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INCORPORATING EXTERNAL TRUST SIGNALS ON SERVICE SHARING PLATFORMS

Research paper

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Abstract

Besides matchmaking, the major success factor of service sharing platforms is to build trust in service providers. Therefore, service sharing platforms typically provide a rating system where service consumers can rate service providers, which signals the trustworthiness of service providers. Based on signaling theory, we examine if external trust signals, namely a star rating from another online platform and mutual friends between service providers and service consumers on social networks, can serve as alternative signals to build trust in service providers who have no rating at the service sharing platform yet. Using a laboratory experiment, we find that a star rating from another online platform positively influences trust in service providers, while mutual friends on social networks and the combination of both external trust signals have no significant influence. Furthermore, we find evidence that the combination slightly decreases trust in service providers compared to the sole presence of a star rating from another online platform. In addition, trust in service providers positively influences willingness to pay of service consumers. Consequently, service sharing platforms have to be aware that not every external trust signal increases trust in service providers and ultimately leads to a higher willingness to pay of service consumers.

Keywords: Sharing economy, external trust signals, trust in service providers, willingness to pay.

1 Introduction

Currently, a change in consumption habits can be observed as individuals increasingly prefer short-term accessibility to services and goods over ownership (Bardhi and Eckhardt, 2012). Such forms of sharing have been taken place as a basic form of exchange between communities and kin for millennia (Price, 1975, Schor and Fitzmaurice, 2015) and thus, is not a new idea (Matzler et al., 2015). However, the rise of the Internet has revolutionized sharing habits by enabling the sharing of services and goods between strangers, which consequently formed the sharing economy (Belk, 2014, Schor and Fitzmaurice, 2015). According to PWC (2015), the sharing economy is expected to grow significantly within the next years and sharing of services (e.g., ride sharing) is a part of it.

In sharing of services, the following three participants exist. A service provider offers a service to be shared, whereas a service consumer aspires to temporarily access this service. A service sharing platform serves as a mediator between a service provider and a service consumer (Dervojeda et al., 2013) and thus, establishes the connection between them (Zobrist and Grampp, 2015).

In sharing of services, service consumers are exposed to information asymmetries because they neither know the real identity of the service provider (Abramova et al., 2017) nor can they assess the quality of the offered service in advance (Ert et al., 2016). In addition, an individual plays a crucial role in the service delivery process as a service is not separable from the individual who is providing it (Stoke and Lomax, 2008). For example, in ride sharing the service is shared when a service consumer gets into the car of a service provider and both get to the desired destination. Hence, a service consumer has to trust

the service provider that she is harmless as well as reliable (Botsman and Rogers, 2011). However, in some cases, service consumers experienced negative incidents like sexual (Barnard, 2017) or violent assaults (Michallon, 2017) by the service provider. This reflects that service consumers make their choices under uncertainty (Abramova et al., 2017) and to overcome this uncertainty trust is required (Frederiksen, 2014). Trust has become of vital importance in the sharing economy and is referred to be its currency (Botsman, 2012; Botsman and Rogers, 2011). In line with this, Roland (2014) states that "to share is to trust" and Campbell (2012) and Tussyadiah (2015) point out that mistrust between strangers deter individuals from sharing. As a countermeasure, service sharing platforms provide service providers with the opportunity to disclose information about themselves (Edelman and Luca, 2014). Thereby, service providers can enhance trust by sending signals that provide information about themselves to service consumers (cf., Spence, 1973). Beside basic trust signals like a profile picture or personal details, service providers are also able to establish a connection to their social media account. For example, the user profile of a service provider gives service consumers the possibility to see the number of friends a service provider has on social networks (BlaBlaCar, 2017c) or the number of mutual friends they share (Airbnb, 2017b, Lyft, 2017). In addition, past experiences of service consumers with a service provider is presented in form of star ratings as well as reviews (BlaBlaCar, 2017c, BlaBlaCar 2017e). By now, platforms are only presenting internal trust signals, like reviews and star ratings, which are provided at their own platform. Consequently, service providers who have not received a rating at the specific platform (e.g., service providers who just joined a service sharing platform) are not able to provide service consumers with internal trust signals. However, individuals who want to start participating in the sharing economy have often already built a reputation (e.g., star rating, reviews, etc.) at other online platforms (Botsman, 2012). Therefore, the question arose whether individuals can make use of external trust signals like *star ratings from another online platform* and *mutual friends on social networks* to signal their trustworthiness. Recently, start-ups like eRated offer the opportunity to carry over existing reputations like star ratings or reviews from one online platform to another (eRated, 2017, O'Hear, 2016).

In addition, Ba and Pavlou (2002) find that a buyer rewards a seller perceived as being more trustworthy with a price premium because this reduces transaction specific risks. *Willingness to pay* is included in our study in order to empirically confirm whether this finding also hold in the sharing economy and thus, to identify whether the level of trust a service consumer has in a service provider influences her *willingness to pay* for a shared service.

To the best of our knowledge, the impact of external trust signals like *star ratings from another online platform* and *mutual friends on social networks* on *trust in service providers* and its influence on *willingness to pay* has not been empirically examined yet in the context of sharing economy. Consequently, we formulate the following research question.

> *What is the influence of external trust signals from other online platforms, namely star ratings from another online platform and mutual friends on social networks, on trust in service providers and willingness to pay of service consumers?*

To answer this research question we conduct a laboratory experiment with a 2 x 2 full factorial between-subjects design. As independent variables, we include *star ratings from another online platform* and *mutual friends on social networks* (two manipulations each) to examine the effect on the mediating variable *trust in service providers* and its effect on the dependent variable *willingness to pay*.

We find that the external trust signal *star rating from another online platform* positively influences trust in service providers, while the external trust signal *mutual friends on social networks* and the combination of both external trust signals do not significantly influence trust in service providers. Furthermore, we find evidence that the combination slightly decrease trust in service providers compared to the sole presence of a *star rating from another online platform*. We further find that *trust in service providers* is positively related to the willingness to pay of service consumers. Consequently, service sharing platforms have to be aware that not every external trust signal from another online platform increases trust in service providers and ultimately leads to a higher willingness to pay of service consumers.

2 Theoretical background

This research is based on signaling theory. Signaling theory deals with the reduction of information asymmetry by the use of signals (Spence, 1973). For example, Spence (1973) explains how signals can solve information asymmetries in the context of labour markets. Although employers would reward high-productivity employees by paying higher wages, they cannot distinguish between low- and high-productivity employees before employment. However, job applicants are able to reduce information asymmetries by the costly signal of higher education to discriminate themselves from low-productivity applicants. Therefore, the selection process can be eased for the employer who is uncertain about an applicant's productivity and the job applicant will be paid equivalent to her productivity (Spence, 1973).

Transferred to sharing economy, where service consumers are not certain about the real identity of a service provider (Abramova et al., 2017) and her trustworthiness, trustworthy service providers can discriminate themselves from untrustworthy ones by providing signals that are able to increase trust. These trust signals, in our context *star ratings from another online platform* and *mutual friends on social networks*, can help service consumers to evaluate the trustworthiness of the service provider and therefore, mitigate information asymmetries (Abramova et al., 2017, Teubner et al., 2017). Accordingly, service providers perceived as being more trustworthy should be rewarded by a higher *willingness to pay* of the service consumer.

Figure 1 depicts our research model that hypothesizes the influence of the independent variables, *star rating from another online platform* and *mutual friends on social networks* on the mediating variable *trust in service providers* and how this, in turn, affects the dependent variable *willingness to pay*.

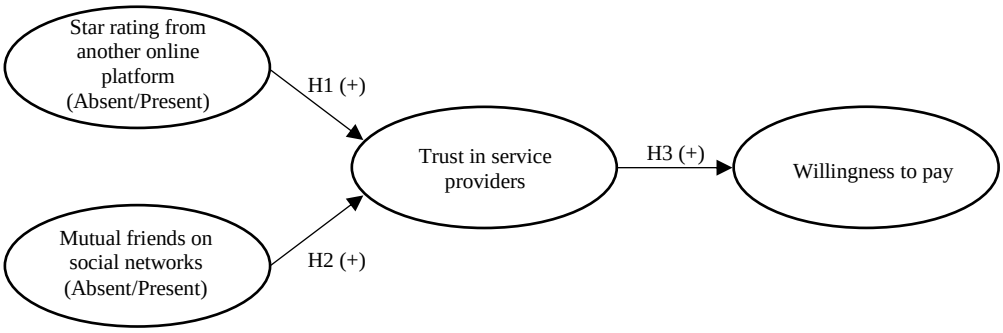


Figure 1. Research model

With respect to online auction markets, a reputation system provides consumers with the opportunity to rate sellers (Slee, 2013) and thus, "[…] collects, distributes, and aggregates feedback about participants' past behaviours" (Resnick and Zeckhauser, 2002, 129). Consequently, such a system supports consumers in deciding whom they can trust (Resnick et al., 2000). At sharing platforms, reputation systems typically provide information in the form of star ratings and reviews (e.g., Airbnb, BlaBlaCar, DogVacay, etc.). The star rating of a service provider is the aggregate of the individual scores given by service consumers (Airbnb, 2017a). Furthermore, ride sharing platform BlaBlaCar expects that the star rating of a service provider reflects her trustworthiness (BlaBlaCar, 2017e). Previous research in the context of the sharing economy started to examine the impact of trust signals on consumers' responses (Abramova et al., 2017, Ert et al., 2016, Teubner et al., 2017). However, either these studies only focus on internal trust signals that originate from the platform at which they are provided (Ert et al., 2016, Teubner et. al., 2017) or neglect to include trust as a mediating variable (Abramova et al. 2017). Moreover, research dealing with trust building between two individuals especially concentrate on reputation systems in general (e.g., Resnick et al., 2000, Pavlou and Gefen, 2004, Abramova et al., 2015, Ba and Pavlou, 2002, Pavlou and Dimoka, 2006). Besides, a previously conducted study in the context of e-commerce finds that star ratings positively influence trust (Bente et al., 2012). Usually studies on reviews and star ratings concentrate on internal trust signals that originate from the platform at which they are provided. This requires that a service provider has already completed at least one transaction at the specific platform for which a service consumer provided feedback. Thus, a new service provider who have not been rated at the service sharing platform lacks the opportunity to provide service consumers

a useful internal trust signal to distinguish herself from untrustworthy service providers. Given that a service provider has already been rated at another online platform (cf., Botsman, 2012), we expect that a *star rating from another online platform* serves as an external trust signal for service consumers to distinguish trustworthy from untrustworthy service providers. Furthermore, we expect that a *star rating from another online platform* will have a positive effect on trust in service providers. Consequently, we formulate the following hypothesis:

> ***H1:*** *The presence of a star rating from another online platform positively influences trust in service providers.*

Social networks like Facebook provide users with the opportunity to see connections to other users such as the presence of mutual friends (Howard, 2010). Furthermore, several sharing platforms have already incorporated a social network feature that enables users to see how many mutual friends they have and with whom (Airbnb, 2017b, Lyft, 2017). In the following, a general example concerning mutual friends is outlined and visualized in Figure 2. Individual A and individual B share a mutual friend – individual C. However, individual A and individual B are strangers to each other and only share the connection to individual C. Thus, individual A and B have an indirect connection through a mutual friend – individual C (Burt, 2005). This allows them to differentiate between strangers with whom they have mutual friends and complete strangers (Hidalgo, 2015). Mutual friends provide individuals the possibility to get information about the stranger as an already trusted friend has a connection to her. As a result, the information provided by the stranger can be verified by the mutual friend (Green, 2007). This is confirmed by Burt (2005) who claims that mutual friends between two individuals can act as reputation control mechanisms. In this line, Granovetter (1992) argues that trust is more likely between individuals who share mutual friends because of the threat of sanctions.

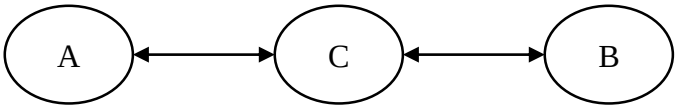


Figure 2. Mutual friends (adapted from Burt, 2005)

Kyriakoullis and Zaphiris (2017) conducted a study in the context of social networks and find out that the chance an individual is perceived as being trustworthy by another individual is higher, the more mutual friends are shared. Previous empirical research on sharing economy examined the impact of the number of Facebook friends on users' responses (e.g., Abramova et al. 2017). However, to the best of our knowledge, no empirical study in the field of the sharing economy has investigated the effect of the external trust signal *mutual friends on social networks* on *trust in service providers*. We examine this effect and we expect that the presence of *mutual friends on social networks* will have a positive impact on *trust in service providers*. Consequently, we formulate the following hypothesis:

> ***H2:*** *The presence of mutual friends on social networks positively influence trust in service providers.*

Willingness to pay is the maximum amount of money an individual is willing to pay for a given unit of a product or a service (Cameron and James, 1987, Krishna, 1991, Moorthy et al., 1997, Wang et al., 2007, Wertenbroch and Skiera, 2002). In a study of online auction markets, Ba and Pavlou (2002) find that buyers are willing to pay higher prices to sellers regarded as being more trustworthy because this minimizes information asymmetries and reduce transaction specific risks. This is in line with Strader and Ramaswami (2002) who demonstrate in the context of C2C e-commerce that buyers reward sellers perceived as being more trustworthy by paying a price premium of 7-10%. Building on these results, we expect that service consumers are willing to pay higher prices for a shared service if they report a higher trust in the service provider. Consequently, we formulate the following hypothesis:

> ***H3:*** *Trust in service providers positively influences a service consumer's willingness to pay.*

3 Research method and study design

To test our hypothesis we conducted a laboratory experiment using a 2 x 2 full factorial between-subjects design. The two independent variables are *star rating from another online platform* and *mutual friends*

on social networks (two manipulations each). Moreover, *trust in service providers* is included as a mediating variable that links the independent variables and the dependent variable *willingness to pay*.

3.1 Case description

We use the ride sharing platform BlaBlaCar as a case example for a service sharing platform, because ride sharing takes place more locally and thus, the existence of mutual friends on social networks is more likely. BlaBlaCar as the service sharing platform connects service providers who provide empty seats in their privately owned cars with service consumers who search for a ride (BlaBlaCar, 2017a). The service provider sets the price for the ride (BlaBlaCar, 2017b). The respondents of this experiment represent service consumers who did not own a car but want to travel from Innsbruck to Vienna and thus, are looking for a ride sharing offer on BlaBlaCar.

3.2 Independent variables

External trust signals are represented by the two independent variables, *star rating from another online platform* and *mutual friends on social networks*.

Star rating from another online platform is manipulated as either present or absent: (1) in the present case a 4.0 star rating from Airbnb is displayed at the profile of the service provider. (2) in the absent case no information about a star rating from another platform is displayed. We use the star rating of Airbnb because it is one of the best known companies in the sharing economy (Quinones and Augustine, 2015). We base our decision to use a 4.0-star rating on an extensive literature review. In the sharing economy, the average star rating lies between 4.5 and 5 stars (cf., Cook, 2015, Slee, 2013, Zervas et al., 2015). In contrast to that, the average star rating of sellers in e-commerce is lower and does not exceed 4.0 stars (Wolf, 2014, Zervas et al., 2015). Usually, star ratings are seen as discriminating signals that foster trust. However, the relatively high average star rating in the sharing economy makes it difficult to discriminate trustworthy from untrustworthy service providers (Slee, 2013). To maintain the discriminating characteristic of a star rating and to avoid biases resulting in solely high trust evaluations of respondents, we use an average star rating of 4.0.

Mutual friends on social networks is manipulated as either present or absent: (1) in the present case the profile of the service provider shows that she has 20 mutual friends on Facebook with the service consumer. (2) in the absent case no information about mutual friends on Facebook is displayed at the profile of the service provider. We use Facebook because it is the market leading social networking site (Statista, 2017). The number of *mutual friends on Facebook* in the present condition has been identified by means of a pre-study using 44 students from an Austrian university. The respondents are asked to put themselves in the situation of searching for a ride sharing offer and find offers from service providers with whom they share a different number of mutual friends. The respondents answer “yes” or “no” whether they would trust a service provider more, if they have 1 instead of 0, 5 instead of 1, 10 instead of 5, 15 instead of 10, 20 instead of 15, 25 instead of 20 and 30 instead of 25 mutual friends on Facebook. Each comparison has been formulated as a separate statement and has been presented on different pages in randomized order. The results show that a higher number than 20 mutual friends will not have an impact on or change the trust perception of the service consumers anymore. Thus, we decided to use 20 mutual friends on Facebook in the present condition of this independent variable.

Table 1 presents the four resulting treatments of our experiment.

Furthermore, manipulation checks for *star rating from another online platform* and *mutual friends on social networks* are included in this experiment to ensure that the manipulation of the independent variables was noticed by the respondents (Stangor, 2015). Since it enables us to make the strongest causal inferences, the manipulation checks are made after measuring the dependent variable (Fromkin and Streufert, 1976). The manipulation check for *star rating from another online platform* is assessed by asking “Was a star rating from Airbnb available for this driver?”. The manipulation check for *mutual friends on social networks* is assessed by asking “Was the number of mutual friends on Facebook available for this driver?”. In both cases, the respondents are asked to answer “yes” or “no”.

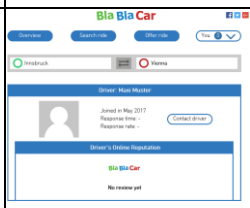
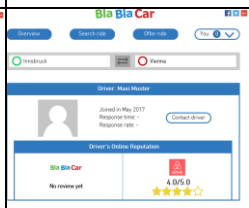
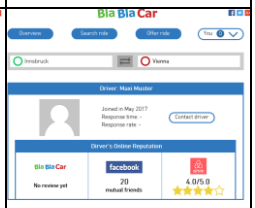
Treatment	A	B	C	D
Visualization				
Star rating from another online platform	Absent	Absent	Present	Present
Mutual friends on social networks	Absent	Present	Absent	Present

Table 1. Visualization of treatments

3.3 Mediating variable

Trust in service providers represents the level to which a service consumer perceives a service provider as trustworthy dependent on the manipulation of the independent variables. Because *trust in service providers* is supposed to have an effect on the *willingness to pay of the service consumer*, it is considered as a mediating variable.

To measure *trust in service providers*, we use an adopted multi-item scale from Pavlou and Gefen (2004) and is operationalized as "beliefs about honesty, dependability, reliability, and trustworthiness" of the service provider. The four items are: (1) "The driver of this ride is in general dependable", (2) "The driver of this ride is in general reliable", (3) "The driver of this ride is in general honest" and (4) "The driver of this ride is in general trustworthy". All items use a seven-point Likert scale. The left end of the scale is numbered with 1 and is labelled "strongly disagree" while the right end is numbered with 7 and is labelled "strongly agree". We use numbered end labeled scales instead of fully labeled because they are less cognitive demanding (Krosnick and Fabrigar, 1997).

3.4 Dependent variable

We measure the dependent variable *willingness to pay* using the ICERANGE method originally developed by Wang et al. (2007). We build on the already adapted ICERANGE items of Scholz et al. (2015) and modified them slightly. The three items are: (1) "Please indicate a price level A at or below which you would definitely participate in this ride, i.e. 100% participation probability.", (2) "Please indicate a price level B at which you are 0% likely to participate in this ride." and (3) "Please indicate a price level C at which you would be indifferent between participating and not participating in this ride (At this price, you are 50% likely to participate in the ride).". Using a range measure rather than a single point measure makes it easier for respondents to express their willingness to pay and demonstrated a higher validity (Schlereth et al., 2012, Wang et al., 2007). In addition to that, the three items for measuring willingness to pay are designed as open-ended questions as suggested by Wang et al. (2007).

3.5 Control variables

This study is controlled for the following three variables: *familiarity*, *propensity to trust* and *perceived risk*. Familiarity and propensity to trust have been identified as antecedents of trust (Mayer et al., 1995), whereas perceived risk is closely related to trust (Mayer et al., 1995, Pavlou and Gefen, 2004). Consequently, these three variables could have an impact on the results of this experiment (Mayer et al. 1995, Mittendorf, 2016). *Familiarity* with a service gives structure to individuals and thus, decreases uncertainty because it provides guidance for future expectations based on past interactions (Gefen, 2000). Additionally, every positive experience that an individual has made is increasing trust (Sundararajan, 2016). In order to measure *familiarity*, the following three items are adapted from Möhlmann (2015): (1) "I am familiar with the lending process of ride sharing.", (2) "I have experience with ride sharing." and (3) "Overall, I am familiar with ride sharing". *Propensity to trust* is influencing the probability that

an individual will trust and thus, reflects an individual's willingness to trust other individuals. As not every individual has the same inherent *propensity to trust*, it is included as a control variable (Mayer et al., 1995). *Propensity to trust* is measured by modifying three items from Cheung and Lee (2001). We decide to measure *propensity to trust* with only three items as the other two control variables are measured with three items as well. Therefore, the item with the lowest factor loading of the original construct is excluded. The modified items are: (1) "It is easy for me to trust a person.", (2) "My tendency to trust a person is high." and (3) "I tend to trust a person, even though I have little knowledge of it.". Moreover, researchers like Mayer et al. (1995) and Pavlou and Gefen (2004) reveal that a close connection between *perceived risk* and trust exists. We measure *perceived risk* using the following three items adapted from Pavlou and Gefen (2004): (1) "There is a considerable risk involved in participating in ride sharing.", (2) "There is a high potential for loss involved in participating in ride sharing." and (3) "My decision to participate in ride sharing is risky.". All items of the three constructs are measured on numbered and end labeled (cf., Krosnick and Fabrigar, 1997) seven-point Likert scales.

3.6 Tasks and procedures

Students are selected to be most appropriate as respondents for this experiment as sharing is mainly used by young age groups ranging from 18 to 34 years (Owyang et al., 2014). Therefore, a total of 181 students from an Austrian university participate in this experiment which took place in June and July 2017. The data was collected via different lectures at the university by means of an online questionnaire and this questionnaire was additionally distributed by email to all students of this university. In order to prevent multiple participations of respondents, a filter question asking respondents whether they have already participated in this experiment during lectures was included. In order to avoid biases, all students are provided with the same information.

At the beginning, the respondents are provided with general information about BlaBlaCar, ride sharing and parties involved in sharing of services. Afterwards, each respondent is randomly introduced to one of the four treatments visualized in Table 1. As stimulus material, we use four coloured mockup websites of a fictitious profile of a service provider who offers a ride on BlaBlaCar. It comprises a headline, a toolbar, a box displaying the start point and the destination of the ride, information about the service provider and an additional box presenting the external trust signals of the service provider. The external trust signals *star ratings from another online platform* and *mutual friends on social networks* are manipulated in two ways each (absent and present), while the rest of the website remains the same. For a better understanding, the words driver and rider were used instead of service provider and service consumer. Thereupon, the respondents, who act as service consumers, are asked to indicate their *trust in the service provider* and their *willingness to pay* for the ride sharing offer followed by the manipulation check. Next, we queried the control variables: *familiarity*, *propensity to trust* and *perceived risk*. Finally, respondents' are asked to provide demographic information including gender, age, educational degree, country of origin, and average money at free disposal.

The experiment uses the free questionnaire tool "Sosci Survey". Before the experiment, we carried out a pre-test to disclose ambiguity and problems (Reynolds and Diamantopoulos, 1998) and to make sure that the manipulations are noticed by the respondents (Stangor, 2015).

4 Methodology

4.1 Analysis of the measurement model

The quality of the measurement model is assessed in terms of internal consistency, convergent validity and discriminant validity to analyse the relationship between the constructs and its items (Hair et al., 2016). Cronbach's α and composite reliability (CR) are used as measures of internal consistency (Cronbach, 1951, Henseler et al., 2009). The Cronbach's α and CR values with respect to the four constructs, namely *trust in service provider*, *familiarity*, *propensity to trust* and *perceived risk* are above the recommended value of .70 (Henseler et al., 2009, Nunnally, 1978). As suggested by Fornell and Larcker (1981), the average variance extracted (AVE) is used as a criterion for convergent validity. The AVE

values of all four constructs are above the recommended value of .50 (Hair et al., 2010). Hence, this criterion is satisfied for the constructs. Finally, discriminant validity is assessed. The results (shown in Table 2) indicate that the assumption of discriminant validity is satisfied as the values of the AVE (depicted in bold font) are larger than the squared bivariate correlation values (depicted in normal font) of the constructs (Hair et al., 2010, Henseler et al., 2009). Consequently, all three quality criteria are fulfilled. A detailed table of the results is provided in Appendix A.

Construct	Trust in service providers	Familiarity	Propensity to trust	Perceived risk
Trust in service providers	**.80**			
Familiarity	.00	**.80**		
Propensity to trust	.06	.18	**.74**	
Perceived risk	.00	.14	.22	**.70**

Table 2. Discriminant validity

4.2 Testing assumptions

Shapiro-Wilk tests report significantly non-normal distributed data for *trust in service providers* of Treatment A ($W = 0.92$, $p = .015$) and Treatment B ($W = 0.92$, $p = .014$), while Treatment C ($W = 0.96$, $p = .289$) and Treatment D ($W = 0.96$, $p = .371$) are normal distributed. As also correlation analysis assumes normal distributed data (Field et al., 2012) we also test *trust in service providers* (throughout all treatments) and *willingness to pay*. The results show that *willingness to pay* ($W = 0.76$, $p < .001$) and *trust in service providers* ($W = 0.97$, $p = .002$) are significantly non-normal distributed.

Levene's test is performed to assess the homogeneity of variances (Field et al., 2012). For *trust in service providers*, the variance is similar for the four treatments, $F(3, 137) = 0.36$, $p = .782$. According to Field et al. (2012), the homogeneity of variances concerning *willingness to pay* is evaluated by using a plot of the residuals against the fitted values to visually check this assumption. The data points are equally dispersed around zero and are randomly arrayed. Thus, homogeneity of variance is tenable in both cases.

4.3 Statistical methods

The underlying data of this experiment violate the assumption of normal distribution for parametric tests (Field et al., 2012). Besides, non-parametric tests are not suitable to analyse factorial designs encompassing interactions (Erceg-Hurn and Mircosevich, 2008). Consequently, as suggested by Wilcox and Keselman (2003), we decided to use robust methods because they increase statistical power when data deviates from normal distribution and offer the opportunity to better control for Type I error. Robust methods "work by replacing traditional regression estimators (i.e., ordinary least squares), measures of location (e.g., the mean) and measures of association (e.g., Pearson's r) with robust alternatives" (Erceg-Hurn and Mirosevich, 2008, 595). Robust location measures are for example, trimmed means and M-estimators. When using trimmed mean, a specific percentage of available data is trimmed. The default of trimming is set to 20% thus, 20% of the data values are trimmed from top and bottom of the data arranged in ascending order. In comparison to that, M-estimators is a procedure that assigns less weight to outliers with extremely high or low values (Wilcox and Keselman, 2012).

We use a robust two-way ANOVA provided by the "t2way" R function of the WRS package developed by Wilcox (2017). Furthermore, the effect size is calculated using the "akp.effect" R function included in the WRS2 package (Mair and Wilcox, 2017). Both methods are based on 20% trimmed means. In addition to that, multiple linear regressions are conducted to examine whether the control variables affect the dependent variable by means of the "rlm" R function as implemented in MASS package which is based on M-estimators (Ripley and Venables, 2017). Following the recommendation of Wilcox (2012), the percentage bend correlation is used as a robust method to assess the bivariate correlation. Therefore, we used the "pbcor" R function developed by Wilcox (2017) on the basis of M-estimators. Moreover, a robust linear regression is carried out with the "rlm" R function (Ripley and Venables, 2017).

5 Results

For the statistical analysis we use the free software R (The R Foundation, 2017) and R Studio. Following the suggestion of Field (2009), a significance level of .05 is used for all statistical tests.

During data cleaning, we removed all cases that failed the manipulation checks and had incorrect specification (e.g., typing errors). The resulting dataset consists of 141 cases. The sample demographics is shown in Table 3.

Gender (N=141)		Age (N=141)		Education (N=141)		Country of origin (N=141)		Average money at free disposal (N=141)	
Female	41%	18-21	30%	A-levels	71%	Austria	47%	<250€	34%
Male	59%	22-25	42%	Apprenticeship	1%	Germany	28%	250-500€	40%
		26-29	21%	Bachelor	14%	Italy	16%	501-750€	13%
		30-34	5%	Master	12%	other	9%	751-1000€	7%
		>34	2%	PhD or higher	1%			>1000€	6%
				other	1%				

Table 3. Sample demographics

There is a significant main effect of a *star rating from another online platform* on *trust in service providers*, $Q = 4.14$, $p = .046$, with a low effect size, $d_t = .352$ (cf., Cohen, 1992). In case a *star rating from another online platform* is absent, the trimmed mean of *trust in service providers* is $M_t = 3.37$, while it is $M_t = 3.81$ in case a *star rating from another online platform* is present. Consequently, H_1 is supported. Moreover, the results show that there is no significant main effect of *mutual friends on social networks* on *trust in service providers*, $Q = 2.01$, $p = .160$, with a low effect size, $d_t = .269$ (cf., Cohen, 1992). The trimmed mean of *trust in service providers* is $M_t = 3.44$ in case *mutual friends on social networks* is absent, whereas the trimmed mean of *trust in service providers* is $M_t = 3.74$ in case *mutual friends on social networks* is present. Consequently, we find no support for H_2.

When considering the interaction effect of a *star rating from another online platform* and *mutual friends on social networks*, our results show no significant interaction effect on *trust in service providers*, $Q = 2.91$, $p = .092$. Despite no significant interaction effect is found, Figure 3 illustrates that if *mutual friends on social networks* is absent, the presence of a *star rating from another online platform* lead to a higher *trust in service providers*, $M_t = 3.84$ compared to its absence, $M_t = 3.03$. However, *trust in service providers* is similar if *star rating from another online platform* is absent, $M_t = 3.70$ and present, $M_t = 3.78$ in case that *mutual friends on social networks* are present.

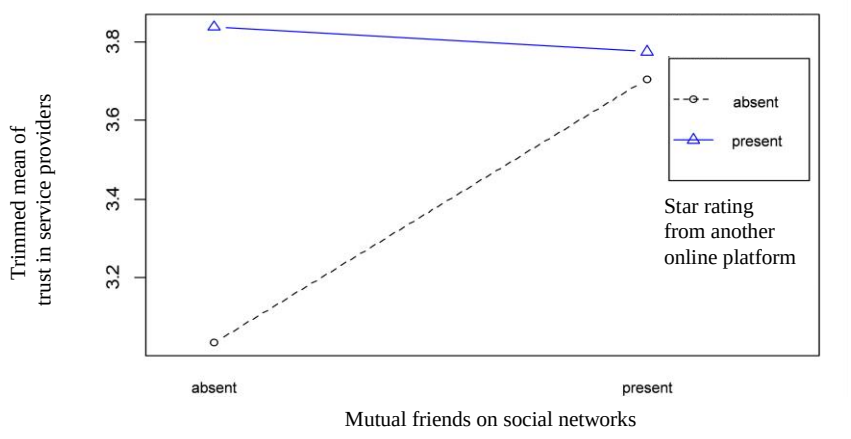


*Figure 3. Interaction effect of star rating from another online platform * mutual friends on social networks on trust in service providers*

Moreover, Table 4 presents the results of four robust multiple linear regression models, which are conducted to examine the impact of the three control variables, namely *familiarity*, *propensity to trust* and *perceived risk* on *trust in service providers*. Model 1 focuses solely on the impact of the three control

variables on *trust in service providers*, whereas in Model 2 the independent variables *star rating from another online platform* is added. Model 3 comprises the three control variable and independent variable *mutual friends on social networks.* Finally, Model 4 comprises the three control variables as well as the two independent variables. The results show, that *familiarity* and *perceived risk* do not make a significant contribution to one of the four models and thus, are no predictors of *trust in service providers*. In opposition to that, *propensity to trust* makes a significant contribution to all four models ($p < .05$) and therefore, is a significant predictor of *trust in service providers*.

		Model 1	Model 2	Model 3	Model 4
Familiarity	Beta Std. Error p-value	-.086 .067 .897	-.086 .068 .894	-.088 .069 .898	-.089 .068 .904
Propensity to trust	Beta Std. Error p-value	.304 .099 .001	.287 .101 .003	.297 .101 .002	.282 .101 .003
Perceived risk	Beta Std. Error p-value	.028 .107 .396	-.009 .110 .532	.061 .112 .291	.023 .112 .418
Star rating from another online platform	Beta Std. Error p-value		.452 .230 .026		.451 .229 .026
Mutual friends on social networks	Beta Std. Error p-value			.291 .236 .110	.263 .234 .132

Table 4. Multiple linear regression models

By using the percentage bend correlation, we find that *trust in service providers* is significantly related to the *willingness to pay of service consumers*, $r_{pb} = .234$, $p = .005$, reflecting a small correlation according to Cohen (1992). To examine the relation more closely we use robust linear regression. As the output did not provide p-values, we use the "pt" R function included in stats package to calculate them based on t-values and degrees of freedom (R Core Team, 2017). *Willingness to pay* is significantly predicted by *trust in service providers* with $\beta_0 = 18.52$, $t(139) = 5.82$, $p < .001$ for the interceptor and $\beta_1 = 3.06$, $t(139) = 3.60$, $p < .001$ for the gradient, meaning that if *trust in service providers* increases by one unit, the *willingness to pay* of service consumers increases by 3.06€. Consequently, H_3 is supported. Moreover, we calculate R^2 to determine how much of the variability in *willingness to pay* is predicted by *trust in service providers*. The correlation between the two variables is $r_{pb} = .234$ and therefore, the value of R_{pb}^2 is $(.234)^2 = .055$ (Field et al., 2012). *Trust in service providers* predicts only 5.5% of the variance in *willingness to pay* and thus, other variables will be accountable for the remaining 94.5% of variance.

6 Discussion

Our findings give evidence that a *star rating from another online platform* is positively influencing the trust of a service consumer towards a service provider. In this sense, a *star rating from another online platform* is a proper external trust signal to influence trust in a service provider in a similar positive way like a star ratings that a service provider collects at the online platform at which she provides her service (cf., Bente et al., 2012). Moreover, our findings reveal no evidence that the presence of *mutual friends on social networks* positively influence trust in service providers. Hence, *mutual friends on social networks* do not effectively serve as an external trust signal that increases *trust in service providers*. This is in contrast to existing literature as Burt (2005) and Granovetter (1992) stated that trust is more likely between individuals who share mutual friends because they can act as a control system. Considering our findings in the light of signaling theory, that states that information asymmetries can be reduced by the use of signals (Spence, 1973) and Bergh et al. (2014) who specified that especially signals that are costly to acquire and difficult to imitate effectively reduce asymmetric information, reveals that a *star rating*

from another online platform is more costly to acquire and more difficult to imitate than *mutual friends on social networks*. In addition, *mutual friends on social networks* seem less costly to acquire and easier to imitate than mutual friends in real life (as considered by Burt, 2005 and Granovetter, 1992). Thus, having *mutual friends on social networks* is less effective in signaling trustworthiness compared to having mutual friends in real life. Moreover, the results show that the control variable *familiarity* is no predictor of *trust in service providers*. This is contrary to our expectations as familiarity is seen to provide guidance for future expectations based on past interactions (Gefen, 2000) and every positive experience made by individuals should increase trust (Sundararajan, 2016). This indicates that either familiarity per se has no influence on *trust in service providers* or previous experiences with ride sharing made by respondents were not positive. Furthermore, with regard to the control variable *perceived ris*k the results reveal that it is no predictor of *trust in service providers*. Therefore, *trust in service providers* is evaluated independently from perceived risk. This is in contradiction to existing literature as Mayer et al. (1995) and Pavlou and Gefen (2004) argue that risk and trust are closely linked to one another. However, the control variable *propensity to trust* is a predictor of *trust in service providers*. Consequently, the higher the *propensity to trust* of service consumers, the higher their *trust in service providers*. This is supported by Mayer et al. (1995) who point out that the *propensity to trust* of an individual is positively related to the probability that she will trust others. Additionally, we found that *trust in service providers* positively predicts *willingness to pay* of service consumers. Thus, service consumers are willing to pay more the more trustworthy the service provider is perceived. This is in line with the findings of previously conducted studies by Ba and Pavlou (2004) on online auction markets and by Strader and Ramaswami (2002) on C2C e-commerce who find evidence that buyers reward sellers perceived as being more trustworthy by paying higher prices. The reason for this is that uncertainties arising from information asymmetries are reduced as service consumers are able to differentiate between untrustworthy and trustworthy service providers based on the provided information and thus, reward service providers in relation to their trustworthiness (Spence, 1973). Our findings also demonstrate that only a very small part (5.5%) of *willingness to pay* is explained by *trust in service providers*. This implies that *trust in service providers* is not the predominant factor that determines service consumers' *willingness to pay* for a ride sharing offer.

6.1 Managerial Implications

Our results show that service providers, who have no rating at the platform (e.g., a service provider who has just joined the platform), can enhance their trustworthiness if they provide a suitable external trust signal from another online platform at their profile. If a service provider displays a *star rating from another online platform*, she is able to increase her trustworthiness by 13.06% which result into a 4.68% increased willingness to pay by the service consumer for the shared service. Thus, a service provider who provides the external trust signal *star rating from another platform* can charge a service consumer a 4.68% higher price for the shared service. What is a positive effect for the trustworthy service provider might also translate into a positive effect for the service sharing platform. Service sharing platforms charge platform fees for granting service providers and service consumers access to its matchmaking service. Since, these platform fees are usually calculated as a percentage rate of the price charged for the shared service, a 4.68% increase in the price for the shared service also lead to a 4.68% increase in respective platform fees. Consequently, it might be worth the effort for a service sharing platform to integrate the external trust signal *star rating from another online platform* as a feature at the profile of the service provider. In contrary, the external trust signal of *mutual friends on social networks* has no significant effect on trust in service providers. In addition, also the combination of the external trust signals *star rating from another online platform* and *mutual friends on social networks* has no significant effect on trust in service providers. Despite its insignificance, our data show evidence that the presence of both external trust signals, in fact, decrease the trustworthiness of a service provider by 1.56% compared to the sole presence of a *star rating from another online platform*. Thus, we find no reason for service sharing platforms to implement *mutual friends on social networks* as an external trust signal. However, if a service sharing platform decides to give service providers the opportunity to present the

number of *mutual friends on social networks* they share with a service consumer, managers of the platform should be aware that presenting it along with *star ratings from another online platform* would not lead to the highest evaluation of *trust in service providers*.

6.2 Limitations and future research

The respondents of this experiment are students where the majority of them are between 18 and 25 years of age. According to Owyang et al. (2014) the main user group of sharing ranges from age 18 to 34. Thus, the sample may not correctly represent the population of participants of the sharing economy. Additionally, the majority of the respondents are from German-speaking countries. However, people from different cultural backgrounds may react different to our experiment. Consequently, it may be worthwhile to replicate the experiment with a more diverse group of respondents in terms of age and cultural background.

Our experiment examines whether star ratings from Airbnb and mutual friends on Facebook between a service provider and a service consumer can serve as external trust signals for a service provider who have no rating at the ride sharing platform BlaBlaCar. Thus, the operationalized experimental setting is representing a niche that is limited to the sharing economy. In order to confirm the results and to derive generalizable findings, we suggest replicating the experiment in a wider context. For example, in additional sharing economy sectors or in an e-commerce setting. Replicating the experiment will also solve the limitation of this experiment concerning the relatively small sample size (N = 141).

In this study, we use well-known companies as case example (BlaBlaCar) and to illustrate manipulations of the independent variables (Airbnb and Facebook). Therefore, previously gained experience with these companies may influence the results. We also recommend evaluating the manipulation of the external trust signal *mutual friends on social networks* to identify whether it has in fact no influence on *trust in service providers*. In addition, our results reveal that only 5.5% of the variance in *willingness to pay* is caused by *trust in service providers*. Further research may investigate other factors influencing *willingness to pay*.

7 Conclusion

To foster trust between service providers and service consumers, service sharing platforms typically provide rating systems where service consumers can rate service providers. This is typically done by star ratings that signal the trustworthiness of a service provider. However, this requires that the service provider has completed at least one transaction for which a service consumer has provided a star rating. Subsequently, service providers who have just joined the service sharing platform cannot signal their trustworthiness to a service consumer by the means of a star rating. Based on signaling theory, we examined if a star rating from another online platform and mutual friends between a service provider and a service consumer on social networks can serve as alternative external trust signals for service providers who have no rating at the service sharing platform in question. Using a laboratory experiment, we found that the presence of the external trust signal star rating from another online platform positively influences service consumers' trust in service providers. In contrast, the presence of the external trust signal mutual friends on social networks and the presence of a combination of both external trust signals do not significantly influence service consumers' trust in service providers. Furthermore, we found evidence that the combination slightly decreases trust in service providers compared to the sole presence of a star rating from another online platform. We further found that trust in service providers is positively related to the willingness to pay of service consumers. Consequently, service sharing platforms have to be aware that not every external trust signal from another online platform increases trust in service providers and ultimately leads to a higher willingness to pay of service consumers.

Appendix A: *Operationalization of constructs*

Constructs	Mean	SD	α	CR[a]	AVE[b]
Trust in service consumers (Pavlou and Gefen, 2004)			.92	.94	.80
(1) The driver of this ride is in general dependable.	3.62	1.32			.89
(2) The driver of this ride is in general reliable.	3.53	1.40			.92
(3) The driver of this ride is in general honest.	3.46	1.37			.90
(4) The driver of this ride is in general trustworthy.	3.50	1.54			.87
Willingness to pay (Scholz et al., 2015, Wang et al., 2007)					
(1) Please indicate a price level A at or below which you would definitely participate in this ride, i.e. 100% participation probability.	20.63	15.62			
(2) Please indicate a price level B at which you are 0% likely to participate in this ride.	48.75	37.77			
(3) Please indicate a price level C at which you would be indifferent between participating and not participating in this ride. (At this price, you are 50% likely to participate in the ride.).	32.62	21.04			
Familiarity (Möhlmann, 2015)			.91	.92	.80
(1) I am familiar with the lending process of ride sharing.	4.12	1.95			.88
(2) I have experience with ride sharing.	3.55	2.26			.87
(3) Overall, I am familiar with ride sharing.	4.24	1.93			.93
Propensity to trust (Cheung and Lee, 2001)			.90	.90	.74
(1) It is easy for me to trust a person.	3.76	1.42			.88
(2) My tendency to trust a person is high.	3.74	1.53			.88
(3) I tend to trust a person, even though I have little knowledge of it.	3.43	1.51			.82
Perceived risk (Pavlou and Gefen 2004)			.85	.88	.70
(1) There is a considerable risk involved in participating in ride sharing.	4.68	1.36			.89
(2) There is a high potential for loss involved in participating in ride sharing.	4.05	1.40			.77
(3) My decision to participate in ride sharing is risky.	3.77	1.40			.85

[a] $CR = \frac{(\sum\lambda)^2}{(\sum\lambda)^2+(\sum\varepsilon)}$ [b] $AVE\ (factor\ loading) = \frac{\sum\lambda^2}{n}$

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