether the two groups, single- and multi-homing users, attribute different levels of importance to direct and indirect network effects, an independent sample t-test was conducted. Saunders (2012) states that the independent sample t-test compares the difference between the means of both groups. It is considered to be

statistically significant if the t statistic is large with a probability of less than 0.05. For this analysis, the researcher chose a significance level of 0.05 or 5%. Thus, the independent t-test is used to understand whether there is a difference in importance of network effects, direct or indirect, based on platform usage behaviour, single- or multi-homing users.

The independent sample t-test assumes a model where the variables are split into dependent and independent variables. The independent variables should be categorical and in our research are either single- or multi-homing users. On the other side, the dependent variable should be on a continuous scale and are in this case the importance of either direct or indirect network effects measured on a scale of 1-5. The model thus assumes that a difference in the mean of the dependent variable is based on the influence of the independent variable.

5. Empirical Analysis and Results

This part of the thesis focuses on testing the developed hypothesis in part 2.6 and on analysing and interpreting the data gathered in the survey. First, the descriptive statistics are illustrated and analysed. Second, the reliability of the questions is analysed with Cronbach's alpha test and the validity of the data is shown. Lastly, the hypothesis will be tested and the outcomes analysed.

5.1 Descriptive Statistics

In the following section the descriptive statistics of the survey data will be described. The part of the descriptive statistic of the survey is divided according to the sections of the survey, namely "Platform User Behaviour", demographics and the importance of direct and indirect network effects. Platform User Behaviour statistics will be analysed at the end even though it was asked first. The platform usage behaviour is compared with all demographic data such as age and gender to give the reader a more in-depth overview of the data.

5.1.1 Sample size and general statistics

The sample size is based on 298 respondents, excluding those that were removed after the sample was cleaned from incomplete responses. Looking at the descriptive statistics of the variables of the questions Q5, Q6, Q7, Q8, Q9 and Q10, the mean values of all variables are between 3.406 and 4.104. The highest mean is for Question 5 with 4.104 and the lowest mean is for Question 7 with 3.406.

The standard deviation is quite similar between all variables ranging from 1.02785 to 1.16633. The highest standard deviation is for Question 1 and the lowest standard deviation is for question 6.

Table 1: Statistical Outcome

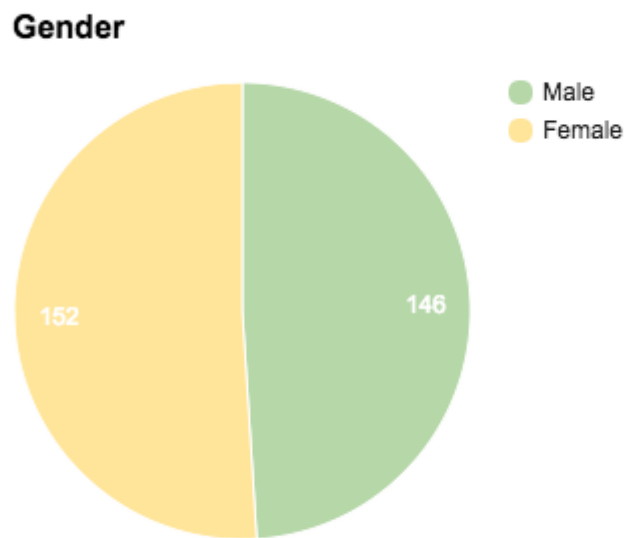
	Item Statistics		
	Mean	Std. Deviation	N
Question 5	4.1	1.028	298
Question 6	3.94	1.311	298
Question 7	3.41	1.104	298
Question 8	3.8	1.072	298
Question 9	3.75	1.113	298
Question 10	3.61	1.115	298

Source: Own analysis

5.1.1 Demographics

The total number of respondents for the survey was n=298. Out of the 298 respondents, 152 were female, representing 51% of the sample, and 146 were male, representing 49% of the sample.

Figure 4: Gender Analysis Survey responses

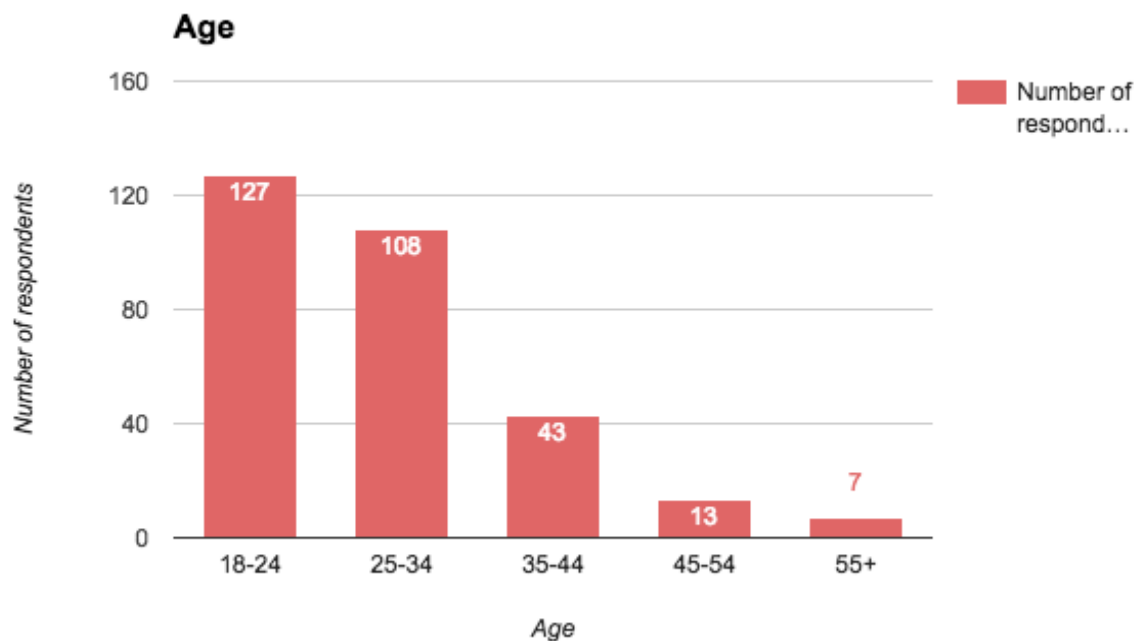


Source: Own analysis

The 298 respondents can be categorized into 5 different age groups ranging from 18-24 years to 55+ years. Considering that the minimum age to book on the largest home sharing platform (Airbnb) is 18+ (Airbnb,2016) the survey was purely targeted at people who are at least 18 years old.

The largest group of users was between 18 and 24 years old, specifically n=127 or 42.6% of the sample. The second largest group was the next age bracket 25-34 years that had 108 users or 36.2%. In total over 235 or 78.89% of users were between 18 and 34 years old. A comparison between the age and platform usage behaviour can be found in part 5.1.2. According to Statista (2014), those age groups are the most interested in renting accommodation through services such as Airbnb.

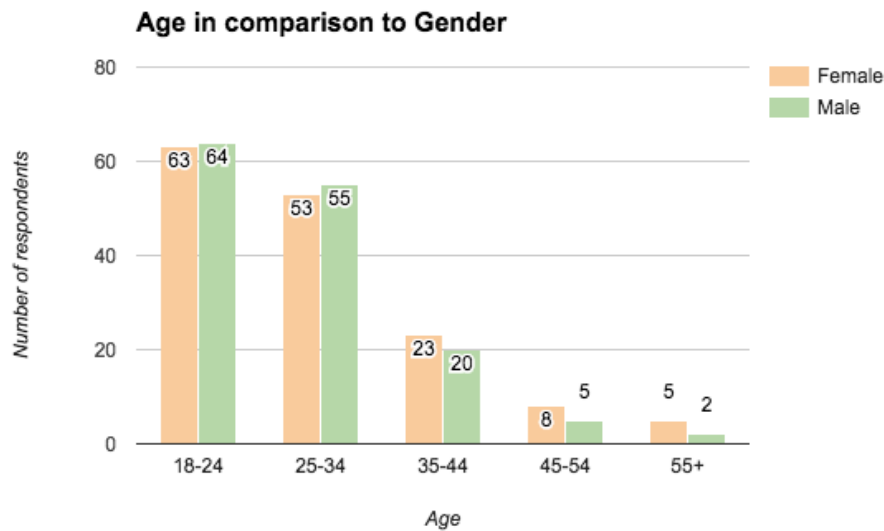
Figure 5: Age Survey responses



Source: Own analysis

Since the research paper is strictly focused on the German market all analysed respondents were from Germany.

Figure 6: Age comparison to gender survey responses



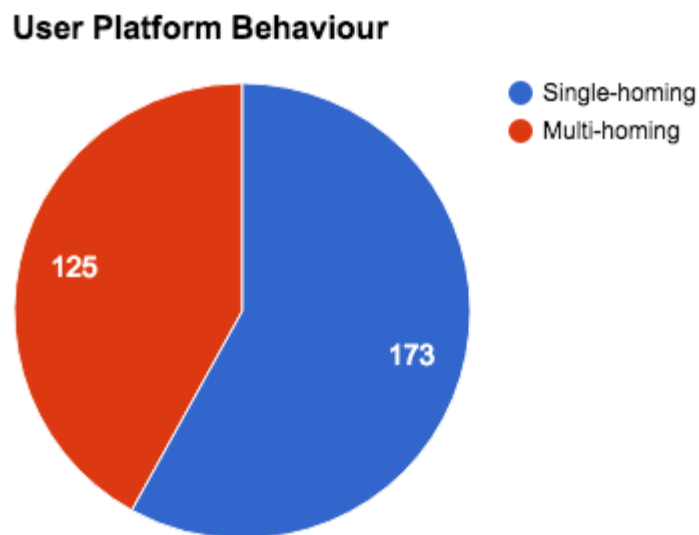
Source: Own analysis

In addition, all age brackets have almost the same split of female and male respondents.

5.1.2 User Platform Behaviour

The results show that out of 298 respondents, 173 use a single platform and are hence considered to be single-homing users. Percentagewise this postulates that 58.1% of the respondents, and thus the majority, are single-homing users. On the other side, 125 respondents are multi-homing users, i.e. 41.9% of the sample.

Figure 7: User Platform Behaviour

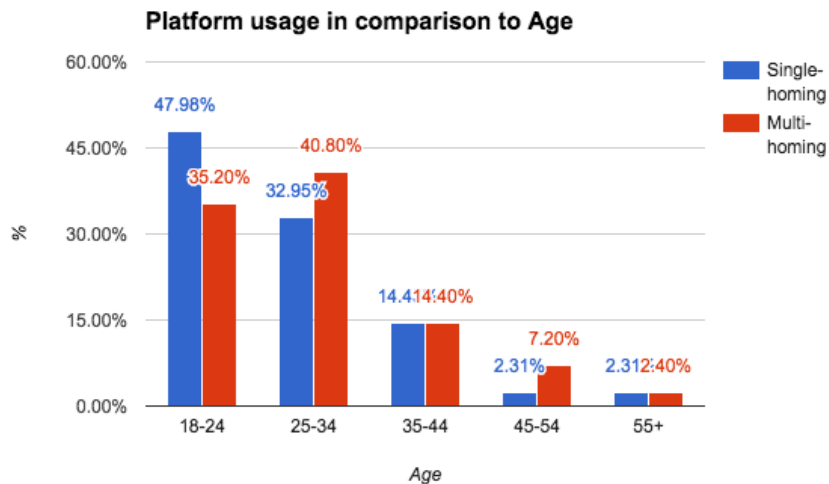


Source: Own analysis

Since the number of single and multi-homing users differ it is more valuable to look at percentage numbers instead of values.

More interestingly is the platform usage in relation to the age group. The data shows that most single-homing users are in the age bracket between 18-24 years. In comparison most multi-homing users are in the age bracket between 25-34 years. Despite the relatively small sample size, those findings offer a preliminary indication that older user groups tend to have a slight preference for using multiple home sharing platforms.

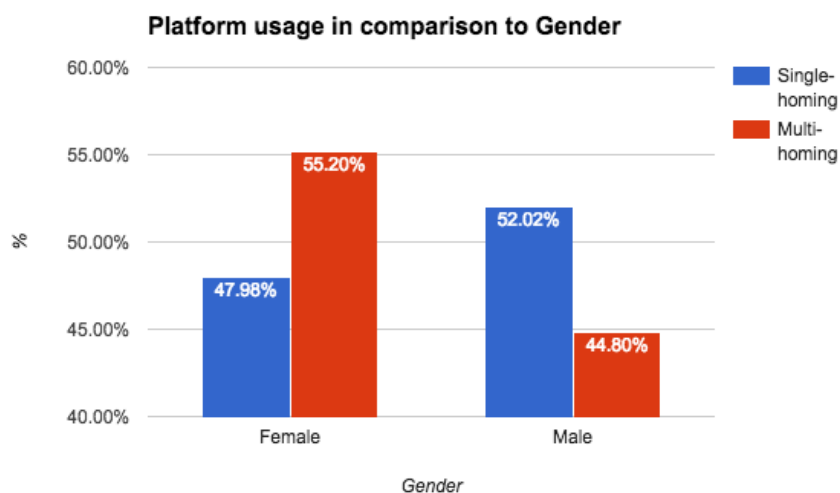
Figure 8: Platform usage in comparison to age



Source: Own analysis

In terms of platform usage in comparison to gender one can conclude from the data sample that females tend to use more multi-homing platforms with 55.2% falling under the multi-homing category, compared to 44.8% of male participants.

Figure 9: Platform usage in comparison to gender



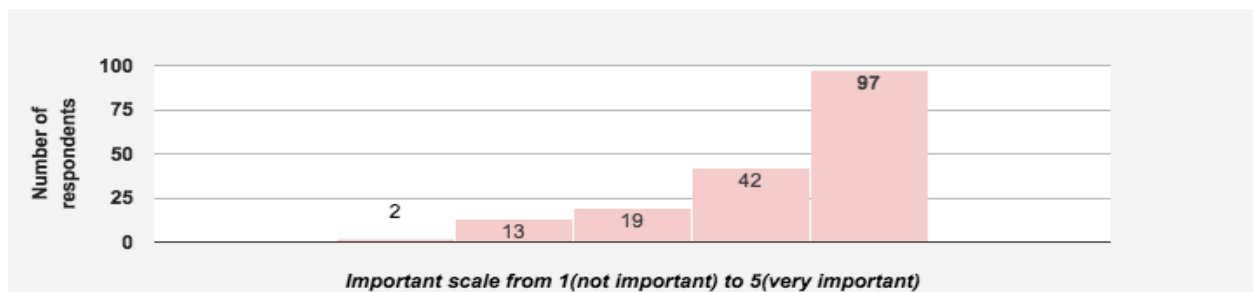
Source: Own analysis

5.1.2 Direct Network effects

5.1.2.1 Question 5 “It is important to me that my friends use the platform.”

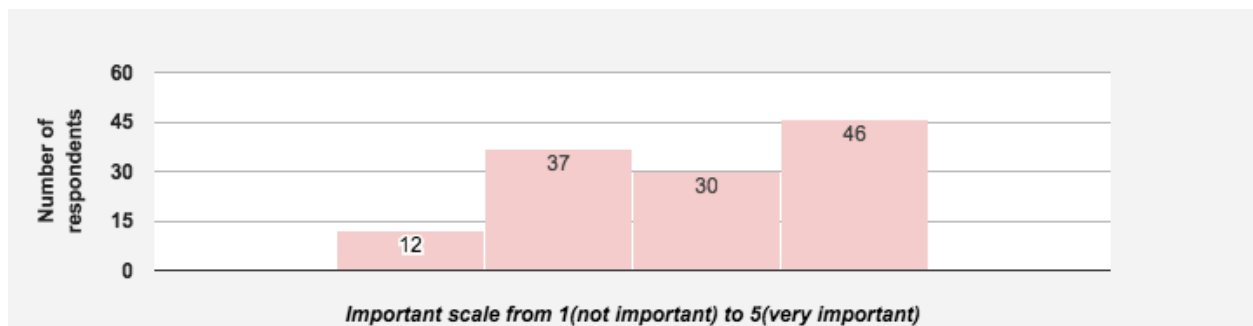
Figure 10 shows the answers from a scale from 1 (not important) to 5 (important) for question 5 for single-homing users and figure 11 shows the same for multi-homing users.

Figure 10: Q5 responses for Single-homing users



Source: Own analysis

Figure 11: Q5 responses for Multi-homing users



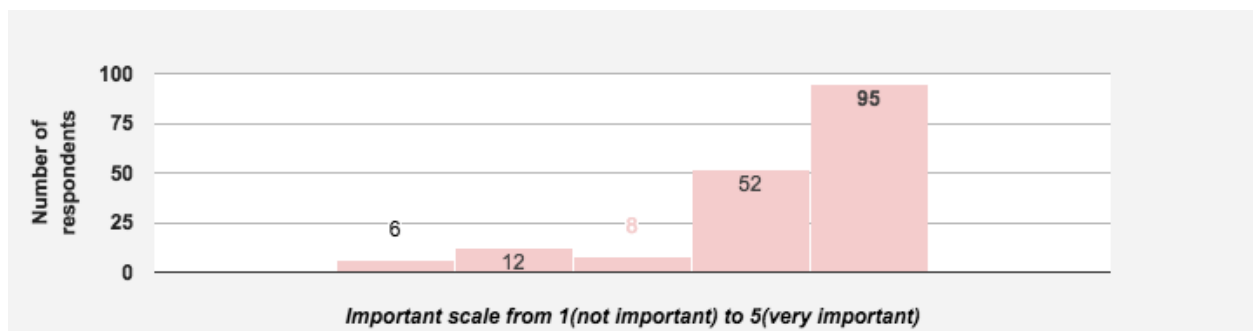
Source: Own analysis

The mean for question 5 for single-homing users was 4.266 which was the highest of all questions. The mean for question 5 for multi-homing users was 3.88. In total, 72% of both users said that it is important or very important that their friends use the platform.

5.1.2.1 Question 6 “I like the platform that I use because I know people that use the same platform”

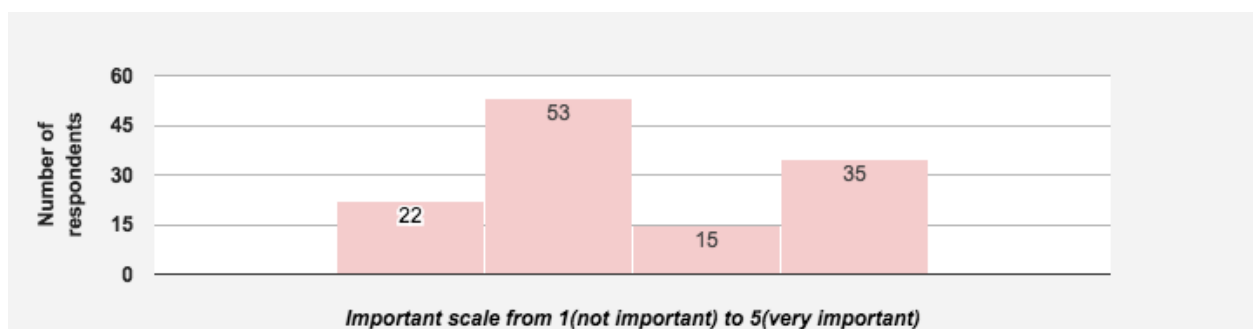
Figure 12 shows the answers from a scale from 1 (not important) to 5 (important) for question 6 for single-homing users and figure 13 shows the same for multi-homing users.

Figure 12: Q6 responses for Single-homing users



Source: Own analysis

Figure 13: Q5 responses for Multi-homing users



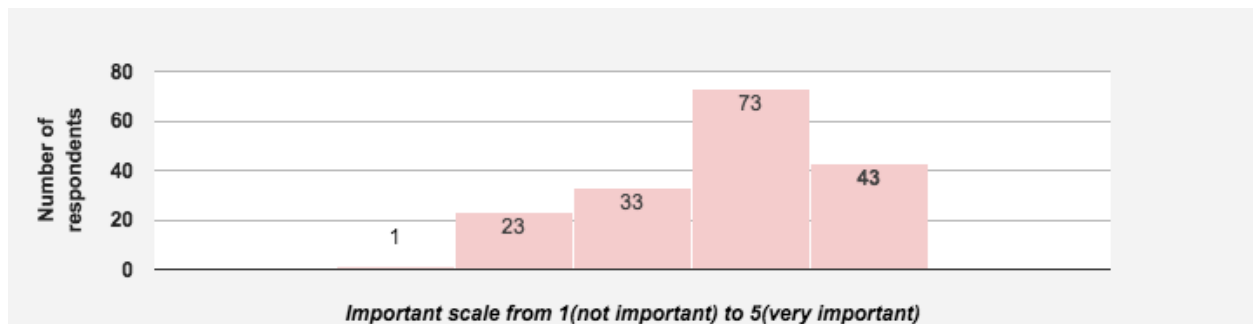
Source: Own analysis

The mean for question 6 for single-homing users was 4.26 which was the 2second highest of all questions. The mean for question 6 for multi-homing users was 3.504. In comparison to Question 5 only 66.1% of both users stated that it is important that people they know use the platform.

5.1.2.3 Question 7 “It is important to me that there are other users with the same interest on the platform.”

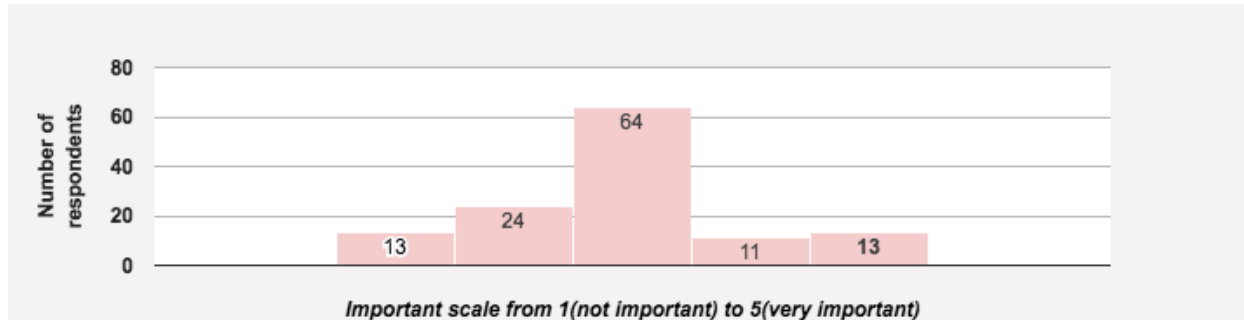
Figure 14 shows the answers from a scale from 1 (not important) to 5 (important) for question 7 for single-homing users and figure 15 shows the same for multi-homing users.

Figure 14: Q7 responses for Single-homing users



Source: Own analysis

Figure 15: Q7 responses for Multi-homing users



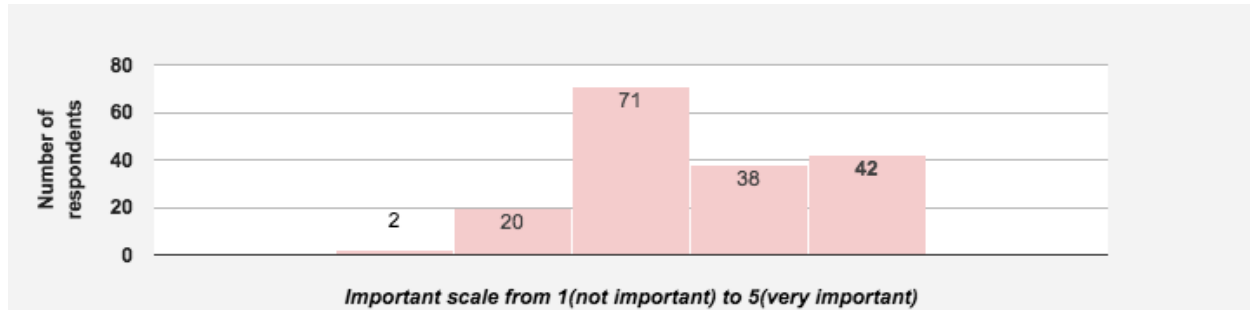
Source: Own analysis

The mean for question 7 for single-homing users was 3.77. The mean for question 7 for multi-homing users was 2.896. Only 47% of both users indicated that it is very important or important for them that users with the same interest use the platform. This question has a particularly high amount of “neutral” answers from multi-homing users.

5.1.2.4 Question 8 “It is important to me that there are a lot of offers on the platform.”

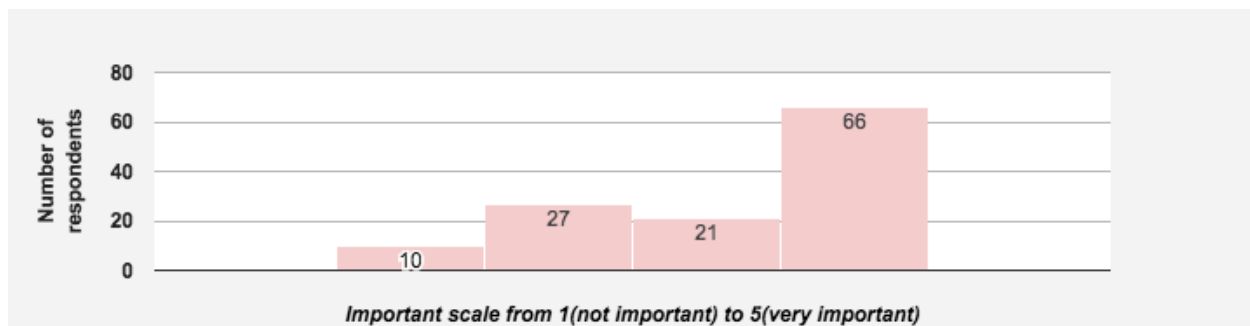
Figure 16 shows the answers from a scale from 1 (not important) to 5 (important) for question 8 for single-homing users and figure 17 the same for multi-homing users.

Figure 16: Q8 responses for Single-homing users



Source: Own analysis

Figure 17: Q8 responses for Multi-homing users



Source: Own analysis

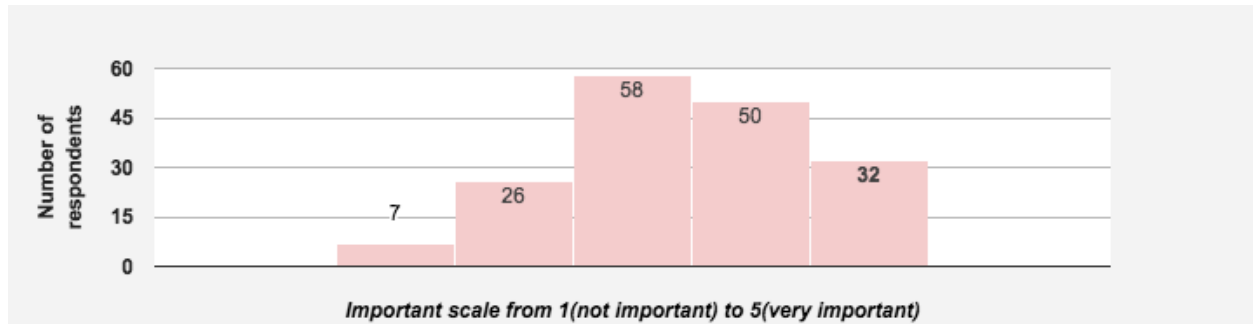
The mean for question 8 for single-homing users was 3.56. The mean for question 8 for multi-homing users was 4.128.

5.1.2.5 Question 9 “I prefer using a platform when there are more offers on it.”

Figure 18 shows the answers from a scale from 1 (not important) to 5 (important) for

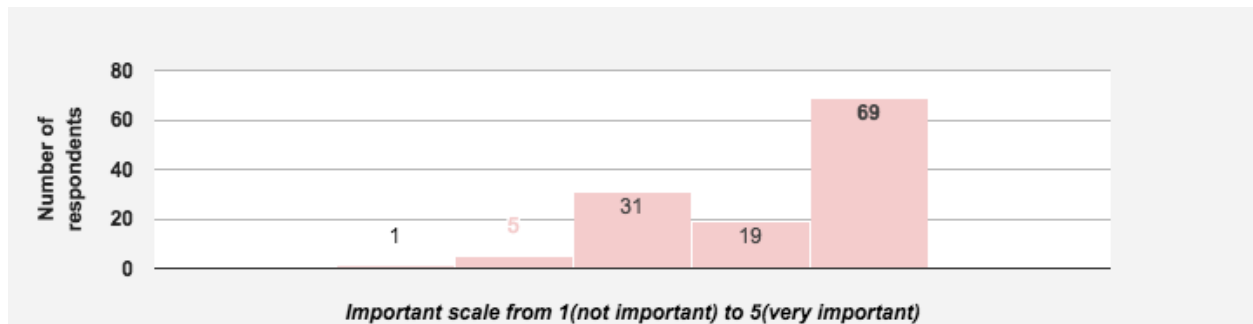
question 9 for single-homing users and figure 19 shows the same for multi-homing users.

Figure 18: Q9 responses for Single-homing users



Source: Own analysis

Figure 19: Q9 responses for Multi-homing users



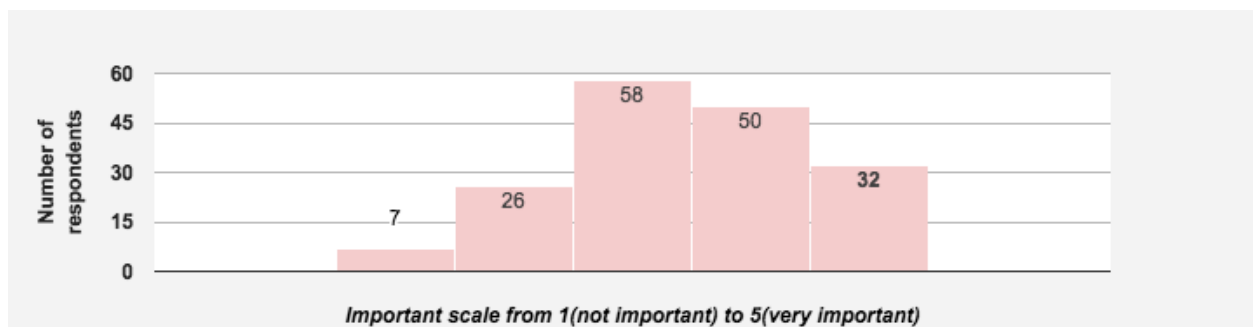
Source: Own analysis

The mean for question 9 for single-homing users was 3.427. The mean for question 8 for multi-homing users was higher with 4.2.

5.1.2.6 Question 10 “I prefer using a platform when there are more offers on it.”

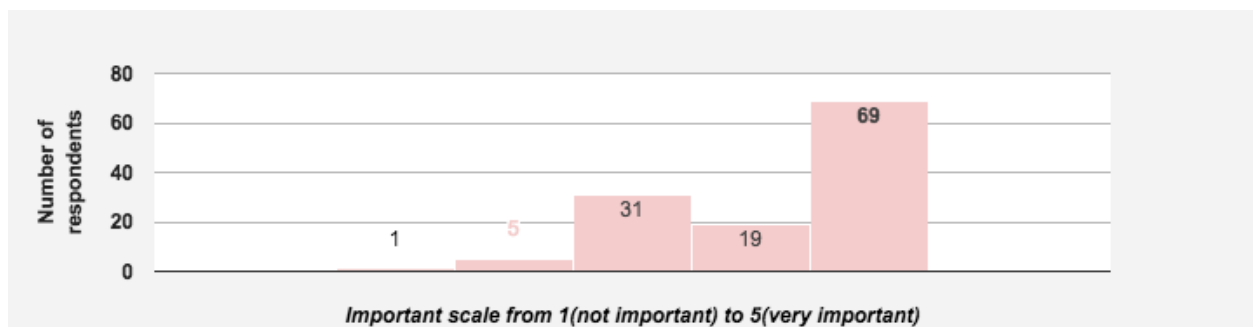
Figure 20 shows the answers from a scale from 1 (not important) to 5 (important) for question 9 for single-homing users and figure 21 shows the same for multi-homing users.

Figure 20: Q10 responses for Single-homing users



Source: Own analysis

Figure 21: Q10 responses for Multi-homing users



Source: Own analysis

The mean for question 10 for single-homing users was 3.283. The mean for question 8 for multi-homing users was higher with 4.056

5.2 Reliability and Validity

According to Saunders (2012), reliability refers to the extent to which data collection methods and analysis procedures have consistent findings. To guarantee internal consistency a Cronbach's alpha test was conducted. Furthermore, Schuster and Bortz (2010) state that Cronbach's alpha is a coefficient that can estimate the reliability of scores that consistent for all the tested items.

Variables were considered as accepted when the value of Cronbach's Alpha was larger than 0.7 as stated in section 4.2.

Question 5 till 7 were combined to see if they can be combined to simplify future analysis with an independent t-test. The analysis showed the following result:

Table 2: Reliability statistics

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
0.804	0.804	3

Source: Own analysis

The Cronbach's Alpha value is 0.804, higher than the minimum value of 0.7 that was determined in the research part 4.2 Furthermore, the analysis showed that no questions should be deleted since this would lead to a lower Cronbach's Alpha score.

Table 3: Statistical output

	Item- Total Statistics				
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item- Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Question 5	7.349	4.053	0.615	0.382	0.767
Question 6	7.5101	3.47	0.69	0.477	0.689
Question 7	8.047	3.688	0.649	0.429	0.733

Source: Own analysis

Question 8 till 10 were analysed to see if they can be combined for further analysis as well. The analysis showed the following result:

Table 4: Reliability statistics

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
0.781	0.781	3

Source: Own analysis

Therefore, also for the second analysis the Cronbach's Alpha is 0.781 and thus larger the minimum of 0.7 that was needed for the data to be accepted.

Table 5: Statistical output

	Item- Total Statistics				
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Question 8	7.36	3.894	0.597	0.358	0.726
Question 9	7.41	3.704	0.614	0.38	0.708
Question 10	7.55	3.601	0.644	0.415	0.674

Source: Own analysis

Further, as in the previous analysis, no questions should be deleted since that would result in lower Cronbach's Alpha score. This means that the data is highly relevant and the questions can be combined. The table below lists a summary of the findings.

Table 6: Summary of findings

Factor	Questions	Cronbach Alpha	Approve and combine?
Direct network effects	Q5+Q6+Q7	0.804	Yes
Indirect network effects	Q8+Q9+Q10	0.781	Yes

Source: Own analysis

Based on the Alpha values no items were removed from the questionnaire. All tested variables are considered to be reliable and questions 5 till 7 can be combined as well as questions 8 till 10 for further research.

Furthermore, according to Saunders et al. (2012) validity explores if research findings are what they appear to be about. In other words, Field (2005) argued that “validity is concerned with the extent to which the measure accurately reflects the purpose of the research”. In order to ensure validity of the survey, it was pretested with different persons. The discussion lead to the definite conclusion that the various questions are understood correctly.

5.3 Hypothesis Testing and Results

In the following section the results of the tested hypotheses will be presented. The analysis is focused on the essentials for answering both hypotheses.

In the previous section the questions 5 to 7, and 8 - 10 were paired up respectively in order to test if they are correlated, i.e. measuring the same thing. Both Cronbach's Alpha were above 0.7 and thus acceptable. Previously, we defined two factors that play an important role in our analysis. The first, direct network effects, can be described with questions five, six and seven of the questionnaire. As stated in the methodology, all questions are referring to direct network effects. With the analysis showing a high Cronbach Alpha of 0.804, the data is highly reliable. For further research, the questions can thus be combined into one factor, representing direct network effects. Furthermore, questions eight, nine and ten had a sufficiently high Cronbach Alpha of 0.781, allowing the researcher to combine them into a single representation of indirect network effects.

In order to compare both groups of interest, single- and multi-homing users, the researcher conducted an independent samples t-test to get an understanding of the possible differences between the two user groups. The results of the test are represented in table 7 to 12 and gives an indication if there are differences with respect to the importance of direct and indirect network effects between single homing users (n=173) and multi homing users (n=125).

5.3.1 Hypothesis 1

The first hypothesis of the research states that:

Hypothesis 1: Direct network effects are more important for single-homing users than for multi-homing users when using a two-sided platform

The analysis of the data showed the following result. Considering the absolute value of the means for single and multi-homing users, one can state that single homing users generally find direct network effects more important when using a platform than multi-homing users. This is reflected in the mean value of single homing users, which is 4.1 and for multi-homing users the value is 3.4267 (see table 7).

Table 7: Hypothesis 1 Outcome

		Group Statistics			
		N	Mean	Std. Deviation	Std. Error Mean
Direct Network Effects	Single-homing	173	4.1002	0.84769	0.06444
	Multi-homing	125	3.4267	0.88049	0.07875

Source: Own analysis

Furthermore, in order to see if the result was significant one has to look at the independent samples t-test. Levene's test for Equality of variances gives a first indication of significance. The significance value for direct network effects is 0.254, which is over the minimum threshold of 0.05, indicating significance. Next, the one ought to analyse if the significance level is significant. Since the value of 0.000 (Sig. 2-tailed) is less than our chosen significance level of 0.05, we can conclude that the mean values of direct network effects for single and multi-homing users is significantly different, thus confirming the first hypothesis.

Table 8: Hypothesis 1 Independent Samples Test

		Levene's Test for Equality of Variances	
		F	Sig.
Direct Network Effects	Equal variances assumed	1.306	0.254
	Equal variances not assumed		

Source: Own analysis

Table 9: Hypothesis t-test

		t-test for Equality of Means						
							95% Confidence Interval of the Difference	
		t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Direct Network Effects	Equal variances assumed	6.659	296	0.000	0.6735	0.1011	0.4744	0.8725
	Equal variances not assumed	6.619	261.245	0.000	0.6735	0.1017	0.4731	0.8739

Source: Own analysis

5.3.2 Hypothesis 2

The second hypothesis of the research is:

Hypothesis 2: Indirect network effects are more important for multi-homing users than single-homing users when using a two-sided platform

As with hypothesis 1, one first has to look at the absolute mean value of both groups for the indirect network variable. From table 10, one can see that the absolute mean value

was higher for multi-homing users, specifically 4.128, than for single-homing users, where the mean value was 3.429. This provides a first indication, that indirect network effects are more important for multi-homing users than for single-homing users.

Table 10: Hypothesis 2 outcome

		Group Statistics			
		N	Mean	Std. Deviation	Std. Error Mean
Indirect Network Effects	Single-homing	173	3.4258	0.81834	0.06221
	Multi-homing	125	4.128	0.8928	0.79855

Source: Own analysis

Table 11: Hypothesis 2 test

		Levene's Test for Equality of Variances	
		F	Sig.
Indirect Network Effects	Equal variances assumed	3.169	0.076
	Equal variances not assumed		

Source: Own analysis

Table 12: Hypothesis 2 t-test

		t-test for Equality of Means						
				Sig. (2-	Mean	Std. Error	95% Confidence Interval of the Difference	
		t	df	tailed)	Difference	Difference	Lower	Upper
Indirect Network Effects	Equal variances assumed	-7.034	296	0.000	0.9982	0.9982	-0.8986	-0.5057
	Equal variances not assumed	-6.936	253.023	0.000	0.1012	0.1012	-0.9015	-0.5028

Source: Own analysis

Further, in order to see if the result was significant one has to look at the independent samples t-test. One has to check the Levene's test for Equality of variances first. The significance value for indirect network effects is 0.076, which is over the norm of 0.05. Now, the researcher analysed if the significance level is significant. The value of 0.000(Sig. 2-tailed) is less than our chosen significance level of 0.05, we can conclude that the mean values of indirect network effects for single and multi-homing users is significantly different and thus confirm the hypothesis.

6. Discussion and conclusion

In this chapter the results of the analysis will be discussed and then brought forward into a managerial context. Further, the limitations of this study will be examined, which could open potential pathways for further research.

6.1 Discussion of findings

In light of the preceding chapter, the author has been able to confirm both of the initially established hypotheses. Hypothesis 1 stated that direct network effects are more important for single-homing users than for multi-homing users, which was confirmed and rendered statistically significant. This holds also true for hypothesis 2, which stated that indirect network effects are more important for multi-homing users than for single-homing users. The following section will discuss each hypothesis more in depth.

According to the results of the analysis in chapter 5, users of a platform who rent a room find it important that their friends are using that platform as well. Klemperer's (2005) statement that direct network effects can be positive and emerge in a snowball pattern aligns with the findings as well. Nowadays, people tend to try out new ideas or platforms based on their friends' recommendation and try to get their friends to join the platform as well. Since single-homing users place more emphasis on direct network effects since one could conjecture that they prefer being connected to their friends and trust their

decision making. Thus, a preference for direct network effects can be seen as a synonymous to a preference for trust. Trust is an important factor in the home-sharing sector because you are living in a flat or living in a room from a stranger that you have not met before. Subsequently, their emphasis on and preference for trust could be the main reason why single-homing users find it so important that their friends use the platform as well and that they are more reluctant to change since they already had a positive experience on that platform.

While single-homing users expressed a stronger emphasis on direct network effects, it is important to note that multi-homing users also considered direct network effects as important - just not as important. Question 5 of the research, "it is important to me that my friends use the platform" had the highest amount of answers for "very important", specifically 97 from single-homing and 46 from multi-homing.

The second hypothesis, which stated that indirect network effects are more important for multi-homing users than for single-homing users, was also confirmed. Thus, multi-homing users place a higher importance on indirect network effects when compared to single-homing users. Indirect network effects, are stimulated by the other side of the network, in this case the seller side. Gawer (2009) stated that "one type of economic agent may value a product more if more of another group economic agents uses that product as well". Subsequently, indirect network effects could be seen as a synonymous with a wider choice and better options when using a platform. This could mean that multi-homing users place a high value on getting the best deal on a platform. Aligned with that statement, Eisenman (2006) said that multi-homing users have limited

attention and resources. Limited attention for multi-homing users on a home-sharing platform could mean that rather than going into depth on one platform, multi-homing users might prefer skimming through multiple options on different sides quickly. Additionally, limited resources might also mean that a multi-homing user have limited financial resources and thus needs to compare the best offers and prices on multiple platforms before booking a room.

6.2 Managerial implications

The results of this study offer several managerial implications for home sharing platforms that could help to maintain current users and attract new ones.

Caillaud and Julie (2003) pointed out that marquee users are important for the brand value of a platform. The so called marquee users can attract more participants to the other side of the network. For example, “a platform provider can accelerate its growth if it can secure the exclusive participation of marquee users in the form of a commitment from the not to join rival platforms.

As stated in our research, direct network effects are important for both single and multi-homing users, but more so for the former group. As single-homing users are more valuable for home-sharing platforms, since they do not compete with other platforms and they exclusively use the given platform, any pathway to maintain those users’

usage pattern could be valuable for an online home sharing platform. Therefore, it becomes clear that, from a company perspective it is important to keep single-homing users, and to not give them any incentive to check out other platforms. The results of the data analysis clearly show that the existing usage by friends, and hence trust, is an important factor. Therefore, managers should consider to focus their marketing strategy more on communicating your existing connection to a platform and on building a closer tie to that platform by increasing the amount of connections, e.g. friends and acquaintances, a user has on a given platform. One potential example is a referral bonus, where when you invite a friend to use the platform you and your friend both get a bonus - something already employed by Airbnb.

Another strategy could be to implement a sharing feature that would allow users to easily share pictures of their platform activity, e.g. last rental booking, to other social media platforms or even the platform itself. Currently this is not possible on Airbnb or other home sharing sides but is a concept already well established on comparison websites such as TripAdvisor. On those sites guests can upload their own pictures and point their experience to friends and other users

With regards, to multi-homing users and their preference for indirect network effects, it is paramount for the company to attract more sellers, i.e. homeowners, to the site. This could either be done, for example, by an easy signup process or by a reward system. The same way that friends can already invite their friends to book a room, homeowners could, e.g. on Airbnb, invite their friends to also advertise their free room or apartment, eventually rewarding both through a kind of benefit system. Furthermore, the

competitive implications for this study's findings offer additional insights. Since multi-homing users tend to compare offers and look at several factors, it is important for the platform to provide the user not only with the most and best offers but also to facilitate the search experience to the best extent possible, e.g. more filtering options.

6.3 Conclusion

With regards to the initial research question "What is the importance of direct and indirect effects for single- and multi-homing users of online home sharing platforms?", this paper has managed to come to a clear result. Direct network effects have a higher impact on the usage pattern of single-homing users, whereas indirect network effects have a higher impact on the usage pattern of multi-homing users. Overall, this research contributes to the theoretical field of platform competition by further exploring the motivation of platform usage for single- and multi-homing users. From a theoretical perspective the results of this study support the current literature as the findings support the notion that network effects are important for platforms to consider.

The findings, backed up by statistical evidence, offer many possibilities for researchers to further investigate the usage patterns of platform users. The resulting managerial implications provide clear suggestions on how the results of this study may be advantageous for home sharing platforms. The given discussions stress the importance of trust in a platform. Trust can be achieved through knowing friends who use a

platform. Overall, this study provides food for thought and inspirations for marketers to eventually market their platforms more successfully.

6.4 Limitations and future research

When interpreting the results, it is important to consider the limitations of this study. For this particular research, a cross-sectional approach was used, which only reflects a snapshot and thus, cannot make a definite statement. Therefore, for future research it is recommended to conduct a longitudinal study that allows observations of users for a longer period of time.

Subsequently, there are also some restrictions concerning the sample used in this study. The survey was only distributed very broadly in Germany. For a replication of the study with a more detailed sample the researcher advises to ask more specific questions, e.g. how often someone has used a platform, what platform was used or more specifically what factors influence them to use just one or multiple platforms. Moreover, this research paper relies mostly on quantitative data, i.e. online survey data, which has some obvious benefits, but also some disadvantages. In fact, since this is an explanatory study, it would be appropriate to look at the original research question also more from a qualitative perspective. One possibility would be to conduct more focus

group interviews or face-to-face interviews and compare the results from the qualitative findings with the findings of this quantitative study.

Lastly, platforms and especially home-sharing platforms vary in type from platform to platform. It is thus suggested that the research is being replicated with respondents that are very familiar with the topic at hand, e.g. use home-sharing platforms on a monthly basis. Future studies could also compare other types of sharing economies, e.g. hotel comparison vs. home sharing platforms.

Although this dissertation has certain limitations, it has paved the way for promising future research opportunities and hopefully, created attention among researchers to analyse platform competition and users' usage patterns more in depth.

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8. Appendices

8.1 SPSS Output

Reliability

[DataSet3]

Scale: ALL VARIABLES

Case Processing Summary

		N	%
Cases	Valid	298	100.0
	Excluded ^a	0	.0
	Total	298	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.781	.781	3

Item Statistics

	Mean	Std. Deviation	N
V1	3.80	1.072	298
V2	3.75	1.113	298
V3	3.61	1.115	298

Inter-Item Correlation Matrix

	V1	V2	V3
V1	1.000	.509	.549
V2	.509	1.000	.570
V3	.549	.570	1.000

Inter-Item Covariance Matrix

	V1	V2	V3
V1	1.149	.607	.656
V2	.607	1.238	.707
V3	.656	.707	1.243

Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maxir Mini
Item Means	3.720	3.607	3.802	.195	
Item Variances	1.210	1.149	1.243	.093	
Inter-Item Covariances	.657	.607	.707	.100	
Inter-Item Correlations	.543	.509	.570	.061	

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cron Alpha De
V1	7.36	3.894	.597	.358	
V2	7.41	3.704	.614	.380	
V3	7.55	3.601	.644	.415	

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
11.16	7.570	2.751	3

Scale: ALL VARIABLES

Case Processing Summary

		N	%
Cases	Valid	298	100.0
	Excluded ^a	0	.0
	Total	298	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.781	.781	3

Item Statistics

	Mean	Std. Deviation	N
V1	3.80	1.072	298
V2	3.75	1.113	298
V3	3.61	1.115	298

Inter-Item Correlation Matrix

	V1	V2	V3
V1	1.000	.509	.549
V2	.509	1.000	.570
V3	.549	.570	1.000

Inter-Item Covariance Matrix

	V1	V2	V3
V1	1.149	.607	.656
V2	.607	1.238	.707
V3	.656	.707	1.243

Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	3.720	3.607	3.802	.195	1.054	.010	3
Item Variances	1.210	1.149	1.243	.093	1.081	.003	3
Inter-Item Covariances	.657	.607	.707	.100	1.164	.002	3
Inter-Item Correlations	.543	.509	.570	.061	1.119	.001	3

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
V1	7.36	3.894	.597	.358	.726
V2	7.41	3.704	.614	.380	.708
V3	7.55	3.601	.644	.415	.674

T-Test

[DataSet1]

Group Statistics

	V1	N	Mean	Std. Deviation	Std. Error Mean
V2	0	173	4.10019268	.847694069	.064448987
	1	125	3.42666667	.880493508	.078753733
V3	0	173	3.42581888	.818346667	.062217745
	1	125	4.12800000	.892806778	.079855066

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference		Lower	Upper
V2	Equal variances assumed	1.306	.254	6.659	296	.000	.673526012	.101141383		.474478684	.872573339
	Equal variances not assumed			6.619	261.235	.000	.673526012	.101763561		.473144760	.873907263
V3	Equal variances assumed	3.169	.076	-7.034	296	.000	-.70218112	.099820398		-.89862873	-.50573350
	Equal variances not assumed			-6.936	253.023	.000	-.70218112	.101231810		-.90154542	-.50281682

8.2 Survey

Survey

Introduction

Dear participant,

I'm a master student from the Copenhagen Business School. As part of my final Master Thesis I'm looking into the importance of network effects on single and multihoming users on two-sided platforms in the home sharing market in Germany. I would greatly appreciate your response to this anonymous questionnaire, which should take around 5 Minutes to complete. The information that you will give will be treated 100% confidentially.

Thank you for your time and help.

In case you have any questions feel free to contact me:
doha13ab@student.cbs.dk

Best regards,

Dominik Hamacher

Next

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Survey

Home sharing platform

Home sharing platforms, such as Airbnb, 9Flats or Wimdu, are websites for people where they can either list or find a private place to rent. It is a trusted marketplace for people to either discover private accommodation to rent such as a spare room or the entire apartment or to list their own place in order to rent it out. It is important to note that a hotel website where you can book a hotel room is not a home sharing website. For this particular research project we are looking for people who have used such platform within the last 6 months only to find accommodation and not to rent their own accommodation.

The survey is structured into three parts. In the first part, you will be asked if you have rented an accommodation on a home sharing platform in the last 6 months. If you didn't then you will be directed to the thank you page of this survey and your participation is highly appreciated and over.

In the second part, you will be asked about your demographic data such as age and country of residence. In the last part of the survey, you will be asked about the importance of several factors when you are using a home sharing platform.

Please read carefully all questions and answer options. It is important to note that there are no right or wrong answers. Just choose the most accurate option for you.

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Survey

1. Have you used a home sharing platform (e.g. Airbnb or 9Flats), specifically rented an accommodation such as a room or apartment in the last 12 months?

☐ Yes

☐ No

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2. How many home sharing websites have you used in the last 12 months?

☐ 1

☐ More than 1

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3. What is your age? Please select the right age group

- ☐ 18-24
- ☐ 25-34
- ☐ 35-44
- ☐ 44-54
- ☐ +55

4. What is your gender?

- ☐ Female
- ☐ Male

5. What is your nationality?

- ☐ German
- ☐ Other

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Survey

Use of a home sharing platform

Please indicate the importance of the following statements why you use a home sharing platform.

6. Please indicate the importance of the following statements why you are using a home sharing platform.

	Not important	Less important	Neutral	Important	Very important
It is important to me that my friends use the platform.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I like the platform that I use because I know people that use the same platform	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is important to me that there are other users with the same interest on the platform.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

7. Please indicate the importance of the following statements why you are using a home sharing platform.

	Not important	Less important	Neutral	Important	Very Important
It is important to me that there are a lot of offers on the platform.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I prefer using a platform when there are more offers on it.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I prefer to use a platform when I can browse between more listings	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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Survey

8.

Thank you for your participation!

In case you have any questions or remarks, please contact me at:
doha13ab@student.cbs.dk

Best regards,

Dominik Hamacher

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Done

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