

Picture: Botsman, R. and Rogers, R. (2011). What's mine is yours. How collaborative consumption is changing the way we live. HarperCollinsPublishers: London.

Samenvatting

Een recente trend op het gebied van duurzame consumptie is die van online peer-to-peer product-dienst systemen. Dit zijn online sociale netwerken die de toegang tot niet gebruikte private goederen faciliteren. Door middel van een dergelijk netwerk kunnen deelnemers spullen aan elkaar huren en verhuren en zo toegang krijgen tot dingen die ze nodig hebben, alleen voor de tijd dat ze het nodig hebben. Inherent aan deze vorm van consumeren is de duurzaamheid ervan omdat het de productie van nieuwe goederen voorkomt. Vertrouwen die deelnemers hebben in het netwerk en in andere deelnemers is van groot belang voor het succes van deze start-ups. Uit onderzoek naar online consumeren in het algemeen blijkt dat er institutionele mechanismen zijn die kunnen worden opgenomen op de website die het vertrouwen van consumenten kan verhogen.

Doelstelling. De eerste doelstelling van dit onderzoek is te kijken welke institutionele mechanisme invloed hebben op de bereidheid van Nederlandse consumenten om deel te nemen als huurder of verhuurder op een online peer-to-peer netwerk. Tien mechanismen zijn geselecteerd op basis van het online vertrouwen model van McKnight et al. (2002). Deze zijn: identificatie verificatie, privacy garantie, controle systeem voor wangedrag, betalingsbeveiliging, garantie systeem, beoordelingsmechanisme, informatie voorziening, iemand aanbevelen, privé groepen maken en communicatie mogelijkheden tussen huurders en verhuurders. De tweede doelstelling is erop gericht om verschillen tussen consumenten te ontdekken. Hebben bepaalde groepen mensen in meer of mindere mate behoefte aan institutionele mechanismen? Ten derde wordt ook ingegaan op bepaalde voorkeuren. Zijn consumenten eerder bereid als huurder of als verhuurder deel te nemen? En welke elementen zien ze graag op de website als het gaat om de verschillende institutionele mechanismen? Tot slot is het doel van dit onderzoek ook om een praktische aanbeveling te kunnen geven aan alle start-ups die zich richten op deze online product-dienst systemen.

Methode. Met behulp van twee vragenlijsten is een experimentele setting gecreëerd. De invloed van de tien institutionele mechanismen is getest door de ene groep respondenten (n=79) een sterke versie van een mechanisme, en de andere groep (n=89) een zwakke versie van het mechanisme voor te leggen. Na een algemene beschrijving van de website en introductie van de fictionele verhuurder Tim en fictionele huurder Martijn werden tien hoge of lage situaties voorgesteld. In elke situatie werd een kenmerk van de website omschreven en werd vervolgens gevraagd naar de bereidheid van respondenten om een beamer te huren van Tim of hun eigen beamer te verhuren aan Martijn. Daarnaast zijn er ook aan aantal controle variabelen gemeten zoals het algemeen niveau van vertrouwen, ervaring met online aankopen doen en een aantal demografische variabelen. Met behulp van statistische analyses in SPSS zijn de resultaten geanalyseerd.

Resultaten. De resultaten laten zien dat er voor een aantal mechanismen een significant verschil was in de bereidheid om te huren of verhuren tussen de hoge en lage variant van de institutionele

mechanismen. Deze zijn voor het huren van de beamer: een verificatie check van deelnemers, hoge informatie voorziening over de deelnemers, een mogelijkheid om de items te verzekeren en de mogelijkheid om een privé groep aan te maken zodat met bekende kan worden gehuurd/verhuurd.

Institutionele mechanismen die significant zijn voor het verhuren van de beamer zijn: de mogelijkheid om na een tevreden huurovereenkomst deze persoon aan te bevelen aan anderen, de mogelijkheid items te verzekeren, de mogelijkheid een borgsom te vragen voor het verhuren van persoonlijke items en ook de mogelijkheid om een privé groep aan te maken zodat met bekende kan worden gehuurd/verhuurd. Verder bleek men het belangrijk te vinden om deelnemers die zich niet gedragen openlijk te kunnen 'aangeven' op de website. Een tweede analyse is uitgevoerd naar mogelijke verschillen tussen groepen mensen maar hier bleek geen grote aanwijzing voor te zijn. Een kleine aanwijzing bestaat voor een verschil in leeftijd. Oudere deelnemers zouden wellicht meer institutionele mechanismen nodig hebben dan jongere deelnemers. Tot slot waren deelnemers meer bereid om als huurder van andermans items dan als verhuurder van eigen items deel te nemen.

Conclusie en discussie. Er moeten een aantal kanttekeningen worden geplaatst bij de validiteit van de resultaten. Er is direct gevraagd naar de 'hypothetische' bereidheid van mensen om te huren of verhuren in verschillende situaties. Het kan zijn dat de resultaten daarom een vertekent beeld geven over de daadwerkelijke bereidheid om deel te nemen. Verder is er een beperkte generaliseerbaarheid naar de gehele Nederlandse bevolking omdat de steekproef voornamelijk uit vrouwen en studenten bestond. De resultaten moeten daarom als een eerste indicatie voor dit soort websites worden gezien. Een praktische aanbeveling kan zijn dat de huidige en toekomstige start-ups de resultaten van dit onderzoek in acht nemen en overwegen om de relevante institutionele mechanismen te implementeren op de website. Aanbevelingen voor verder onderzoek zijn gericht op gelijksoortig onderzoek op andere online peer-to-peer netwerken om te zien of er gelijksoortige resultaten uit komen. Verder kan er gekeken worden naar andere institutionele mechanisme die mogelijk van belang zijn om het vertrouwen te verhogen. Interessant voor verder onderzoek is ook de mogelijke impact van deze nieuwe vorm van consumeren. Wat is de impact op het design van nieuwe producten, op de economie, de sociale impact en de impact op regelgeving? Het nieuwe consumeren, door uit te gaan van beschikbaarheid in plaats van eigendom, is nog een nauwelijks onderzocht domein. Dit onderzoek heeft geprobeerd een eerste bijdragen te leveren en laat zien dat bepaalde institutionele mechanismen wellicht een invloed hebben op de bereidheid van de Nederlandse consument om de uitdaging met het nieuwe consumeren aan te gaan.

Kernwoorden: peer-to-peer product-dienst systemen, institutionele mechanismen, online vertrouwen, duurzaam consumeren.

Abstract

A recent trend in sustainable consumption is that of online peer-to-peer product-service systems. These are online social networks that facilitate the access to underutilized private goods. Through this network, participants can rent and rent out personal items to others and get access to things they need, just for the time they need them. This has inherent sustainable advantages because it prevents the production of new products. A factor that is important for the success of these start-ups, is the trust that participants have in the network and other participants. From general e-commerce research, it appears that institutional mechanisms can reduce the risk involved in an online transaction and enhances the trust of consumers.

Objective. The first objective of this research is to see which institutional mechanisms have an influence on the willingness of Dutch consumers to rent and rent out goods. Ten mechanisms are included based on the online trust model of McKnight et al. (2002). These are: identity verification, privacy assurance, monitoring, payment security, guarantee security, a review system, information disclosure, vouching for trustworthy participants, the possibility to form private groups and the possibility to communicate. The second objective aims to find differences between consumers. Do certain groups of people need such institutional mechanism more than others? Thirdly, several preferences are evaluated. Are consumers more willing to engage in the network as a renter or a lender? Additionally, opinions are gathered regarding which items of these institutional mechanisms are preferred. A final objective of this research is to give practical recommendations to start-ups that focus on these online peer-to-peer product-service systems.

Method. By means of two online questionnaires an experimental setting is created. The influence of the ten institutional mechanisms is tested by providing one group of respondents the high scenario (n=79) and the other group of respondents the low scenario (n=89). After a general description of the website and the introduction of a fictional lender Tim and fictional renter Martijn, the ten, high or low, scenarios were given. After each of the scenarios, the willingness to rent a projector from Tim and the willingness to rent out their projector to Martijn was measured. Additionally, several control variables were measured such as the disposition to trust, demographic factors and experience with e-commerce. The data is analyzed with statistical analyses in SPSS.

Results. The results show that for a few institutional mechanisms, the willingness scores significantly differed between the high and low scenario. In the case of renting the projector these were: an identity verification check of the participants, high information disclosure about the participants, an insurance option and the option to make a private group to share items with friends. Institutional mechanisms that were significant for renting out the projector were: the possibility to vouch for 'good' participants, an insurance option, the possibility to ask for a deposit and also the option to make a private group to share items with friends. Additionally, respondents valued the possibility to publicly report misbehaving participants. In analyzing the results further, there was no major indication that the influence of these

mechanisms was different for different groups of people. There was a small indication for an interaction with age. This could imply that older participants might need more institutional mechanisms than younger participants. Finally, respondents were more willing to participate as a renter of items from someone else than as a lender of their own personal items.

Conclusion en discussion. There are several limitations that need to be considered when interpreting the results of this research. The willingness to participate was directly measured. However, such a direct measure could provide biased results since people are not always able to really say what their willingness is in hypothetical situations. Furthermore, the sample consisted mostly of females and students which makes it difficult to generalize the results to the average Dutch consumer. The results should therefore be seen as a first indication about institutional mechanisms and trust on these online peer-to-peer sharing networks. Practical recommendations that can be given from the results to current and future start-ups are to take the relevant institutional mechanisms into consideration and further investigate the possible impact of them in the particular context. Recommendations for further research are directed at conducting the same research but then at different online peer-to-peer networks to see if the results are robust in different sharing contexts. Furthermore, other institutional mechanisms might play a role in decreasing risk and uncertainty and increasing trust. In the broader field of online sharing networks, it would be interesting to investigate the impact of this new way of consuming. What is the impact on the design of new products, on the economy, does it have a social impact or political and legal impact? This new way of consuming, in which access exist over ownership, is still a limited researched domain. This research tried to contribute a little by showing that certain institutional mechanisms might influence the willingness of Dutch consumers to take the challenge of this new way of consuming.

Keywords. peer-to-peer product-service systems, institutional mechanisms, online trust, sustainable consumption.

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Abbreviations

ANOVA	Analysis of variance
B2B	Business-to-business
B2C	Business-to-consumer
C2C	Consumer-to-consumer
MANOVA	Multivariate analysis of variance
P2P	Peer-to-peer
PSS	Product-service system

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“One of the 10 ideas that will change the world”

TIME

1. Introduction

1.1 Background and problem description

One of the big challenges of sustainable development is the production and consumption pattern of the Western society (World commission on environment and development, 1987). The rate at which products are produced and consumed causes significant negative environmental impacts (European Commission, 2003). These negative impacts occur through the whole lifecycle of products, ranging from the resource use at the beginning of the production phase to the impact of waste at the disposal phase. Since 1980, we have consumed one-third of the planet's resources and disposed them in oceans, landfills or incinerators (Botsman and Rogers, 2011). In the United States, 99 percent of the products that are bought are disposed as waste within six months (Leonard, 2010). Over the years, ways to reduce these negative environmental impacts at the production side have been developed such as technological innovations for cleaner production processes, eco-design, the cradle-to-cradle principle and improved technologies for waste processing (Goedkoop et al., 1999). Although substantial improvements are required and can be made at the design and production stage of products, the most fundamental issues exist in the unsustainable hyper-consumption around which the economy is designed today. Victor Lebow (1955) states: "our enormously productive economy demands that we make consumption our way of life, that we convert the buying and use of goods into rituals, that we seek spiritual satisfaction, our ego satisfaction in consumption".

Interestingly, research has indicated that the level of human happiness, or quality of life, is not related to material consumption above a certain threshold (Layard, 2003; Tukker et al., 2008). So we are depleting natural resources and are creating waste, not to be happy, but to keep the economy running. This discrepancy has led to the idea of de-coupling consumption from material use by means of dematerialization of consumption (Jackson, 2009; Mont, 2001). A recent trend within the area of sustainable consumption which is linked to this notion of dematerialization of consumption is that of collaborative consumption (SPREAD, 2011).

Background of collaborative consumption

In their book, Botsman and Rogers (2011) explain the concept of collaborative consumption as making use of peer-to-peer community based networks to share, rent, sell or swap underutilized goods or assets. Consumption today is based on ownership of goods. However, it happens to be that 80 percent of the things that are owned, are used less than once a month (ibid, p.83). Therefore, it makes sense to start looking for alternative and innovative ways of consumption. The perspective of collaborative consumption takes the idling or underutilized capacity of goods as a departure point and facilitates the use of this capacity.

Intrinsic in these systems is the notion of sustainability since environmental benefits are provided by several factors. First, there is an increase in use efficiency since the use per product unit is higher (Baines et al., 2007). Consequently, less new products will be bought which saves resources and reduces waste. Second, it will encourage the development of better products that will be designed to share. Furthermore, it is claimed that collaborative consumption changes consumer behavior and slowly will cause a transition from ownership of goods to access to service, utility and experiences and therefore, dematerialize consumption. Progress in sustainable production and consumption can only be achieved when both the consumer and the producer are willing to change their behavior (Botsman and Rogers, 2011). Unlike other attempts to change consumer behavior such as green labels, taxes and subsidies, collaborative consumption has the benefit that it is in the user's self-interest without personal sacrifice (ibid). Kestrin Pantera states: "with the limited resources we have on the earth, the next step for conservation is instead of just buying stuff, is sharing stuff" (ibid, p.106).

There are three existing forms of collaborative consumption. One is a form of collaborative lifestyles in which less tangible assets such as time, skills, space, money and food is shared. An example is of this is Airbnb¹, which is also one of the biggest collaborative consumption networks at the moment. On this website, homeowners can rent out their spare rooms and travelers can book them instead of hotel rooms. The second form of collaborative consumption is a redistribution market in which goods that are no longer needed are swapped between people. An example of this is Valet.Swap² in which kids' clothes and toys can be swapped. The third form of collaborative consumption is a product-service system of which an example is Neighborgoods³. On this website, people can rent products from and to their neighbors. This thesis will only focus on this third form of collaborative consumption, the product-service system (PSS).

Product-service systems

Several definitions of a product-service system exist in the literature. A widely accepted definition by Baines et al. (2007) states that a product-service system is "an integrated product and service offering that delivers value in use. A product-service system offers the opportunity to decouple economic success from material consumption and hence reduce the environmental impact of economic activity" (p.3). A more recent definition by Wang et al. (2011) states that a product-service system "is a system of products, services, networks of players and supporting infrastructure that continuously strives to be competitive, satisfy customer needs and have a lower environmental impact than traditional business models (p.6865)". Essential in this concept is the fact that not a product but the functionality, utility and performance is sold to customers (Geum and Park, 2011, Matzen, Tan and Andreasen, 2005). This is sensible because, in many cases, it is not the product itself that is wanted, but just the experience or service it provides.

¹ Airbnb.com is a website to share private rooms and houses

² Valet.Swap.com is a website to swap kids' clothes and toys

³ Neighborgoods.net is a website to share goods

Product-service systems have existed for many years in business-to-business (B2B) and business-to-consumer (B2C) formats. However, the access to the internet and social networks have created the opportunity for a worldwide online marketplace in which consumers can also interact with each other on a big scale (Botsman and Rogers, 2011). Over the years, numerous online peer-to-peer (P2P) start-ups have emerged. A peer-to-peer network has been defined by Androutsellis-Theotokis and Spinellis (2004) as: "... distributed systems consisting of interconnected nodes able to self organize into network topologies with the purpose of sharing resources ..., ... capable of adapting to failures and accommodating transient populations of nodes while maintaining acceptable connectivity and performance, without requiring the intermediation or support of a global centralized server or authority" (p 337). In other words, peer-to-peer networks are networks where equal individuals are interacting. In these P2P product-service system networks, private individuals can rent or rent out their underutilized assets to other private individuals who are in need of them. Chapter 2.1 will go further into this. The principle behind all these online networks is that they provide an efficient way for people to gain access instead of ownership to the things they need, just for the time they need them.

Knowledge gap and problem description

There are many P2P collaborative consumption start-ups worldwide at the moment. However, Leonard and Jones (2010) state in their extensive literature review on e-commerce that just a few articles have focused on the P2P context. Their review reveals no articles focusing specifically on collaborative consumption networks. Therefore, more knowledge is needed on what factors influence the functioning of these new e-commerce systems and how they can be managed in the most optimal way. According to Botsman and Rogers (2011) and the recent study of Campbel-Mithun (2012) one of the important elements in a P2P product-service system is the trust that people have in the network and in unknown peers to which they will rent out their personal underutilized goods. According to a model of McKnight, Choudhury and Kacmar (2002), one of the dimensions of online trust is institution-based trust. This can be defined as a buyers perception that effective institutional mechanisms are in place to facilitate the transaction successfully. This dimension of trust appears to have an influence on the willingness of people to engage in online transactions, in B2B and B2C contexts (Pavlou, 2002). Since institution-based trust in an online network is something that can be facilitated by effective institutional mechanisms (Pavlou and Gefen, 2004), it would be relevant to know which indicators of institution-based trust influence the willingness to engage in online transactions in a P2P context. Therefore, this will be the main objective of this research.

1.2 Research objective

The objective of this research is to yield *evaluative*, *explanatory* and *prescriptive* knowledge on the effect that institution-based trust has on the success of online peer-to-peer product-service systems

- (1) The first aim is to *evaluate* which institutional mechanisms influence the willingness to engage in online peer-to-peer product-service systems.

- (2) The second aim is to *explain* this influence of institutional mechanisms on the willingness to engage in online peer-to-peer product-service systems.
- (3) The third aim is to *evaluate* if there is a difference in the willingness to engage in an online peer-to-peer product-service system as a renter or as a lender.
- (4) The fourth aim is to provide *prescriptive* knowledge by making management recommendations for institutional mechanisms which improve the level of institution-based trust in online peer-to-peer product-service systems.

1.3 Scientific relevance and connection to the theoretical debate

The innovative aspect of this research is the focus on P2P online sharing-places rather than on B2B or B2C online marketplaces. One key aspect of the successful functioning of these businesses is whether there is trust in the online community itself and if there is trust between the participants in the online community. It is expected that the results of this study will provide an understanding of the factors that influence trust in online P2P product-service systems. Therefore, it makes a valuable contribution to online trust research as well as product-service system research and emerging collaborative consumption research. In addition, these insights could be beneficial to the growing number of collaborative consumption start-ups to facilitate and enhance the trust of participants and thus increase their willingness to participate.

1.4 Central research question and sub-questions

The central research question that will be answered is:

What is the effect of institutional mechanisms on the success of online peer-to-peer product-service systems and how can this influence be explained?

The first sub-question is related to the evaluative part of the thesis.

- (1) What is the effect of institutional mechanisms on the willingness to engage in online peer-to-peer product-service systems and which institutional mechanisms are valued most?

The second sub-question aims to explain differences in the influence of institutional mechanisms on the willingness to engage.

- (2) Which factors explain why some people need more institutional mechanisms than others?

The third sub-question aims to evaluate the differences between renting and lending.

- (3) What is the difference in the willingness to engage in online peer-to-peer product-service systems between a renter and a lender?

The fourth sub-question is related to the managerial recommendations that will be made based on the results of the first two sub-questions.

- (4) Which institutional conditions do online peer-to-peer product-service systems have to fulfill to enhance the level of institution-based trust of their participants?

1.5 Structure of the thesis

In chapter 2, the theoretical background of institutional literature and online trust literature will be provided. These theories will be the basis for a conceptual model and the hypotheses, presented in chapter 3 that indicate which institutional mechanisms and tools might have an influence on the willingness of people to engage in online P2P product-service systems. In chapter 4, the methodology will be outlined. The results and the statistical analysis will be presented in chapter 5. A conclusion will be given in chapter 6. Finally, the results will be discussed in chapter 7 and practical recommendations as well as recommendations for further research will be given.

"Enabling members of Collaborative Consumption marketplaces to build trust between their peers and make safe, informed decisions is the most important thing we can achieve to propel this movement further forward."

John Zimmer, Founder and Chief
Operations Officer, Zimride

2. Theoretical background

This chapter provides an overview of the literature on P2P product-service systems, online trust literature and institution-based trust literature that forms the theoretical basis of this thesis.

2.1 P2P Product-service systems

The before mentioned definitions of product-service systems emphasize the philosophy of access instead of ownership. One way to facilitate access over ownership of goods for consumers is through the use of online P2P platforms. Many startup companies have launched such innovative platforms directed at different customers or purposes. Table 1 provides a few examples of these start-ups. A more extensive, but not exhaustive, list of start-ups can be found in Appendix A. These platforms facilitate sharing and renting of personal belongings between private individuals. A distinction can be made between platforms that focus on the renting of general goods and platforms that facilitate renting of transport such as cars or bikes. A prominent example of a business that facilitates the renting of general goods is NeighborGoods. They are active in several countries and provide the opportunity to rent a wide range of items. Generally, these platforms work in a way that people post items they have and wait till someone who is looking for these items contacts them. Peerby⁴ is a Dutch start-up that also facilitates renting of general goods between neighbors. However, they turn the process around and participants send out a request to other users when they are looking for an item to rent. In case of transport product-service systems, there is a difference between P2P car sharing platforms in which people rent out their cars to people in the neighborhood and P2P ride sharing platforms through which carpooling is facilitated.

The platforms can in theory, be used to rent anything as long as someone is offering it and someone else is looking for it. However, Benkler (2004, p.10) describes the attributes of goods that are likely to be successfully shared through P2P product–service systems. He states that shareable goods are a subclass of club goods or common pool resources. More specifically, they are individually owned goods, but with an over-capacity and are available for sharing. Goods should be small enough for people to own them individually for their own use so that there are enough of these goods spread out in society. If many people own such goods, a large amount of excess capacity in the hands of individuals will exist throughout society. Shareable goods should also be lumpy. A lumpy resource is one that delivers utility in discrete packages, rather than continuously” (ibid, p.285). Utility in discrete packages means that it should be possible to physically hand a product over to someone else.

⁴ Peerby.nl is a sharing website for general goods

Table 1.

Selective overview of P2P product-service system start-ups

P2P product-service system	Country of Practice	P2P product-service system	Country of Practice
General goods			
TheShareHood	International	Neighborrow	UK
Neighborgoods	International (also NL)	OpenShed	Australia
Zilok	US, EU, NL, BE	Peerby	NL
P2P Car sharing			
RelayRides	Massachusetts San Francisco	DriveMyCarRentals	Australia
SnappCar	NL	WhipCar	UK
P2P Ride sharing			
Toogethr	NL	LiftShare	UK
ZimRide	San Francisco LA and Tahoe	Mitfahrgelegenheit	Germany

How do these start-ups work? Collaborative consumption start-ups use different business models (Botsman, 2012). The most common business model is a percentage service fee on transactions. This service fee is based on the matching of buyers and sellers or borrowers and lenders. On Airbnb bookings, fees of 6 or 12 percent of the total bill are charged. On Whipcar⁵, a platform where people can rent out their car to neighbors, a service fee of 15 percent of the rental price is charged for car owners. This is an incredibly capital-efficient business model because the business has no inventory or fixed costs. The role of the start-up is to facilitate the process and provide the marketplace (Cocotas, 2012). Another business model is a freemium. In this case, a business offers basic services or use of the platform for free. Users can then 'trade-up' and pay a fee for additional benefits and exclusive features. Tiered subscription plans, which differ in price, can be offered by the platform. These plans can be based on the frequency of use or number of goods that can be rented. Dimdom⁶, a French platform that rents out toys offers different subscription plans varying from five toys a month (€39,95) to five toys every three months (€29,95). A white label business model sells a piece of software that the buyer can customize and use. An example of this is ZimRide⁷ which sells rideshare network software to universities and large companies. The software can then be customized and serve as a private platform. A flat membership is a business model in which a flat monthly or annual membership fee is charged regardless of usages. A combination is also possible in which a one-time

⁵ Whipcar.co.uk is a website where people can rent out their car.

⁶ Dimdom.fr is a website where people can rent toys for kids.

⁷ Zimride.com offers a carpooling platform for individuals as well as carpooling software to organizations.

or annual membership fee is charged with additional fees based on usage. An example is the OV-bike plan⁸ in Holland for which an annual flat membership and additional usage fees are charged.

Research on P2P product-service systems is hardly performed so far. A recent study by a marketing firm (Campbell-Mithun, 2012) reveals who are willing to engage in sharing and what the drivers and barriers are to engage in P2P sharing. A large majority of Generation X (people born between 1961 and 1981) and Millennials (people born after 1981) found the concept of sharing appealing (62 percent of both groups). However, the generation of baby boomers was less attracted to the idea of sharing (53 percent). Participants mentioned the following rational benefits related to sharing: saving money, it is good for the environment, provides flexibility and is practical. Furthermore, several emotional benefits related to sharing where: helping yourself and others, gives a sense of belonging to a community, makes me feel smart and more responsible and makes me feel part of a larger cultural movement. Barriers to sharing are mostly related to trust. There is fear that an item gets lost or stolen (30 percent). There is also a barrier in trusting the network (23 percent) and privacy concerns (14 percent). Furthermore, 12 percent of the barriers mentioned were related to the concern that sharing would not be worth the effort and another 12 percent to the fear that goods are of poor quality. Literature on B2B and B2C product-service systems provide some more insights in drivers and barriers in that context. A barrier for customers might be that ownerless consumption has less symbolic value and is, therefore, not appealing (Lebel and Lorek, 2008). Another valuable element of a product-service system is the fact that it facilitates a form of micro-entrepreneurship. These networks enable the consumer to use them as a business. Co-founder of GetAround⁹, Jessica Scorpio states that the average car owner makes 350 dollars a month by renting out their car to people in the neighborhood (Cocotas, 2012). According to the founder of Airbnb, Brian Chesky, an average Airbnb host in New York makes 21.000 dollar a year with renting out his spare rooms (ibid).

Concluding, online product-service system start-ups have emerged in different fields and with different business models. However, several barriers exist for consumers to use these platforms which are related to the risks that are involved. The following section will give insights in online trust literature on the influence of online trust and how trust might be facilitated.

2.2 Online trust

Literature provides no explicit definition of trust. This because trust is approached from a variety of disciplines such as sociology, economics, psychology, and philosophy and all have their own way of defining trust (Wu, Wang and Huang, 2011). Agreed upon is that trust is highly subjective and consist of multiple dimensions. A widely recognized definition of trust is that of Mayer, Davis and Schoorman (1995). Trust is “the willingness of a party to be vulnerable to the actions of another party based on the

⁸ Ov-fiets.nl a website to rent a bike a train stations.

⁹ GetAround.com is a website where people can rent out there cars or rent one from someone in the neighborhood.

expectation that the other will perform a particular action important to the trustor, irrespective of the ability to monitor or control that other party” (p.712). Key in this is that perceptions of risk and insecurity are overcome by a person’s level of trust (McKnight et al., 2002). Therefore, trust can be built by decreasing perceptions of risk and uncertainty.

Cheung and Lee (2006) give an overview of the three theoretical perspectives of trust. The social psychological perspective focuses on transactions between individuals. Within this perspective, Mayer et al. (1995) state that three attributes of a person, competence, benevolence and integrity, build feelings of trust in that person. The perspective of personality theorists focuses on trust as a belief, expectancy or feeling that is rooted in someone’s personality. This disposition to trust is the general propensity that a person is willing to depend on others. The third perspective is that of sociologists who see trust as an institutional concept. They focus on how institutions and incentives can reduce anxiety and uncertainty that is related to transactions among strangers (Zucker, 1986).

Furthermore, McKnight et al. (2002) provide two other perspectives on trust. There is the cognitive-based trust literature which assumes that people form a sense of trust early in a first experience. This is called initial trust. Initial trust refers to trust in an unfamiliar trustee, which indicates that no prior relationship is present to gather credible and meaningful information about each other. Another approach is highlighted in knowledge-based trust literature which assumes that trust develops gradually through experience and social exchange.

It is widely recognized that trust is vital in e-commerce (Cheung and Lee, 2006; Pavlou, 2002). Three elements of online communities make that trust is so important. First, the impersonal nature of the online marketplace is a key issue. Second, use of communication technology instead of face-to-face communication might cause problems. Third, using an open technological infrastructure for financial transactions gives uncertainty (Pavlou, 2002). Trust is essential in economic exchanges. From an economic perspective, trust is an expectation that people will not be exploited by others. This exists when there are no strong incentives for people to behave opportunistically (James, 2002). However, Tullberg (2008) argues that, in most economic exchanges, not everything can be verified before a transaction. This makes it impossible to eliminate all the risks and, therefore, some degree of trust is necessary in any economic transaction.

Like regular B2C online e-commerce, also online P2P product-service systems require a high level of trust because participants do not have sufficient information to judge the trustworthiness of others compared to traditional face to face transactions (Wu et al., 2011). While normally online transactions occur between a buyer and a seller, in these cases, the transaction occurs between a renter and a lender. The renter is the person who rents the good from the lender. The lender is the person who rents out his personal belongings. Two kinds of trust issues arise in such online marketplaces (Zacharia and Maes, 2010). The first is that due to lack of physical access to the product, the lender can easily misrepresent the condition or quality of the product. Secondly, renter and lender might

decide not to abide by the agreement reached. This can mean, not sending the product after the money is transferred or the other way around, or not being careful with a product that is rented.

As stated above, trust consists of multiple dimensions and is difficult to define. Based on the various disciplines within the trust literature such as described above, McKnight et al. (2002) provide a multidimensional online trust model that they empirically validated (Figure 1). According to this model, there are four dimensions of online trust. The first is the *disposition to trust*. This is based on the personality literature of trust and is the extent to which a person displays a general tendency to depend on others, across various situations and persons. It is assumed that people have a certain belief, expectancy and feeling towards others and situations, which is rooted in their personality. The second is *institution-based trust*. This can be defined as a buyers perception that effective institutional mechanisms are in place to facilitate the transaction successfully. This form of trust is based on factors in the external environment in which the transaction takes place. The third dimension is the *trusting belief*. This is the extent to which the truster is confident that the trustee has attributes that are beneficial to the truster. In this case, it is the belief that the renter or lender has attributes (competence, benevolence and integrity) that are beneficial. The fourth dimension is the *trusting intention* when the truster is securely willing to depend on the trustee. In this case, the trusting intention can be seen as the willingness to rent or rent out personal belongings to other participants through an online platform. According to this model, the disposition to trust (1) influences the level of institution-based trust, trusting belief and trusting intentions. In turn, the level of institution-based trust (2) influences the trusting beliefs about a seller and the trusting intentions. Lastly, the trusting beliefs about a seller (3) influence the trusting intentions (4). This model is based on the Theory of Reasoned Action. This theory is often used in technology-acceptance literature and assumes that intentions can be measured as a proxy of actual behavior (Fishbein and Ajzen, 1975).

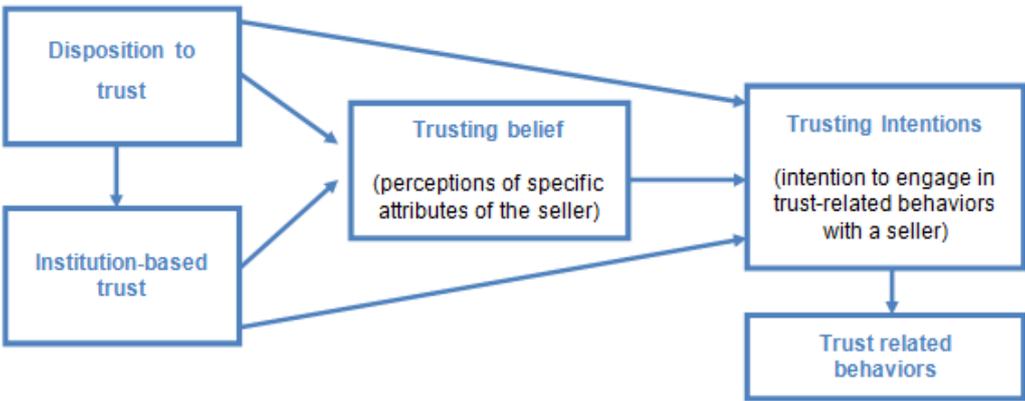


Figure 1. Online trust model (McKnight et al., 2002)

Furthermore, the first two dimensions of trust consist of several sub-constructs (McKnight et al., 2002).

Disposition to trust

The dimension *disposition to trust* consist of (a) the general faith in humanity and (b) the trusting stance of participants. The general faith in humanity is the general perception that participants have of the competence, benevolence and integrity of other people. The trusting stance is the position that people take towards others. A positive trusting stance, assumes that better outcomes result from dealing with people as though they are reliable.

Institution-based trust

The dimension *institution-based trust* consists of (a) structural assurance and (b) situational normality. Structural assurance is the extent to which certain rules and mechanisms provide a perception of assurance. Situational normality is also based on the perception of the benevolence, competence and integrity of the external context. Section 2.3 will provide further theoretical background on the concept of institution-based trust.

Trusting belief and trusting intention

The dimensions of *trusting belief* and *trusting intention* are single concepts. Table 2 gives an overview of the formal definitions of the online trust concepts of the model of McKnight et al. (2002).

Table 2.

Formal definitions of trust concepts (from McKnight et al., 2002)

Construct	Definition
1. Disposition to trust	A general propensity to trust others. The extent to which a person displays a tendency to be willing to depend on others across a broad spectrum of situations and persons.
1a. Faith in humanity	One assumes others are usually upright, well meaning and dependable. Faith in general others' competence, benevolence and integrity.
1b. Trusting stance	Regardless of what one believes about peoples' attributes, one assumes better outcomes result from dealing with people as though they are well meaning and reliable
2. Institution-based trust	An individual's perceptions of the structural characteristics of the institutional environment. The belief that needed structural conditions are present to enhance the probability of achieving a successful transaction.
2a. Structural assurance	One believes that structures like guarantees, regulations, promises, legal recourse or other procedures are in place to promote success.
2b. Situational normality	One believes that the environment is in proper order and success is likely because the situation is normal or favorable and the vendor has attributes as: competence, benevolence, and integrity.

3. Trusting belief	The trusters' perception that the trustee has attributes that are beneficial to him.
4. Trusting intention	The truster is securely willing to depend or intends to depend on the trustee.
Competence	Ability of the trustee to do what the truster needs.
Benevolence	Trustee caring and motivation to act in the truster's interest.
Integrity	Trustee honesty and promise keeping.

2.3 Institution-based trust

Zucker (1986) argues that trust in an economic environment is besides process-based (familiarity) and characteristics-based (similarity) also institution-based. The focus of this thesis is on the role of institutions in the economic environment of the online P2P product-service system.

Institutions can be defined as "the rules, norms and strategies adopted by individuals operating within or across organizations" (Ostrom, 2007). "Rules are shared prescriptions that are mutually understood" (ibid). "Norms are shared prescriptions that tend to be enforced by the participant themselves" (ibid). "A strategy is a regularized plan that individuals make within the structure of incentives produced by rules, norms, and expectations of the likely behavior of others in a situation" (ibid). According to North (1990), institutions structure incentives in human exchange. They define and limit individuals and reduce uncertainty. Therefore, it can be assumed that institutions will also play an important role in online *renting* and *renting out* of personal belongings. Furthermore, institutions are created to solve cooperation problems, which arise due to transaction costs involved in exchange. Transaction cost theory assumes that there are costs involved in an exchange because of bounded rationality and the risk of opportunistic behavior of the participants (Williamson, 1981). Institutions establish a stable and predictable structure for human interaction and without them, complex exchanges would not take place (North, 1990).

Focusing further on the concept of institution-based trust, two dimensions are defined by McKnight et al. (2002). The first is *structural assurance*. This means that a participant believes that structures such as guarantees, regulations, promises, legal recourses and other procedures are in place to promote success. The second dimension is *situational normality*. This means that a participant believes that the network is in proper order and that success is likely because the situation is perceived as normal. If a situation is perceived as normal, it is assumed that the e-vendor or seller has certain attributes that foster trust such as competence, benevolence and integrity.

Ostrom (2007) identifies several structural variables that are present in all institutional arrangements and that influences people's behavior in a certain action arena. The three external factors that

influence the action arena and their participants are: material conditions, attributes of the community and rules-in-use. To answer the research question, the influence of the rules-in-use on the willingness to engage in such networks is evaluated. The implementation of certain institutional mechanisms can change the context of the action arena and, therefore, influences the incentives for participants to engage in the network. In order to avoid an influence of the other two variables, the material conditions and attributes of the community will be held constant.

“The success of the sharing economy will be defined by its ability to foster trust between strangers. The single most important thing we can do as an industry to foster the development of this critical trust is creating a meaningful reputation that allows others to see how you behave and reminds you that others will know how you behave.”

Shelby Clark, Founder and Chief
Community Officer, RelayRides

3. Conceptual model and hypotheses

Based on the theoretical background of online trust and institutions described above, a conceptual model is constructed (Figure 2). The concepts in this model and their empirical foundation will be discussed for research question I and research question II separately. The conceptual model for research question I shows how the influence of institutional mechanisms on the willingness to engage in P2P product-service systems will be evaluated (Figure 3). The willingness to engage is indicated by the dotted box, including both the willingness to rent and rent out personal belongings from and to unknown peers. Later in this section, the conceptual model for research question II shows how variation in this influence could be explained by the disposition to trust, e-commerce experience and demographic factors of participants (Figure 7).

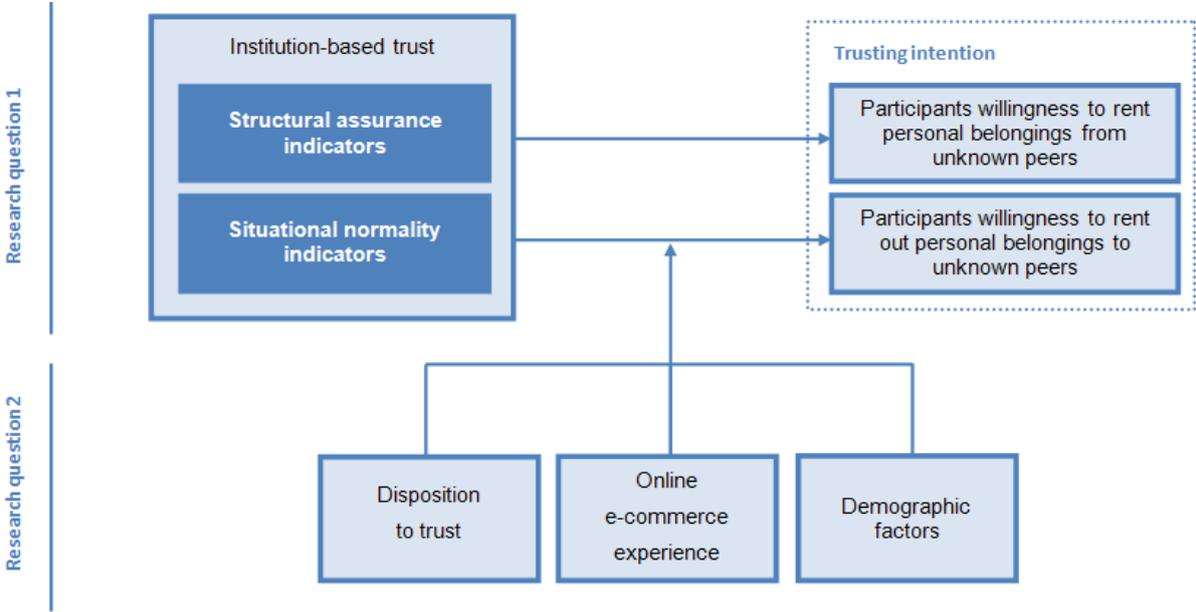


Figure 2. Conceptual model for research question I and II

3.1 Institution-based trust building mechanisms

For answering research question I, the effect of institution-based trust (independent variable) on the success of online P2P product-service systems (dependent variable) is examined. In this case, the success of such systems is defined as the willingness of people to participate in them. Participation in this context means both renting items from participants as well as renting personal items to other participants in the network. Previous research has found that trust has an influence on online purchase intentions of consumers in B2C situations (Gao, 2011; Yusta, Ruiz and Zarco, 2011; Zhu et al., 2009) and in online P2P auction websites such as eBay¹⁰ (Lu, Zhao and Wang, 2010; Pavlou and Gefen, 2004). Although these studies have looked at trust in a buying and selling context and not in a renting context, it might be assumed that trust also has an influence on the willingness to participate in online P2P product-service systems. A literature review of the online trust literature is conducted to

¹⁰ eBay.com is an online B2C marketplace and a P2P marketplace for selling second hand goods.

find institution-based trust indicators that influence the willingness of people to engage in online commerce. The independent variables and their corresponding hypotheses will be explained per sub category: (1) Structural assurance indicators and (2) Situational normality indicators (Figure 3).

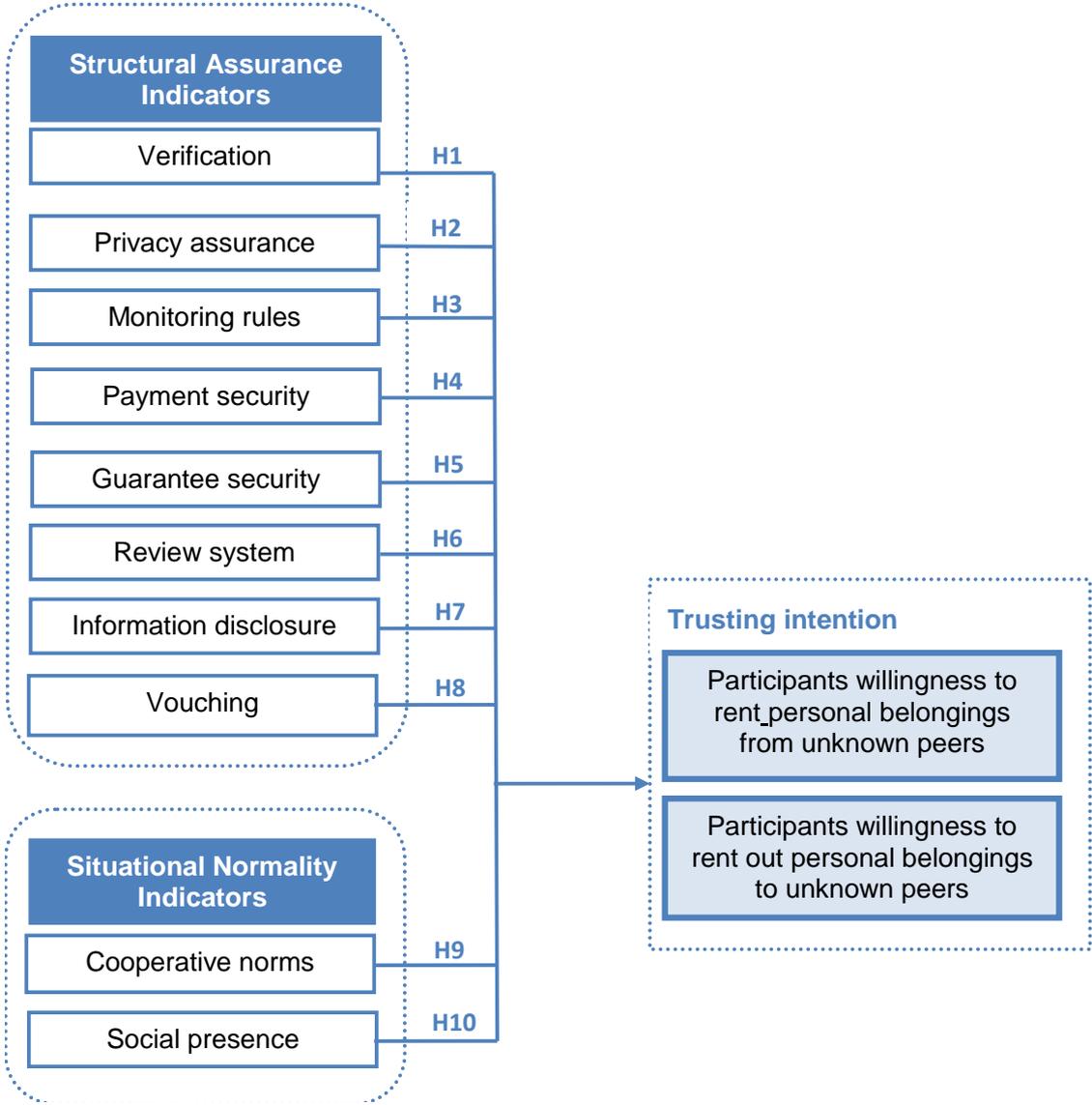


Figure 3. Conceptual model and research hypotheses for research question I

3.1.1 Structural assurance indicators

According to Ostrom (2007), rules have an influence on the action arena. Rules are shared understandings among the participants that refer to guidelines on what behavior and actions are required, prohibited or allowed (Ostrom, 2007, p.36). According to the literature on online trust, several rules and norms appear to have an influence on the level of trust that online buyers have in online sellers or e-vendors. Such rules provide a structure to facilitate successful transactions and are, therefore, indicators for structural assurance. Table 3 provides an overview of the definitions of these structural assurance indicators that will be discussed below.

Verification

The IAD framework suggests that entry rules influence the action arena. This, because the participants who are allowed into the arena, are somehow selected or verified. Nesta (2012) and De Bruin (2002) propose that official verification of the authenticity of a person's identity, such as address verification, helps to build trust in other participants in an online community. It is possible to verify the address and telephone number of participants. It can be assumed that the stricter the verification, the more willing participants are to participate in P2P product-service systems. This leads to the following hypothesis.

H1: The stricter the verification, the more willing participants are to participate in P2P product-service systems.

Privacy assurances

In online e-commerce, private information has to be shared between the seller and the buyer or in this case between the renter and the lender. Furthermore, people might have concerns about the way their internet usage and preferences are being monitored (Beldad, de Jong and Steehouder, 2010). It is claimed that privacy concerns are a significant factor for customers to trust or distrust e-commerce (Hoffman, Novak and Peralta, 1999). Empirical studies on B2C e-commerce found that the presence (not content) of a privacy policy is sufficient to persuade internet users that an online organization can be trusted and would be expected to respect and protect their personal data (Kim, Ferrin and Rao, 2008; Pan and Zinkhan, 2006). It can be assumed that the more comprehensive the privacy policy, the more willing participants are to participate in P2P product-service systems.

H2: The stricter the privacy policy, the more willing participants are to participate in P2P product-service systems.

Monitoring rules

Monitoring practices that make sure that transactions are performed according to the accepted agreements such as quality standards, delivery and performance are an incentive for responsible behavior (Pavlou, 2002). It is assumed that sellers will fulfill the requirements concerning the transaction to avoid sanctions and possible removal from the marketplace. A distinction can be made between monitoring executed by the website or monitoring executed by fellow participants (self monitoring). TaskRabbit¹¹ monitors the behavior of participants and bans participants from the network after two occasions of inappropriate behavior. Self monitoring can be implemented by adding a 'flag' button on profile pages. When participants are not behaving according to the agreements, other participants can publically post a review to notify other participants. There is no empirical evidence that shows a preference between the two mechanisms but it is assumed that website monitoring is a stronger mechanism. Therefore, the following hypothesis is proposed.

H3: The stronger the monitoring, the more willing participants are to participate in P2P product-service systems.

¹¹ TaskRabbit.com is a website where people can hire others for all sorts of tasks and errands.

Security features

Since money transactions are involved, security features are important in decreasing the risk of failure of the transaction. Since items are rented, there is a risk that participants get a broken item back or do not get anything back at all. Several empirical studies found that security features and safety mechanisms that are built into the website influence the level of online trust in B2C e-commerce context (Belanger, Hiller and Smith, 2002; Gefen, Karahanna and Detmar, 2003; Kim et al., 2008).

A. Payment security

Possible security mechanisms for a safe transaction could be an escrow service or credit card guarantee. An escrow services might decrease the risk for fraud and, therefore, positively influences institution-based trust (Hu et al., 2004). The function of an escrow service is that it receives and holds a buyer's payment and notifies the seller to ship the product. When the product is received by the buyer, the escrow service releases the payment to the seller. If the product is not satisfactory or not received properly, the payment is credited back to the buyer. A credit card guarantee is another security measure that might decrease perceptions of risk and thereby facilitate trust (Pavlou and Gefen, 2004). A credit card guarantee is a service provided by a financial institution in case of fraudulent seller behavior. It is a legally supported, third-party institutional mechanism that decreases the risk in online transactions. In online transactions, credit cards are the most common means to pay for an order (Ibid). A credit card guarantee reduces the buyer's monetary liability in case of illegal seller behavior. A downside of this institutional mechanism is that it involves paperwork and inconvenience for the buyer and does not protect against all types of opportunistic seller behavior. This leads to the following two hypotheses.

H4a: Participants are more willing to engage in P2P product-service systems when there is a security mechanism in place for the transaction.

H4b: Participants are more willing to engage in P2P product-service systems when there is an escrow service compared to a credit card guarantee.

B. Guarantee security

The security mechanisms that provide a form of guarantee in case items are broken or stolen are a deposit mechanism or an insurance service. A common practice in P2P product-service systems is the payment of a deposit. Rentstuff¹² is one of the platforms that incorporates this service. Since the person who lends out his personal item has to trust the renter that his product is returned in its original state, it is common to ask for a deposit. This decreases the risk of renting out a personal item and, therefore, facilitates trust. Usually the deposit is payed to the website by the renter and is payed back as the lender confirms that the product is returned in its original state. A second security mechanism that services as a guarantee is an insurance mechanism such as implemented by many car sharing businesses. Participants can get insurance through the particular website to compensate for possible broken or stolen items. This might decrease the risk to engage in P2P sharing and, therefore, facilitates trust. The following two hypotheses are proposed:

¹² Rentstuff.com is a website where people can rent and rent out general goods.

H5a: Participants are more willing to engage in P2P product-service systems when there is a security mechanism in place as a form of guarantee.

H5b: Participants are more willing to engage in P2P product-service systems when there is an insurance mechanism compared to a deposit mechanism.

Review system

Ostrom (2007) suggests that also information rules influence the action arena. Pavlou (2002) found that feedback mechanisms that gather reputation information influence the level of trust that participants have in others in the network. The function of feedback mechanisms is to gather and display information about the trading behavior of participants. Ba and Pavlou (2002) state that feedback mechanisms are structural assurances that discourage opportunistic behavior and build trust in online marketplaces. Beldad et al. (2010) define reputation within the B2C e-commerce context in two ways. "First, it is a collective measure of trustworthiness based on referrals or ratings from members in a community" (p.886). "Second, it is an indication of an organization's credibility, which results from the comparison between what an organization promises and what it actually fulfills" (pp,886).

There are different ways to represent and picture someone's reputation in online P2P networks (Ooi, Liau and Tan, 2003). Reputation systems differ, among other things, in the amount of information that is displayed. One option is to show an average of the total reputation in one score (Figure 4). Often this average is pictured by means of stars in which the number of colored stars represent the average rating. This average rating can be combined with information on how many people have rated this person.

Rentalic¹³ shows not only how other participants rate someone as a borrower but also as an owner (Figure 5).

Additional to the general rating, a rating over the last three interactions can be added. This provides a better indication of the recent behavior of a participant

More specific rating information can be shown by including public review comments that appear on a participants profile (Figure 6).



Figure 4. Type of review system from Neighborgoods.com



Figure 5. Type of review system on Rentalic.com

¹³ Rentalic.com is a website where people can rent or rent out general goods



Figure 6. Type of review system on Ecomodo.com¹⁴

New in the field of online reputation is a system that combines the reputation of a person over multiple online platforms. As in the regular financial industry, other banks will know if a loan is not payed back yet. Cross-platform reputation scores could include someone's social behavior on facebook and twitter, buying and selling behavior on eBay and sharing behavior on collaborative consumption platforms. Emerging start-ups in this field are Trustcloud, Getscaffold and Legit. It is assumed that such a score gives a better and more informative insight in someone's online behavior. Furthermore it is proposed that people are trusted more based on their Facebook profile (Busque, 2012). However, do people actually have more trust in someone who behaved good on eBay, which is a totally different context than car sharing, and would they be more willing to rent out their personal belongings to this person? Several studies provide evidence for the positive relation between reputation scores and trust in the seller in online C2C auction marketplaces (Bente, Baptist and Leuschner, 2012; Pavlou and Gefen, 2004; Yang, Hu and Zhang, 2007; Zacharia and Maes, 2010; Xiong and Liu, 2003). It might be assumed that the more detailed the reputation information is the more willing the participants are to engage in P2P product-service systems. Therefore, the following hypothesis is proposed.

H6: The more information a review system displays, the more participants are willing to engage in online P2P product-service systems.

Information disclosure

Since online commerce lacks the opportunity to see the seller, personal profiles of participants are often provided as an alternative. Also in P2P product-service systems, personal profile pages provide information about the participants. It is relevant to both renter and lender, to see with whom they are about to do business. The question is how much and which information is relevant to include in profiles, to give participants a feeling of trust in others in the community.

It is assumed that when participants can read a profile of someone, with personal statements, it helps to build trust (Botsman and Rogers, 2011; Nesta, 2012). Furthermore, Bente et al. (2012) found that the use of trustworthy photos of the seller had a significant effect on the level of trust in the seller and the number of purchases. The CEO of Zaarly¹⁵ stated in an interview with businessinsider.com that they found that user engagement increased when users shared more information about themselves

¹⁴ Ecomodo.com is website where everyday objects, space and skills can be lend and borrowed.

¹⁵ Zaarly.com is an online local market place.

(Cocotas, 2012). Furthermore, Peerby proposes to provide an opportunity to upload a personal video. Other information that could be included in profiles is a trustworthy photo or video, location information (city and postal code), gender, age, the date of subscription to the community, number of interactions that participants have performed with others, number of items offered for rent, number of items rented, short personal description, education and occupation.

H7: The more information a profile shows, the more willing a participant is to engage in a transaction with this person.

Vouching

Doney, Cannon and Mullen (1998) found that trust can be transferred. This transference process requires the identification of a third-party and the establishment of links between these third-parties and the unknown ones, provided that those third parties are themselves trustworthy. In a B2C context, this can mean a form of certification by a trusted third party. However, in a P2P context, this could mean vouching from trusted others. Vouching is a recommendation from a trusted participant (not a random participant) about a participant where the renter or lender are about to have a transaction with. Cheung and Lee (2006) found that third-party recognition could promote trust in consumer-based electronic commerce. Koehn (2003) states that a form of vouching of trusted others might compensate for a lack of history with a particular person. If a trusted other does have a positive history with this person, a renter or lender might trust this person more than when there is no vouching. Jones and Leonard (2008) found a positive influence of third-party recognition in a P2P online context.

H8: Participants are more willing to engage in a transaction with another participant if a trusted other, rather than an unknown other, is vouching for this participant.

Table 3.

Definitions of the structural assurance indicators

Construct	Definition
Verification	A mechanism which verifies the identity and capability of a new participant allowing entrance to the website.
Privacy assurance	The existence of a privacy policy on the website
Monitoring rules	A mechanism which assures that all transactions in the marketplace are performed as expected.
Security features	For payment security the existence of an escrow service or credit card guarantee. For a guarantee service the existence of a deposit mechanism or insurance service.
Review system	A mechanism which shows reliable information about a participants reputation.
Information disclosure	The existence of information on a participants profile.
Vouching	A mechanism which allows a trusted someone to vouch for another participant.

3.1.2 Situational normality indicators

According to McKnight et al. (2002), situational normality is an indicator of institution-based trust because people believe that structural conditions or institutions are present if the situation is in proper order and perceived as normal or favorable. Two indicators for situational normality that can be identified are cooperative norms and social presence. If participants feel that other participants have the same cooperative norms, the situation might be perceived as normal. Furthermore, if there is an opportunity to communicate with other participants, the online platform might feel more as a regular market place which indicates situational normality. Table 4 gives an overview of the definitions of the situational normality indicators that will be discussed below.

Cooperative norms

Ostrom (2007) suggests that norms and behaviors that are generally accepted, influence the action arena. In the case of P2P product-service systems, norms about cooperation between the participants are important. Cooperative norms can be defined as the values, standards, and principles to which the participants in the network adhere (Pavlou, 2002). According to Axelrod (1984) values and norms discourage opportunism, facilitate cooperation, and promote joint problem solving. The cooperative norms encourage responsible behavior through a sense of collectivity and the expected transaction patterns between buyer and seller can be seen as standards of conduct (Dwyer, Schurr and Oh, 1987). These cooperative norms have an influence on the level of trust that buyers have in sellers. According to Schaefer (1993), buyers perceive the behavior of sellers as trustworthy if there is a common ground of values, attitudes and interests. Perceived cooperative norms can be defined as the extent to which participants believe that there are common values, principles and standards to which everyone adheres. In several P2P product-service system platforms like Neighborgoods, Rentalic and Ecomodo the opportunity is provided to form private group. Groups can be based on anything. Some existing groups on Ecomodo are based on: location, hobbies, work field and specific interests. These groups are based on some form of shared attribute, which increases the chance that people have the same cooperative norms. This encourages responsible behavior and increases trust in others. It can be assumed that people are more willing to engage in a transaction with someone from a private group than with a random person.

H9: Participants are more willing to engage in P2P product-service systems with people from a private group than with random people in the network.

Social presence

Online communities lack face-to-face contact opportunities which are crucial in transactions. Therefore, it is proposed that trust can be created by tools that facilitate social interaction with other participants in the community. Several studies indicate that the infusion of social presence in websites for online transactions could increase users' trust in online organizations (Cyr et al., 2007; Hassanein and Head, 2004). Social presence can be defined as: "the extent to which a medium allows users to experience others as being psychologically present" (Gefen and Straub, 2003, p.11). Gefen and Straub (2004) underscore that although a website has no face-to-face human interaction, the

possibilities for interaction increases online trust. The study by Chen, Zhan and Xu (2009), also confirms that informational and emotional interaction on a P2P platform increased trust among members and in the organization. On P2P product-service system platforms, examples of mechanisms can be found that facilitate social presence. E-mail, chat and private and public messaging services provide opportunities for participants to interact with each other. It can be assumed that the more opportunity there is for social interaction the more willing participants are to engage in a transaction.

H10: The more opportunity there is for social interaction, the more willing participants are to engage in P2P product-service systems.

Table 4.
Definitions of the situational normality indicators

Construct	Definition
Cooperative norms	The extent to which participants believe that there are common values, principles and standards to which everyone adheres
Social presence	A sense of awareness of the presence of an interaction partner.

3.2 Explaining the influence of institutional mechanisms

The aim of research question II is to explain the variation in institution-based trust in participants. Which factors can significantly explain why some people are more influenced by institutional mechanisms than others? Figure 7 gives an overview of the explanatory variables and the hypotheses.

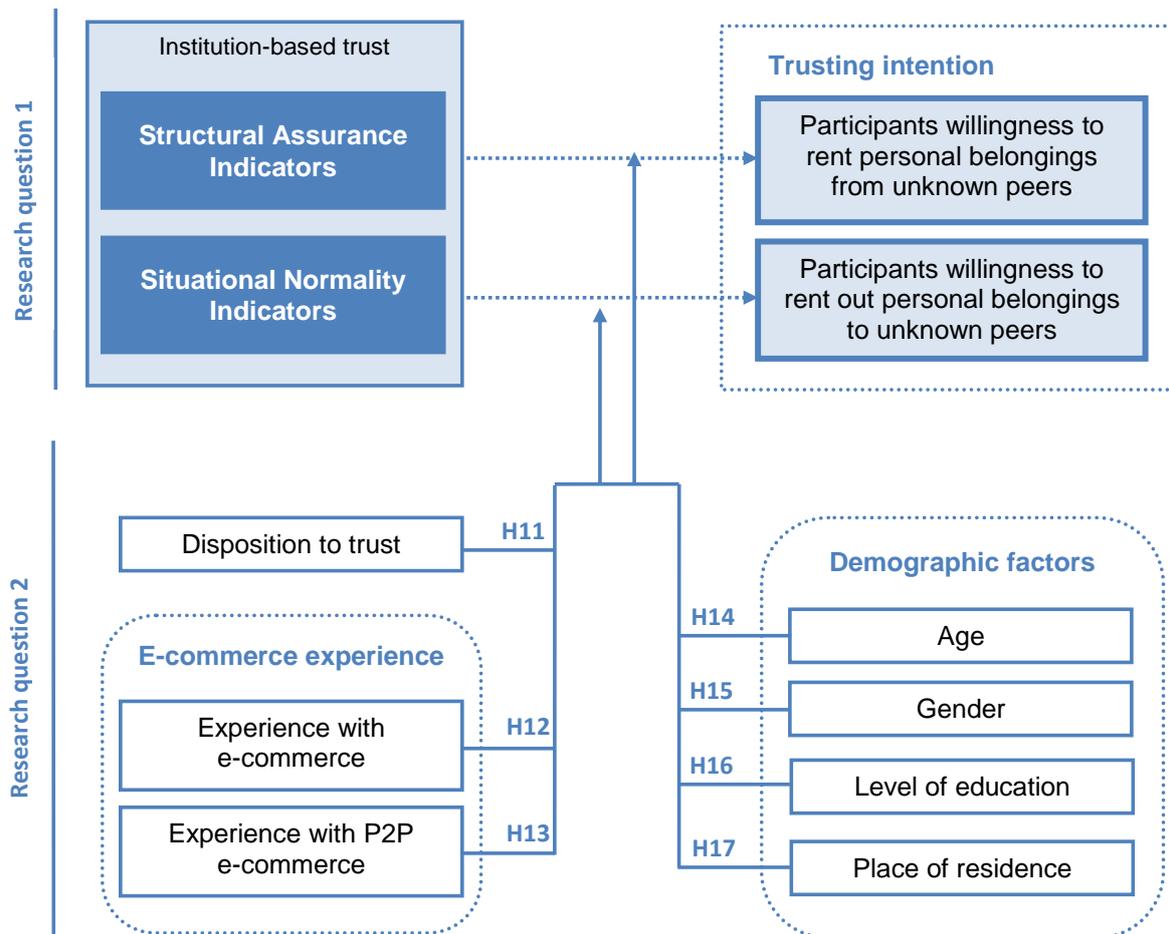


Figure 7. Conceptual model and hypotheses for research question II

Disposition to trust

According to the model of McKnight et al. (2002) someone's personal disposition to trust influences the level of institution-based trust as well as the willingness to engage in online transactions. It can be assumed that people with a higher general intrinsic trust level do not need as many institutional mechanisms as people with a lower general intrinsic trust level. The influence of institutional mechanisms on the willingness to engage in P2P product-service systems might, therefore, differ for people with a high disposition to trust and people with a low disposition to trust.

H11: The influence of institutional mechanisms on the willingness to engage in P2P product-service systems is lower for people with a high disposition to trust than for people with a low disposition to trust.

Experience with e-commerce

Studies show that experience with internet in general and internet e-commerce, positively influences the willingness of people to buy items online (Corbitt, Thanasankit and Yi, 2003; Metzger, 2006). It might be interesting to see if the influence of institutional mechanisms on the willingness to engage in P2P product-service systems differs for people with different levels of experience with e-commerce. A difference can be made between B2C experience such as buying commercial items on the internet and experience with buying items on online P2P platforms such as Marktplaats¹⁶ and eBay. The following can be hypothesized.

H12: The influence of institutional mechanisms on the willingness to engage in P2P product-service systems is lower for people with more B2C e-commerce experience.

H13: The influence of institutional mechanisms on the willingness to engage in P2P product-service systems is lower for people with more experience in P2P e-commerce.

Demographic variables

Several demographic variables might explain the degree of the institutional mechanisms that are required for the success of P2P product-service systems. Examples are age, gender, level of education and place of residence.

A. Age

As stated above, a study by marketing firm Campbel-Mitchun (2012) shows that younger people are more willing to engage in P2P product-service systems. It might be interesting to see if the influence of institutional mechanisms on the willingness to engage in P2P product-service systems is different for people from different generations. A distinction can be made between baby boomers, generation X and the Millennials. Baby boomers are born between 1945 and 1960. Generation X people are born between 1961 and 1981 and Millennials are born after 1981.

H14: The influence of institutional mechanisms on the willingness to engage in P2P product-service systems is different for people from different generations.

B. Gender

It might be interesting to see if gender plays a role in the willingness to engage in P2P product-service systems.

H15: The influence of institutional mechanisms on the willingness to engage in P2P product-service systems is different for males and females.

C. Level of education

It might be interesting to see if the level of education plays a role in the willingness to engage in P2P product-service systems.

H16: The influence of institutional mechanisms on the willingness to engage in P2P product-service systems is different for people with a different level of education.

¹⁶ Marktplaats.nl is an online P2P marketplace to sell second hand goods.

D. Place of residence

It might be interesting to see if there is a difference in the willingness to engage in P2P product-service between people who live in the city or a village. This would help start-ups to target the part of the population that is most willing to share.

H17: The influence of institutional mechanisms on the willingness to engage in P2P product-service systems is lower for urban residents than for rural residents.

“Sharing based businesses generally offer a greater feeling of connection and community. They are more trustworthy because they have to be”.

Lisa Gansky, The Mesch

4. Methodology

The first section in this chapter outlines the research method and its justification. Thereafter, the choice for the sample will be explained. The third section gives an overview of the operationalization of the variables. The fourth section will further outline how the data collection was performed and section five outlines which statistical analyses were used to test the hypotheses.

4.1 Method

The proposed hypotheses were empirically tested in an online survey on 168 Dutch consumers. Since the conceptual model of this thesis has a large number of variables of which the influence needed to be analyzed, a quantitative research strategy was the most appropriate method. Because of a relatively large number of subjects, it is possible to find correlations and other statistical information which allows to say something about the relations between the variables. This way the study gives a broad overview of which institutional mechanisms have a significant influence on the willingness to engage in online P2P product-service systems and how this influence can be explained. Such a quantitative research strategy has the advantage of high generalizability of the findings to the population. However, the downside of this survey is that depth and specificity is lost and that only information on the pre-defined variables was gathered. The survey is a structured questionnaire consisting of mostly closed questions, which allows little room for other information than which is asked for. A downside of using a self-reporting technique such as a questionnaire is that answers do not necessarily have to represent the actual attitude or belief of the respondent which is asked for. There is always a divergence between stated vs. actual preferences and beliefs. Compliance to the social norm (face validity) could also play a role, or respondents are simply not aware of the things they are asked for. As a test, the questionnaire was tested on ten respondents to see if questions were unclear and if the right concepts were being measured. This to enhance the validity of the questions. As a result of the test, some screenshots of a fictional website were added which visually represented some of the questions to make it clearer.

4.2 Sample selection

Participants in this study were Dutch consumers. No restrictions to this sample were made because, in practice, anyone can use P2P product-service systems to rent or rent out goods. A diverse sample could provide the most useful information since it might show which groups of people were more willing to participate than others. The link of the online questionnaire was distributed to the sample by email and Facebook. Furthermore, people were targeted by means of flyers on the university. The sample was no random selection of the target population due to the fact that this was not feasible considering the available time and means. This means that the sample in this study is a nonprobability sample based on convenience sampling. Convenience sampling means that respondents were

selected based on their availability. However, the attempt was to approach many different people from different backgrounds, age, gender and city of residence.

A relatively large number of respondents (N=168) was included to ensure reliability of the findings. The fact that the sample was not a completely random selection has consequences for the external validity of the findings. In total, a large number of people were approached by email, Facebook or flyers. Overall, 197 people responded, but only 168 completed the whole questionnaire. Of the 168 respondents, 58 were male and 110 were female with an age between 17 and 63 years old.

4.3 Operationalization

In designing the questionnaire, several survey techniques were incorporated. An attempt was to design the questions in a way that they are appropriate and understandable for the sample. A wide variety of people were addressed by the questionnaire which implies that questions should include no scientific jargon. The questions were formulated as much as possible from the perspective of the respondent ('I feel...' or 'I think...') to generate a more personal connection to what was asked. The operationalization of the variables will be discussed for research question I and research question II separately. For answering research question I, the influence of institutional mechanisms on the willingness to engage in P2P product-service systems needed to be measured. For research question II, the influence of the disposition to trust, experience with e-commerce and demographic variables needed to be measured. A template of the questionnaires can be found in Appendix B.

4.3.1 Research question I

To measure the influence of institutional mechanisms (independent variables) on the willingness to participate (dependent variable), an experimental setting was created. Respondents were randomly assigned to either a high institutional scenario or a low institutional scenario. This to minimize influences of other variables and make sure that the two groups are a representative sample of the population. In order to avoid any influence of material conditions, the questions were designed around one specific product. The product that was used was a movie projector. This item was chosen because it can be assumed that a high degree of trust is necessary to rent or rent out a projector. Furthermore, it is a product that not everybody owns, and if one would own it, it is not used every day. In order to avoid any influence of attributes of the community, a uniform situation was described to all the respondents by an introductory text at the beginning of the questionnaire (Figure 8). In this introduction, the purpose of the website was explained, and respondents were asked to imagine renting or renting out a projector. The renting price was deliberately not mentioned because that could be of influence on the willingness to rent or rent out. The renting price was described as a fair price for which respondents could imagine renting or renting out the projector. Furthermore, two fictional characters were introduced. Tim was offering his projector for rent on the platform and Martijn wanted to rent a projector from the respondent for a day. Both Tim and Martijn lived two streets away.

Instruction

Imagine a website on which it is possible to rent goods from people in your neighborhood and to rent your own goods to them. You can think of tools, lawn mower, barbecue, trailer wagon, camping goods, projector, photo camera's etc.

For the following questions, please imagine the next two situations:

Situation 1. You want to organize a movie night and project a movie on your wall with a projector but you don't have one yourself. Tim lives two streets away and offers his projector for rent for a day. The price is a fair price for which you could imagine renting the projector.

Situation 2. You own a projector but you only use it a couple of times a year during special occasions. Two streets away lives Martijn who would like to organize a movie night and wants to rent your projector for a day. The price is a fair price for which you could imagine renting out the projector.

A few descriptions of this website will follow. Please indicate after each description to what extend you are willing to rent a projector from Tim and to what extend you are willing to rent your projector to Martijn.

Figure 8. Instruction for the questionnaire.

Operationalization of independent variables

Following, several descriptions of the website were presented to the respondents. Each description entails one institutional mechanism (independent variable). For each independent variable, a high and low scenario was constructed.

Verification

High: The website has a subscription procedure in which the identity of Tim and Martijn is verified. Telephone number and address are verified on existence.

Low: The website has a subscription procedure in which participants have to give a valid email address.

Privacy Assurance

High: The website has a privacy statement on the website in which it is stated that personal information will be handled with care and that this information will not be shared with third parties. Your personal information will not be shared with other participants and your search behavior on the website will not be recorded.

Low: The website has a privacy statement.

Security Features - Payment

High 1 – Escrow service: The payment of rent can be arranged with a secure method. The renter pays the rent to the website. When the payment is received, the renter can pick up the projector. If the renter is content with the projector, it notifies the website that the rent can be released to the lender.

High 2 – Credit card service: The payment of rent can be arranged with a credit card. The rent has to be paid by credit card to the lender. If the projector is not being delivered to the renter according to the agreement, the renter can get a refund through the credit card service.

Low: The payment of rent between you and Tim and you and Martijn has to be arranged between the two of you.

Security Features – Guarantee

High 1 – Deposit: The renter pays a deposit to the website. If the projector is not returned in its original state, the lender can apply for the deposit.

High 2 – Insurance: As a participant you are insured through the website. If the projector is not returned in its original state, the lender can apply for a compensation.

Low: If something happens with the projector, you have to make an arrangement with Tim and Martijn yourself.

Monitoring

High: If a participant is not behaving according to the rules, the website will eliminate the participant from the website after two warnings.

Low: If a participant is not behaving according to the rules, you can publically give this participant a bad review.

Review system

High: The profile of Tim and Martijn shows the review from other participants according to (Figure 9):

- A mean rating based on 5 stars.
- The number of people that rated them
- A mean rating of the last 3 transactions
- Short review messages of other participants
- Review scores on other websites such as Marktplaats or eBay

Low: The profile of Tim and Martijn shows the reviews from other participants according to a mean rating based on 5 stars (Figure 10).

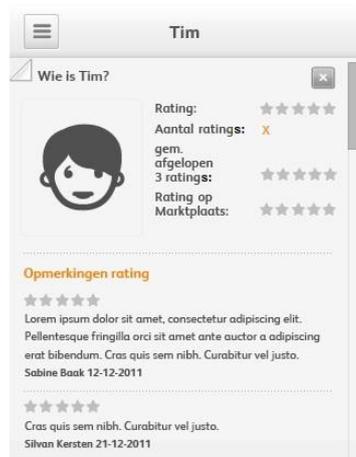


Figure 9. High review system



Figure 10. Low review system

Information disclosure

High: The profile of Tim and Martijn contains the following information: name, age, gender, place of residence, time of membership, number of transactions, short personal description, hobbies and occupation (Figure 11).

Low: The profile of Tim and Martijn contains the following information: name, time of membership and number of transactions (Figure 12).



Figure 11. High information disclosure



Figure 12. Low information disclosure

Vouching

High: A good friend vouches for Tim as a reliable renter and vouches for Martijn as a reliable lender from his own experience.

Low: Another (unknown) participant vouches for Tim as a reliable renter and vouches for Martijn as a reliable lender from his own experience.

Cooperative norms

High: On the website it is possible to have a private group where you only rent or rent out with people from that group. You are a member of a private group with only friends and acquaintances you invited. Tim and Martijn are also a member of this group.

Low: On the website it is possible to have a private group where you only rent or rent out with people from that group. You are a member of a private group with only people that live less than 10 km away. Tim and Martijn are also a member of this group.

Social presence

High: To contact Tim and Martijn, it is possible to email them through the website, privately chat or video chat or send public messages.

Low: To contact Tim and Martijn, it is possible to email them through the website.

Operationalization of dependent variables

The willingness of respondents to rent or rent out (dependent variables) was measured by asking the same two questions after every description:

1. The chance that I will rent the projector from Tim is....
2. The chance that I will rent my projector to Martijn is....

The answer scale was a 5 point scale in which each answer category was a 20% chance range. This gave the following answering options: 0% -20%; 20-40%; 40-60%; 60-80%; 80-100%.

It was a specific choice to provide a uniform answer scale as much as possible. This to make it easier for the respondents to give answers and save time on reading and interpreting different answer scales. A downside of this option is that respondents might fill in the questions more automatically instead of reading each question properly (Oosterveld and Schokker, 1998). However, since each question followed after a different website description and the questionnaire should not be too long, the choice for a uniform answer scale was made.

The experimental setting that was created by the high and low scenarios of the independent variables, aimed to find differences in the willingness of respondents to participate. If, for example, the willingness to participate significantly differs between the low and high information disclosure condition, it might be assumed that the amount of information contributes to the willingness to participate. Table 5 shows the design of the questionnaires. Most variables had a high and low scenario. However, two variables had three scenarios (one low and two high scenario's). Therefore three questionnaires were designed (A, B and C). Questionnaire B and C were identical, apart from two variables in which they either had the first high scenario or the second high scenario.

Table 5.

Questionnaire construction

Variable	Questionnaire A	Questionnaire B	Questionnaire C
Verification	High	Low	Low
Privacy assurance	High	Low	Low
Security feature – payment	Low	High 1	High 2
Security feature – guarantee	Low	High 2	High 1
Monitoring rules	High	Low	Low
Review system	Low	High	High
Information disclosure	High	Low	Low
Vouching	Low	High	High
Cooperative norms	High	Low	Low
Social presence	Low	High	High

The high and low conditions were divided equally over the questionnaires so that each group was confronted with 5 high and 5 low conditions. This to prevent describing one extremely poor website and one extremely advanced website.

4.3.2 Research question II

Research question II tries to see if disposition to trust, experience with e-commerce or demographic variables are able to explain the variation in the influence of institution-based trust on the willingness to participate. The operationalization of these independent variables is shown in table 6.

Disposition to trust:

To measure the disposition to trust of the respondents, a validated operationalization was applied from McKnight et al. (2002). Four statements were included in the questionnaire in which each statement measured a sub-dimension of disposition to trust (Table 6). The answer scale was a 5 point Likert-scale which ranged from strongly disagree to strongly agree.

Table 6.

Operationalization of sub-dimensions of disposition to trust

Sub dimensions of disposition to trust	Operationalization
Faith in humanity	In general, people really do care about the well-being of others.
Integrity	In general, most people keep their promises.
Competence	I believe that most professional people do a very good job at their work.
Benevolence	I usually trust people until they give me a reason not to trust them.

Experience with e-commerce:

The experience with e-commerce was measured with two yes or no questions. It was asked if respondents had experience with buying items online from businesses. Secondly, it was asked if respondents had experience with buying items online from private individuals on websites such as eBay and Marktplaats.

Demographic variables:

Several demographic factors were measured by asking the respondents age, gender, level of education and postal code. The level of education was measured by a multiple choice question in which respondents had to indicate what their highest education was providing the choice categories: (a) high school, (b) MBO, (c) HBO, (d) University.

4.3.3 Respondents preferences

To provide a more specific overview of what institutional elements are valued as most relevant to the respondents, three additional questions were added about the elements of a review system, information disclosure and general institutional mechanisms. Respondents were asked to pick two elements they would like to know about a participant's online behavior to judge his or her reliability out of the following list:

- Mean review rating
- Last 3 reviews
- Public review messages
- The number of reviews
- Reviews on other websites such as Marktplaats or eBay
- Someone's activities on social media websites such as Facebook, Twitter or LinkedIn.

Secondly, respondents were asked to pick three elements they would like to know about a participant out of the following list:

- Time of membership
- Number of times he or she rented or rented out something
- Number of advertisements
- Age
- Gender
- City
- Postal code
- Short personal description
- Hobbies
- Occupation
- Photo

Thirdly, respondents were asked to pick the four most valuable elements about the website in general out of the following list:

- Identity verification of renter and lender
- Personal information of renter and lender
- Ability to review each other
- Ability to vouch for a reliable renter or lender
- Ability to monitor misbehavior
- Privacy assurance
- A safe procedure for money transference
- A guarantee mechanisms when an item breaks
- Possibility to form a private group
- Possibility to contact a renter or lender

4.4 Data collection

The link to the online questionnaire was distributed to the respondents by email, Facebook and flyers.

The email contained an introduction in which the aim of the research was shortly explained and was stated why the respondent was approached. It was stated that anonymity would be assured, and the importance of filling in the questionnaire was highlighted in the hope that it motivated people to respond. An incentive in the form of a lottery of an e-reader was provided to motivate people to participate. To participate in the lottery, the questionnaire needed to be filled in within 10 days to motivate people to respond. The respondents were asked to fill in their email address if they wanted to participate in the lottery. It was assured that this email address would only be used for the notification of the winner. 98% of the respondents left their email address. Furthermore, an URL to start the online questionnaire was provided.

The opening page of the survey contained a short instruction in which it was stated that the questionnaire would be about a website that would be explained later on. Furthermore, the importance of filling in all the questions was highlighted, and it was stated that the respondent could not go back once an answer was provided. The anonymity of the respondent was once more guaranteed. A final instruction was given that each question required one answer unless otherwise indicated.

4.5 Data analysis

4.5.1 SPSS code book and spreadsheet

To import the data from the three online questionnaires into SPSS 17.0, the data needed to be recoded from string data into numerical data. In a code book, the variables were defined and meaning of the codes were given (Appendix C). Moreover, the value for a missing value was defined as 999 and 9999. The missing value 999 represents missing values when a questionnaire was not finished and the missing value 9999 represents typing mistakes in the open questions age or postal code.

Additionally, the level of measurement (nominal, ordinal, interval, scale) was assigned to each variable. Several nominal variables which can be identified, were gender, postal code, general e-commerce experience, P2P e-commerce experience, and the choices on review system elements, information disclosure elements and institutional elements. The disposition to trust variables were on an ordinal scale because the answer scale (completely disagree, partly disagree, neutral, partly agree and completely agree) represents categories with an order. Also ordinal, was the level of education since there is an order in the levels: high school, MBO, HBO and University. The dependent variables of willingness of people to rent or rent out for the different institutional mechanisms (high and low) were interval variables. This because the scale (0-20%, 20-40%, 40-60%, 60-80% and 80-100%) represents scores with an even interval. The only scale variable was age.

Following, the data was 'cleaned' to find possible type- or coding mistakes by analyzing the frequency tables on meaningless values. Out of the 197 respondents, 168 completed the whole questionnaire. Several questionnaires were eliminated because of too many missing values.

4.5.2 Statistical analysis

The collected data was analyzed using statistical analysis with SPSS 17.0. The results will be discussed in chapter 5 per research question starting with several descriptive statistics such as the frequency, percentages and averages of different answers to give a first overview of the results. In order to find relations between the variables, inferential statistical tests were computed.

For research question I, a multivariate analysis of variances (MANOVA) was computed for two sets of five variables, to see if there was an overall impact of institutional variables on the willingness to rent or rent out. Because the respondents were only questioned once in either questionnaire A or B, the samples in the two conditions were independent. Therefore, the analysis for research question I was based on a between-subjects design. After the MANOVA, separate independent samples T-tests were computed to see if there were significant differences between willingness to rent or rent out under the high and low scenarios of the institutional variables. To control for the influence of possible confounding variables the influence of the disposition to trust, experience with e-commerce and demographic variables were checked with a regression analysis. Finally, a Cohen's d effect size was calculated for the significant institutional variables to indicate the strength of the effect.

For research question II, separate regression analyses were performed to see if there was an interaction effect between the influence of the institutional mechanism and the external variables: disposition to trust, experience with e-commerce and demographic variables.

For research question III, the total willingness to rent and total willingness to rent out scores were compared to see if there was a difference. In this case, the two averages that were compared were from the same sample and were, therefore, tested by a paired T-test. Furthermore, the different preferences for a review mechanism, information disclosure and general institutional mechanisms were analyzed by looking at the frequencies of the listed answers and were split for different variables such as the disposition to trust, experience with e-commerce and demographic variables to see if preferences differed between different groups of people.

"A socioeconomic groundswell that will transform the way companies think about their value propositions."

Rachel Botsman in

Harvard Business Review, 10-2010

5. Results

The experimental design of the questionnaires has provided the necessary data input to test the hypotheses that were posed in the previous sections. The raw data was processed in a SPSS data file, such as described in the method section, and several tests were performed to analyze this data and test the hypotheses. First a general descriptive overview of the sample will be given in section 5.1. Thereafter, the data will be analyzed in order to adopt or reject the hypotheses posed in respectively research question I, II and III in the sections 5.2, 5.3 and 5.4.

5.1 Descriptive data of the sample

Relevant descriptive data of the sample is given to provide an insight in the background of the sample and helps to judge the reliability and generalizability of the rest of the findings.

The age of the respondents varied between 17 and 63 years old with a mean of 33 years. Of the 167 respondents, 63% (n=106) was in the age between 17 and 31 (Millennials), 24% (n=40) was between the age of 32 and 51 (Generation X) and 13% (n=21) was in the age between 52 and 63 (Baby boomers). Of the 168 respondents, 35% (n=58) was male and 65% (n=110) was female. Regarding the place of residence, 40% (n=67) of the respondents lived in a village and 60% (n=101) lived in a city. Regarding the highest level of education, 7% (n=12) of the respondents had a high school diploma, 10% (n=17) had a MBO diploma, 31% (n=52) had a HBO diploma and 52% (n=87) had a university diploma. Almost all of the respondents (97%, n=163) had experience with general e-commerce in the sense that they have ordered a product online. A smaller but still rather high percentage had experience with P2P e-commerce in that they have bought a product from a private individual online (80%, n=135). Respondents have answered four questions regarding their general level of trust in other people. A total disposition to trust score was calculated by summing up the scores of these four questions. The answer scale consisted of five answer categories. This means that a total score of 4 indicated an extremely low disposition of trust and a total score of 20 indicated an extremely high disposition to trust. Total trust scores varied from 6 to 20 with a mean of 14.89. By dividing the total trust scores in three categories (low 6-10, medium 11-15 and high 16-20), a general overview can be given of the disposition to trust of the respondents. Most respondents (50%, n=84) fell in the medium trust category while 5% (n=8) fell in the low trust category and 45% (n=76) fell in the high trust category.

5.2 Results research question I

The first research question tries to find which institutional mechanisms have an influence on the willingness of respondents to participate in an online P2P product-service system. First, several descriptive statistics will give a general overview of the data. Thereafter, the hypotheses, which have been defined in chapter 3, will be tested. First a multivariate analysis was performed to see if there

was a simultaneous effect of several institutional mechanisms together. Then the individual hypotheses were tested with independent samples T-tests and regression analysis to control for possible confounding variables. Ultimately a Cohen's d effect size was calculated for the significant institutional mechanisms to show the strength of their influence.

5.2.1 Descriptive statistics

Independent variables

Two independent groups of respondents were randomly assigned to one of the two questionnaires (Table 7). Each questionnaire either contained the high scenario of an institutional mechanisms or the low scenario of the institutional mechanism. In total, 79 respondents have answered questionnaire A, 43 respondents have answered questionnaire B and 46 respondents have answered questionnaire C. Questionnaire B and C were the same, except for the fact that for two variables the high scenario was split up in two options. The high scenario of 'security feature – payment' consisted of a scenario about a credit card service or an escrow service. These were both considered as 'high' scenarios. Therefore, a total of 89 respondents received the high scenario on the 'security feature – payment' variable, only 43 respondents had the credit card option and 46 respondents had the escrow service option. The same accounts for the 'security feature – guarantee' variable. From now on, questionnaire B and C will be discussed together except when the specific security feature variables are specifically discussed.

Table 7.

Overview of conditions per questionnaire

Variable	Questionnaire A (n=79)	Questionnaire B (n=43)	Questionnaire C (n=46)
Verification	High	Low	Low
Privacy assurance	High	Low	Low
Monitoring rules	High	Low	Low
Information disclosure	High	Low	Low
Cooperative norms	High	Low	Low
Security feature – payment	Low	High (Credit card)	High (Escrow)
Security feature – guarantee	Low	High (Deposit)	High (Insurance)
Review system	Low	High	High
Vouching	Low	High	High
Social presence	Low	High	High

Dependent variables

There were two dependent variables in this research question which are the willingness to *rent* the projector from Tim and the willingness to *rent out* the projector to Martijn. Each respondent has answered ten questions about his willingness to *rent* the projector from Tim, five under a high

institutional condition and five under a low institutional condition. The same accounts for the willingness to *rent out* the projector to Martijn. The willingness was indicated on a five point scale ranging from 0-20% (1) to 80-100% (5). To find out which institutional mechanism had an influence on the willingness to *rent* or *rent out*, it is analyzed if these willingness scores differed between the high and low scenarios of the ten institutional mechanisms. Table 8 provides an overview of the mean willingness scores per institutional mechanisms for the high (H) and low (L) conditions. At first glance, most of the mean willingness scores under the high conditions seem to be bigger than the mean willingness scores under the low conditions. Also in most cases, the mean willingness to *rent* the projector from Tim seems to be bigger than the mean willingness to *rent out* their own projector. However, this is just descriptive data. An inferential statistical analysis is needed to see if these differences are statistically significant.

Table 8.

Mean willingness scores per institutional mechanism and high/low condition

Variable	Questionnaire A (n=79)	Questionnaire B (n=47)	Questionnaire C (n=46)
Verification			
Rent	4.10 (H)		3.70 (L)
Rent out	3.52 (H)		3.44 (L)
Privacy assurance			
Rent	4.01 (H)		3.71 (L)
Rent out	3.43 (H)		3.48 (L)
Monitoring rules			
Rent	3.49 (H)		3.81 (L)
Rent out	2.97 (H)		3.70 (L)
Information disclosure			
Rent	4.08 (H)		3.65 (L)
Rent out	3.66 (H)		3.46 (L)
Cooperative norms			
Rent	4.80 (H)		4.37 (L)
Rent out	4.67 (H)		4.36 (L)
Security feature – payment			
Rent	3.90 (L)	3.33 (H-credit)	3.74 (H-Escrow)
Rent out	3.41 (L)	3.44 (H-credit)	3.39 (H-Escrow)
Security feature – guarantee			
Rent	3.20 (L)	3.67 (H-deposit)	4.04 (H-Insurance)
Rent out	2.57 (L)	3.95 (H-deposit)	4.17 (H-Insurance)
Review system			
Rent	4.06 (L)		3.76 (H)
Rent out	3.72 (L)		3.58 (H)
Vouching			
Rent	4.35 (L)		4.55 (H)
Rent out	4.08 (L)		4.53 (H)
Social presence			
Rent	4.16 (L)		4.06 (H)
Rent out	3.92 (L)		3.99 (H)

(H) High condition, (L) Low condition

5.2.2 Hypothesis testing

It was expected that respondents were more willing to *rent* or *rent out* the projector under the high institutional scenario than under the low institutional scenario. Since the dependent variable (willingness) was measured on an interval scale and the two samples were independent from each other, an independent samples T-test was used to compare the mean willingness scores between the high and low institutional conditions. The two samples were bigger than 30 which allows to assume that the data is normally distributed (De Vocht, 2008). To conduct inferential statistical procedures, a null hypothesis and an alternative hypothesis needed to be formulated. The null hypothesis states that there is no difference in the scores of the population from which the samples were selected. In this case, more specific, the null hypothesis would be: there is no difference in willingness to *rent* or *rent out* the projector between populations in a high institutional situation and a low institutional situation. This null hypothesis was tested against the directional alternative hypothesis. The directional alternative hypothesis states that the mean willingness to *rent* or *rent out* the projector is lower under the low institutional scenario than under the high institutional scenario.

$$H_0: \text{Willingness}_{\text{institutional mechanism_low}} = \text{Willingness}_{\text{institutional mechanism_high}}$$

$$H_1: \text{Willingness}_{\text{institutional mechanism_low}} < \text{Willingness}_{\text{institutional mechanism_high}}$$

Multivariate testing

To test all the hypotheses, 28 separate independent sample T-tests were performed (14 for the willingness to *rent* and 14 for the willingness to *rent out*). Each test had a risk for a type I error of wrongly rejecting the H_0 . A multivariate analysis (MANOVA) provides an extra check to see if the separate T-tests could be interpreted in the first place and that the significant findings were not merely a result of chance. In this analysis, five dependent variables were taken together to see if there was a significant difference between the total willingness on these five variables under the high and low scenarios. If the MANOVA is significant, it means there is simultaneous significance, and it is allowed to look closer at the separate T-tests (Field, 2005).

The five dependent variables that were high in questionnaire A and low in questionnaire B were taken together in a MANOVA. These were Verification, Privacy assurance, Monitoring, Information disclosure and Cooperative norms (Set I). Two analyses were done, one for *renting* and one for *renting out*. Following, a MANOVA was conducted for the five dependent variables that were low in questionnaire A and high in questionnaire B. These were Security Payment system, Security Guarantee system, Review system, Vouching and Social presence (Set II). This analysis was also done for *renting* and for *renting out*. For each test, the assumption of equal variances was violated. However, the tests were still interpretable because the two groups that were compared were similar in size and then a MANOVA is fairly robust to a violation of this assumption (Nijdam, 2012).

Set I - Verification, Privacy assurance, Monitoring, Information disclosure and Cooperative norms

Renting analysis: The test statistic of the MANOVA was significant (F value (5;164)= 6.885 with a $p < .001$). This indicates that the willingness to *rent* under the five high conditions significantly differed from the willingness to *rent* under the five low conditions.

Renting out analysis: The test statistic of the MANOVA was significant (F value (5;164) = 7.401 with a $p < .001$). This indicates that the willingness to *rent out* under the five high conditions significantly differed from the willingness to *rent out* under the five low conditions.

Set II - Security Payment system, Security Guarantee system, Review system, Vouching and Social presence.

Renting analysis: The test statistic of the MANOVA was significant (F value (5;162) = 10,571 with a $p < .001$). This indicates that the willingness to *rent* under the five high conditions significantly differed from the willingness to *rent* under the five low conditions.

Renting out analysis: The test statistic of the MANOVA was significant (F value (5;162) = 27,960 with a $p < .001$). This indicates that the willingness to *rent out* under the five high conditions significantly differed from the willingness to *rent out* under the five low conditions.

These four significant MANOVA tests showed that the individual independent samples T-tests were interpretable. However, to counteract the problem of multiple comparisons and the higher chance of a type I error, a Bonferroni correction was applied in the coming analyses. This is a conservative method to control for a family wise error rate that occurs when multiple tests are conducted (Field, 2005). The normal significance level of 5% was divided by five, for the five tests, and the new significance level was therefore 1%.

Univariate testing

A total of 28 independent samples T-tests were computed to compare the mean willingness score between the high and low condition of each institutional mechanisms. Table 9 shows the sample size (N) and test statistic (T) of each T-test. For each institutional mechanism, the mean willingness to *rent* the projector under the high scenario was compared with the mean willingness to *rent* the projector under the low scenario. The same procedure has been repeated for the willingness to *rent out* the projector.

Applying a significance level of $p < .01$, the results suggest that there was a statistically significant difference between the mean willingness to *rent* the projector from Tim for the following institutional mechanisms: information disclosure ($t = 2.618, p < .01$), cooperative norms ($t = 4.259, p < .01$) and an insurance mechanism (security feature guarantee) ($t = 4.052, p < .01$).

Furthermore, the results suggest that there was a statistically significant difference between mean willingness to *rent out* the projector to Martijn for the following institutional mechanisms: monitoring ($t = -3.617, p < .01$), cooperative norms ($t = 3.018, p < .01$), insurance mechanism (security feature guarantee) ($t = 8.157, p < .01$), deposit mechanism (security feature guarantee) ($t = 6.348, p < .01$) and vouching ($t = 3.361, p < .01$).

Table 9.

Test Statistics Independent Samples T-test per independent variable

			Willingness to rent	Willingness to rent out
	N High condition	N Low condition	T	T
Verification	79	89	2.346	.424
Privacy assurance	79	89	1.778	-.266
Monitoring	79	89	-1.578	-3.617 *
Information disclosure	79	89	2.618 *	1.131
Cooperative norms	79	89	4.259 *	3.018 *
Security feature – Payment:				
High credit / Low	43	79	-2.194	.147
High escrow / Low	46	79	-.795	-.060
High credit / High Escrow	43	46	1.415	.182
Security feature – Guarantee:				
High insurance / Low	46	79	4.052 *	8.157 *
High deposit / Low	43	79	1.869	6.348 *
High insurance / High Deposit	46	43	1.447	1.054
Review system	89	79	-1.845	-.810
Vouching	89	79	1.558	3.361 *
Social presence	89	79	-.729	.413

* Significant on a $p < 0,01$ level

Table 9 shows that some test statistics have a negative value. This indicates that the willingness to *rent* or *rent out* was higher in de low scenario than in de high scenario for that institutional mechanism. This is the case for privacy assurance (renting out), monitoring (both renting and renting out), credit card mechanism (renting), escrow service (both renting and renting out), review system (both renting and renting out) and social presence (renting). These findings contradict the initial hypotheses that the willingness under the high condition is higher than under the low condition.

Regression analysis

The above analysis shows that several institutional mechanisms seem to have a significant effect on the willingness to *rent* or *rent out* the projector. However, there could be a confounding variable that interferes with this effect. Therefore, a regression analysis has been conducted to control for the following possible confounding variables: disposition to trust, age, gender, place of residence (city or village), education, experience with general e-commerce and experience with P2P e-commerce. A table with all the separate regression coefficients and significance levels can be found in Appendix D.

All the variables which had a significant ($p < .01$) effect before, still appeared to be significant after controlling for the confounding variables. The other way around, there were also no variables significant on a $p < .01$ level after controlling for the confounding variables that were not significant before. This gives an extra robustness to the findings from the univariate analysis.

Effect size

To indicate the strength of the relationship between the institutional mechanisms and the willingness to *rent* or *rent out*, an effect size has been calculated. Table 10 shows the Cohen's d measure of association. This effect size is typically used to indicate the standardized difference between two means. Cohen (1988) suggests that an effect size under .40 is a small effect, between .40 and .80 a medium effect, above .80 is a strong effect and above 1.2 is a very strong effect. Interpreting the effect sizes in table 10, it can be seen that most effects are of medium size. Although, the insurance mechanism has a very strong effect and the deposit mechanism a strong effect on the willingness to *rent out* the projector. Interestingly, the effect size of monitoring is negative which indicates that respondents were more willing to *rent out* their projector in the weaker self-monitoring condition than in the strong website-monitoring condition.

Table 10.

Effect size Cohen's d

	Willingness to rent	Willingness to rent out
Monitoring		-.449
Information disclosure	.419	
Cooperative norms	.679	.506
Security feature – Guarantee:		
High insurance / Low	.702	1.404
High deposit / Low		.925
High insurance / High deposit		
Vouching		.471

< .40 is small, between .40 - .80 is medium, > .80 is strong, > 1.2 very strong.

5.2.3. Interpretation

The results suggest that respondents were significantly more willing to *rent* the projector from Tim when there was:

- A verification mechanism in which the identity of the renter was checked.
- An insurance mechanism as a form of guarantee that nothing would happen to the rented projector.
- A high information disclosure about the other participants.
- Strong cooperative norms.

The results suggest that a slightly different set of institutional mechanisms significantly influenced the willingness to *rent out* their own projector to Martijn.

- An insurance mechanism as a form of guarantee that nothing would happen to their projector.
- A deposit mechanism as a form of guarantee that nothing would happen to their projector.
- A possibility to vouch for other participants that are trustworthy.
- Strong cooperative norms

Interestingly, respondents seemed to have more trust in a self-monitoring system than in a strong monitoring policy by the website itself. Respondents were significantly more willing to *rent out* their projector if participants on the website had the option to publicly report misbehavior of other participants.

Concluding, two institutional mechanisms seemed to play a role in both the willingness to *rent* and *rent out*. These were strong cooperative norms and an insurance mechanism. Additionally, identity verification and high information disclosure about the participants seemed to be more important when *renting* the projector than *renting out* their own projector. A vouching and deposit mechanism seemed to be more important for the willingness to *rent out* their own projector than for *renting* a projector from someone else.

However, these tests only indicate that there was a significant difference between the willingness scores under these high and low institutional scenarios. The results do not necessarily indicate a causal relationship since there could be other factors that influence the willingness to *rent* or *rent out*. These results merely give an indication of which mechanisms are important in creating a marketplace where people are willing to *rent* or *rent out* their personal belongings. Figure 13 indicates the initial conceptual model. The boxes with the dotted line indicate the institutional mechanisms that are not significant and the highlighted boxes with the significance levels indicate the institutional mechanisms that have a significant difference in willingness between the high and low scenarios.

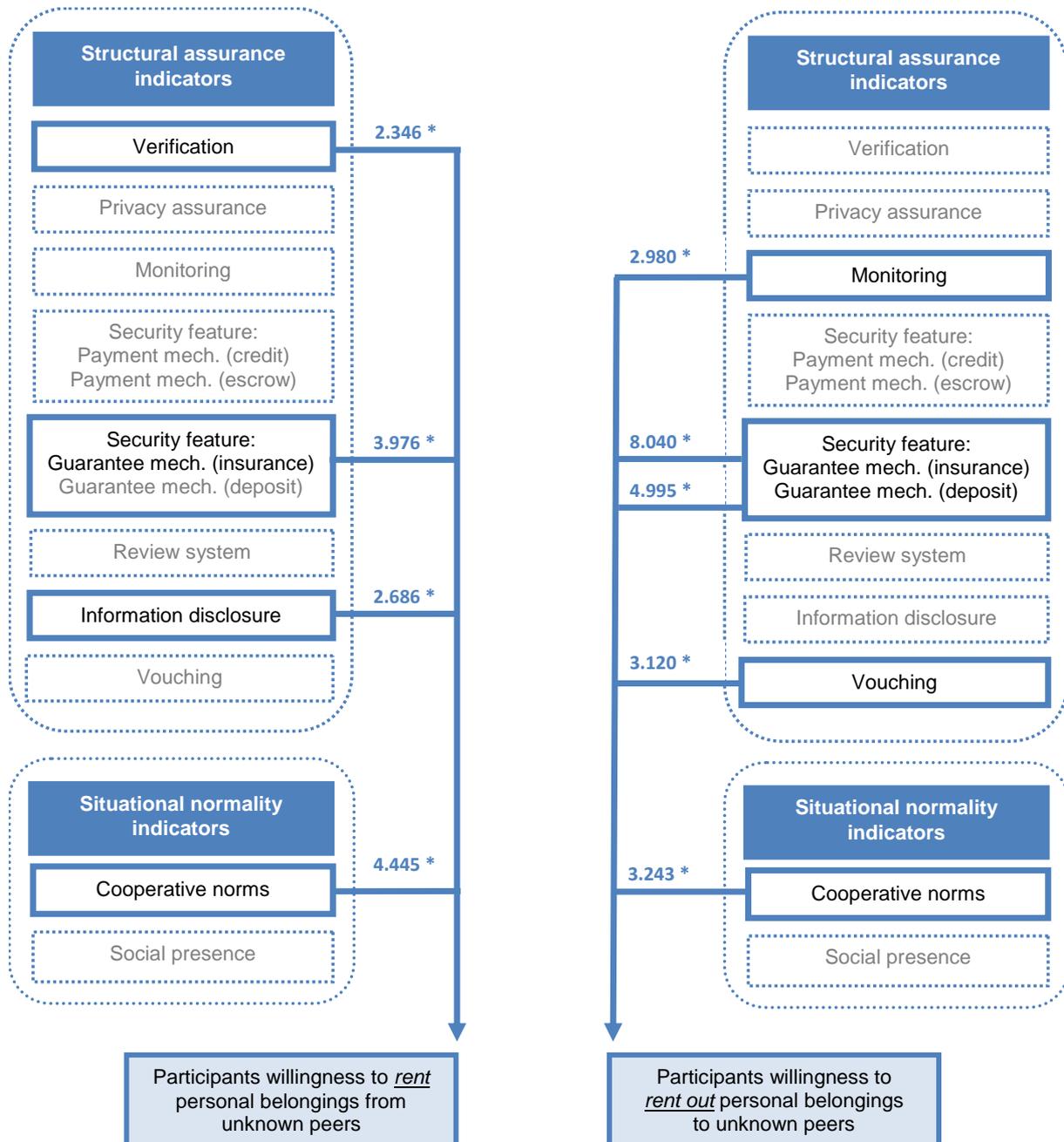


Figure 13. Conceptual model indicating significant influence of institutional mechanisms.

5.3 Results research question II

The second research question tried to see if the effect of the institutional mechanism on the willingness to *rent* or *rent out* the projector was different for several factors. These factors were disposition to trust, age, gender, place of residence (city or village), educational level, experience with general e-commerce and experience with P2P e-commerce. First several descriptive statistics will give a general overview of the data in section 5.3.1. Thereafter, the results from the regression analysis to test the hypotheses will be presented in section 5.3.2,

5.3.1 Descriptive statistics

The respondents in the sample differed on several factors such as their disposition to trust, several demographic factors and their experience with general or P2P e-commerce. These factors might have influenced their willingness to *rent* and *rent out*. Some general information is provided to give an indication of the influence of these factors.

The total willingness to *rent* of respondents is the sum of the ten answers of willingness that each questionnaire gathered. These ten answers were based on five high and five low scenario situations for all respondents. The same accounts for the total willingness to *rent out*. Looking at the seven external factors that were mentioned above, only a few seemed to have a relation with the total willingness to *rent* and total willingness to *rent out* scores.

The total willingness to *rent* differed significantly between respondents that had experience with general e-commerce or not ($p < .01$). Respondents with general e-commerce experience were more willing to *rent* the projector than respondents without any general e-commerce experience. Furthermore, the total willingness to *rent* differed significantly between respondents with high and low disposition to trust ($p < 0.05$). Respondents with higher disposition to trust levels were more willing to *rent* the projector.

The total willingness to *rent out* differed significantly between respondents that had experience with P2P e-commerce or not ($p < .05$). Respondents with P2P e-commerce experience were more willing to *rent out* the projector than respondents without any P2P e-commerce experience. Furthermore, the total willingness to *rent out* differed significantly between young and old respondents ($p < .05$). Younger respondents were more willing to *rent out* their projector than older respondents.

5.3.2 Hypothesis testing

It was expected that the effect of the institutional mechanism on the willingness to *rent* or *rent out* the projector was different for several external factors. For example, the effect of the institutional mechanism might differ between man and women or between young and old respondents. Two continuous factors which were expected to have an influence were: age and total disposition to trust (sum of four trust variables). Several categorical factors which were expected to have an influence were: gender, place of residence (city or village), level of education, general experience with e-commerce and experience with P2P e-commerce. If the effect of the institutional mechanism was different for a certain factor, there should have been a significant interaction effect. Such an interaction effect could be computed with a multiple regression analysis. A multiple regression analysis was done for each institutional variable including one of the factors, computing an interaction effect. A full overview of all the interaction coefficients can be found in Appendix E.

Age, gender and general e-commerce experience seemed to have some interaction effect with several of the institutional variables. Table 11 gives an overview of these regression coefficients of the interaction with each institutional mechanisms in the renting or renting out situation.

Table 11.

Regression coefficients of the interaction

	Age	Gender	Experience general e-commerce
Verification – Renting	-.017	.031	-.593
Verification - Renting out	-.016	.273	1.603
Privacy assurance - Renting	-.025	-.006	-.694
Privacy assurance - Renting out	-.042 *	.243	1.728
Monitoring – Renting	-.020	-.521	-.802
Monitoring - Renting out	-.026	-.350	2.841
Information disclosure - Renting	.000	.149	-1.356
Information disclosure- Renting out	-.004	.234	1.721
Cooperative norms - Renting	.005	-.119	.192
Cooperative norms - Renting out	-.005	.074	.075
Review system – Renting	.013	.181	1.225
Review system - Renting out	.020	.220	-.381
Vouching – Renting	.022	.578 *	.445
Vouching - Renting out	.039 **	.382	-1.322
Social presence – Renting	-.002	.233	.643
Social presence - Renting out	.016	.187	-1.209
Security feature payment – Renting	.038 .064 *	.571 .817	3.915 * 2.450
Security feature payment Renting out	.066 * .044	-.825 -.495	1.021 1.969
Security feature guarantee - Renting	.010 -.045	-.184 .315	1.112 .269
Security feature guarantee - Renting out	.042 -.042	-.140 .582	-1.998 .436

* Significant on a $p < .05$ level.

** Significant on a $p < .01$ level.

In one of the ten *renting* cases, age had a positive interaction effect with an institutional variable (secure payment system). This indicates that the effect of a secure payment system on the willingness to rent the projector increased with an increase in age. In other words, the effect of a secure payment

system was bigger for older respondents than for younger respondents. In three of the ten *renting out* cases, age had an interaction effect with an institutional variable. A negative interaction was found for the privacy assurance and a positive interaction was found for vouching and security feature payment. This indicates that the effect of privacy assurance on the willingness to *rent out* the projector decreased with an increase in age. The effect of a privacy assurance was bigger for younger respondent than for older respondents. The positive interaction effect between the vouching mechanism and age indicated that the effect of a vouching mechanism was bigger for older respondents than for younger respondents. The same accounts for a secure payment mechanism which had a bigger effect on the willingness to *rent out* in older respondents than in younger respondents.

In one of the ten *renting* cases, gender had a positive interaction effect with an institutional mechanism (vouching mechanism). This indicates that the influence of a vouching mechanism on the willingness to *rent* the projector was bigger for males than for females.

In one of the ten *renting* cases, general e-commerce experience had a positive interaction effect with an institutional mechanism (secure payment system). The influence of a secure payment system on the willingness to *rent* the projector seemed to be bigger for respondents with more general e-commerce experience.

5.3.3 Interpretation

In chapter 3, it was hypothesized that the influence of the ten individual institutional mechanisms would have a different effect on the willingness to *rent* or *rent out* the projector depending on several factors. The multiple regression analysis has computed all these different interaction effects. The results suggest that only three variables had a limited interaction effect. Age had an interaction effect with four of the 20 institutional variables (10 for *renting* and 10 for *renting out*). This is no robust result but indicates that age might have an influence on how people deal with e-commerce. Young people might be more experienced with the internet in general and, therefore, need less institutional mechanisms than older people. Gender and general e-commerce experience only had an interaction effect with one out of the 20 institutional variables. These interaction effects could easily be the result of chance and are, therefore, not interpreted as significant evidence for an interaction.

5.4 Results research question III

The third research question looks at different preferences. Did respondents prefer to *rent* a projector or *rent out* their projector? Which institutional mechanisms did respondents prefer when asked directly?

5.4.1 Preference to *rent* versus *renting out*

Interesting to see is if there was a difference between the willingness to *rent* or *rent out* the projector.

H_0 : Total mean willingness score to rent = Total mean willingness score to rent out.

H_1 : Total mean willingness score to rent \neq Total mean willingness score to rent out.

Respondents have indicated their willingness to *rent* and *rent out* in 10 situations. In questionnaire A, respondents had five high and five low scenarios. In questionnaire B, respondents had the opposite five high and low scenarios. For each questionnaire, the total willingness to *rent* could be calculated by summing up the ten answers on the ten scenarios. This could be compared, for each respondent, with the sum of their willingness to *rent out* scores on the same ten scenarios. This is analyzed by a paired samples T-test because the same respondents answered the willingness to *rent* as well as the willingness to *rent out* questions. This test is appropriate when two related sample means need to be compared (Field, 2005).

Questionnaire A

Mean willingness to *rent* was 40.16 and mean willingness to *rent out* was 35.95. There was a significant Pearson correlation of .631 with $p < .000$. There was a significant difference between the means when tested as an non-directional, as well as a directional hypothesis ($p = .000$).

Questionnaire B+C

Mean willingness to *rent* was 39.01 and the mean willingness to *rent out* was 38.02. There was a significant Pearson correlation of .828 with a $p < .000$. However, there was not a significant difference when tested as an non-directional hypothesis but significant as tested as a directional hypothesis ($p = .051$).

This implies that there is some evidence that respondents were significantly more willing to *rent* items from others on the online platform, than *rent out* their own personal items.

5.4.2 Institutional preferences

Respondents were asked in three additional questions to rank specific elements and institutional mechanisms that were most valuable to them to judge the reliability of other participants or which would increase their willingness to participate. Questions were asked about the content of a review system to judge the reliability of other participants, about the content of the profile of other participants and about general institutional features of the website.

Review system

Respondents were asked which two out of the six elements would be most valuable to them. The two items that were most listed by the 171 respondents were public review messages (n=120, 70%) and mean review score (n=95, 56%). Table 12. shows the preference frequencies and percentages for the

other review system elements. If the preferences were split between males and females, generations, level of education, experience and disposition to trust levels, there appeared to be no large differences in the order of preferences.

Table 12.

Preference frequencies for review system elements

	Frequency	%
Public review messages	120	70%
Mean review score	95	56%
Number of reviews	48	28%
Last 3 review scores	42	25%
Reviews on other websites such as Marktplaats	20	12%
Activities of the participant on social media websites such as Facebook, Twitter and LinkedIn.	17	10%

Information disclosure

Respondents were asked which three out of 11 elements would be most valuable to them. The three items that were most listed by the 163 respondents were the number of transactions that a participant had already done (n=147, 90%), the time of membership (n=62, 38%) and the city of residence of the participant (n=59, 36%). Table 13 shows the preference frequencies and percentages for the other listed personal profile elements.

Table 13.

Preference frequencies for personal profile elements

	Frequency	%		Frequency	%
Number of transactions	147	90%	Photo	32	20%
Time of membership	62	38%	Age	30	18%
City	59	36%	Job	11	7%
Personal description	53	31%	Gender	5	3%
Number of advertisements	50	23%	Hobbies	2	1%
Postal code	38	20%			

Institutional mechanisms

Respondents were asked which four out of ten website characteristics would be most valuable to them. The four items that were most listed by the 158 respondents were a guarantee in case of misuse (n=122, 77%), an identity verification mechanism (n=103, 65%), a secure money transfer (n=97, 61%) and the opportunity to contact members (n=68, 43%). Table 14 shows the preference frequencies and percentages for the other listed institutional mechanisms. No big differences in ranking appeared to exist between gender, educational levels or different experience levels with e-commerce. If split by generation, no big differences in order appeared. Only difference is that the opportunity to monitor other participants was listed in the top four by baby boomers and not by younger generations. If split by disposition to trust, the opportunity to monitor other participants was ranked third by people with low disposition to trust, while it was not in the top four of respondents with medium and high dispositions to trust. This is not surprising since disposition to trust was significantly correlated ($R = -0.811$, $\text{sig}=0.015$) with age. The older the respondents were, the lower the disposition to trust.

Table 14.

Preference frequencies for institutional mechanisms

	Frequency	%		Frequency	%
Guarantee in case of misuse	122	77%	Opportunity to review	55	35%
Identity verification	103	65%	Privacy assurance	47	30%
Secure money transfer	97	61%	Opportunity to vouch	29	18%
Opportunity to contact members	68	43%	Opportunity to create a private group	27	17%
Opportunity to monitor	61	39%	Personal information	23	15%

5.4.3 Interpretation

The comparison between the willingness to *rent* and *rent out* implied that there was some evidence that respondents were significantly more willing to *rent* items from others on the online platform, than *rent out* their own personal items. This is an expected result since it involves more risk to *rent out* a personal item than *rent* an item from someone else.

The overview of the preferences for the review system, information disclosure and general institutional mechanisms showed some interesting preferences. Regarding the review system, public review messages (70%) and mean review scores (56%) were valued most by the respondents. Regarding the information disclosure, 90% of the respondents listed the 'number of transactions' as the information they would like to know about other participants. Furthermore, it seemed that younger people valued a personal description and number of advertisements as more valuable information

while older respondents listed the time of membership and place of residence as more valuable. Regarding the institutional mechanism, more than 60% of all participants listed a guarantee mechanism, identity verification and secure money transfer as essential institutional mechanisms. This is an interesting result since these preferences do only partly link with the findings from the earlier results. Results from the experiment indicated that a guarantee mechanism was indeed found to be important in the form of a deposit or insurance mechanism. However, identity verification was only found to be important when *renting* the projector. A secure money transfer was not found to be important in the form of a credit card or escrow service.

“As individuals increasingly share ideas and information, leverage their excess capacity, and work together to create a more open, dynamic economy, we begin to see the strength of people-powered innovation. If we embrace this shift toward a collaborative economy, companies, individuals, and the environment can all win”.

Robin Chase,

Founder and CEO of Buzzcar.

6. Conclusion

The main aim of this research was to investigate online P2P product-service systems and to find out which institutional mechanisms make it more attractive for people to participate. Based on the literature it is assumed that people are more willing to engage in online e-commerce when there is trust. Trust can be facilitated by different institutional mechanisms to reduce uncertainty and risk. Therefore, the aim of this research was to find out which institutional mechanisms have a significant contribution to the willingness of participants to engage in online P2P product-service system.

6.1 Research question I

The first objective of this research was to evaluate which institutional mechanisms influence the willingness to engage in an online P2P product-service system. By means of a literature research on online trust, several key institutional mechanisms have been selected. Through an online questionnaire, 168 respondents have been asked to state their willingness to *rent* and *rent out* a projector under different scenarios. An experimental design of two different questionnaires allowed for a comparison of mean willingness scores between high and low institutional scenarios. Literature on online trust indicated that several structural assurance mechanisms and situational normality factors could enhance the trust of consumers and enhance the participation of consumers in e-commerce. The structural assurance indicators that have been investigated are verification mechanism, privacy assurance, payment security, guarantee mechanism (insurance or deposit), monitoring rules, a review system, information disclosure and a vouching mechanism. The situational normality indicators that have been investigated are cooperative norms and social presence.

Willingness to rent

The results suggest that respondents were significantly more willing to *rent* the projector from Tim when there was a strong verification mechanism, an insurance guarantee mechanism, high information disclosure about the other participants and strong cooperative norms. The willingness to *rent* the projector from Tim was higher when the website had a subscription procedure in which the identity of Tim was verified based on his telephone number and address. An insurance through the website in case something would happen, contributed to a higher willingness to *rent* the projector from Tim. This was also the case when the profile of Tim contained a high degree of information such as his name, age, gender, place of residence, postal code, time of membership, number of transactions, number of active advertisements, a short personal description and occupation. Furthermore, of influence seemed to be the degree of cooperative norms on the website. If respondents could form a group of friends from whom they would *rent* items, the willingness to participate was higher than when they would *rent* items from random people.

Willingness to rent out

The results suggest that a slightly different set of institutional mechanisms influenced the willingness to *rent out* their own projector to Martijn. Under an insurance mechanism, a deposit mechanism, a vouching mechanism and strong cooperative norms respondents were significantly more willing to *rent out* their projector. The willingness to *rent out* seemed to be higher when the projector could be insured through the website or when the renter would have to pay a deposit to the website which would be granted to the participant in case something would happen to the projector. Furthermore, the willingness to *rent out* the projector to Martijn seemed to be higher when a friend had vouched for Martijn to show that he had a good experience with this renter before. The possibility of making an online group on the website to limit the people where you *rent out* too (cooperative norms) seemed to contribute to the willingness to rent out as well. Interestingly, respondents seemed to have more trust in a self monitoring system than in a strong monitoring policy by the website itself. Respondents were significantly more willing to *rent out* their projector if participants on the website had the option to publicly report misbehavior of other participants compared to when the website would eliminate a misbehaving participant.

Concluding, the results indicate that an insurance mechanism and cooperative norms (private groups) were of influence in both *renting* and *renting out*. This provides some evidence that these systems are important in enhancing online trust. The other mechanisms were only significant in either *renting* or *renting out* situations. The fact that this differs indicates that people use different criteria to judge the risk when they are a renter or a lender on the platform.

The fact that a review system was not found to be significant is not in line with the online trust literature. This literature poses that a review system in which participants rate their experiences with others are a crucial mechanism in building trust. How can this be explained? It could be that the high and low scenario of the review system did not differ well enough. The high scenario provided an overall rating in the form of five stars, the rating of the last three interactions, showed ratings on other e-commerce websites such as Marktplaats and showed comments of other participants. The low review scenario provided just an average rating in the form of five stars. One explanation could be that only an average rating in the form of five stars, already provides the relevant and necessary review information. However, mean willingness scores in both the high and low scenario of the review system were relatively low compared to the other answers, which might indicate that both review systems are not sufficient enough and that even more information might be needed to enhance the trust in other participants.

Other mechanisms that did not seem to have an effect on both the willingness to *rent* and *rent out* are: privacy assurance and social presence. A privacy assurance is an assurance by the website that they will handle personal information with care and that it will not be shared with third parties. Literature provided evidence that consumers find this important in e-commerce. However, in case of a sharing

platform it might not be the most important element that determines whether people want to participate in it. Furthermore, literature indicated that social presence, the opportunity to communicate with the renter or lender, is important in P2P e-commerce. The results indicated that there is no difference between the high and low scenario willingness scores. The high scenario implied that it was possible to contact the other person by email, private chat, video chat and public messages. The low scenario implied that it was possible to contact the other person via an email function on the website. An explanation could be that only an email function on the website is a sufficient communication mechanism.

6.2 Research question II

The second objective was to explain the influence that these institutional mechanisms had on the willingness to engage in P2P product-service systems. In chapter 3, it was hypothesized that the influence of the ten individual institutional mechanisms would have a different effect on the willingness to *rent* or *rent out* the projector depending on several factors. A multiple regression analysis has computed all the different interaction effects. The results suggest that only three variables had a limited interaction effect. Age had an interaction effect with four of the 20 institutional variables. This is no robust result but indicates that age might have an influence on how people deal with e-commerce. Young people might be more experienced with the internet in general and, therefore, need less institutional mechanisms than older people. Gender and general e-commerce experience only had an interaction effect with one out of the 20 institutional variables. These interaction effects could easily be the result of chance and are, therefore, not interpreted as significant evidence for an interaction.

6.3 Research question III

A third objective was to evaluate the preferences to be a renter or a lender and the preferences for institutional mechanisms. The comparison between the willingness to *rent* and *rent out* implies that there is some evidence that respondents are significantly more willing to *rent* items from others on the online platform, than *rent out* their own personal items. This confirms the expectation that it involves more risk and, therefore, requires more trust to *rent out* a personal item than *rent* an item from someone else.

The overview of the preferences for the review system, information disclosure and general institutional mechanisms show some interesting preferences. Regarding the review system, public review messages (70%) and mean review scores (56%) were valued most by the respondents. Regarding the information disclosure, 90% of the respondents listed the 'number of transactions' as information they would like to know about other participants. This implies that the level of experience with renting or renting out a participant is seen as valuable information. Furthermore, it seemed that younger people valued a personal description and number of advertisements as more valuable information while older

respondents listed the time of membership and place of residence as more valuable. Regarding the preferences for institutional mechanisms, more than 60% of all participants listed secure payment system, a guarantee mechanism and identity verification as essential institutional mechanisms. Linking these outcomes with the results from the earlier research questions, these preferences only partly confirm the results from the experiment. A strong guarantee mechanism was indeed found to be important in the form of a deposit (in the renting out situation) or insurance mechanism (in both renting and renting out situation). Identity verification was only found to be important for the willingness to rent an item from someone else. Although respondents indicated that a secure payment would increase their trust, there was no significant difference found between the existence of a payment system (credit card or escrow service) and no payment system at all.

“This is much more than a trend. It is part of this macro power shift that’s underway from a world that’s top down to bottom up. For corporations, one of the things that they should consider is that the competitive threat now is not just other companies. It is empowered individuals”.

Rachel Botsman,

Author of What’s mine is yours.

7. Discussion

This thesis has been the first to look at online trust in P2P product service system and provides preliminary conclusions as for what institutional mechanisms might increase the willingness of consumers to participate in them. However, this research and its results need to be discussed. The validity and reliability of the method and analysis will be discussed. Furthermore, the generalizability of the results will be outlined and practical recommendations and recommendations for further research on P2P product-service systems and collaborative consumption in general will be given.

7.1 Validity

The validity of the measurements indicates the extent to which the questions have measured what they were supposed to measure. Several aspects of the validity of the data will be discussed.

Internal validity. The internal validity refers to the validity of the experiment and its measures. Several elements that might hamper the internal validity of this study need to be mentioned.

Measuring willingness. The dependent variables are measured by asking respondents for their willingness to rent or rent out in certain scenarios of an online sharing platform. This form of directly asking for someone's willingness has some bias in it. People tend to be more willing to do things when they are asked for it directly than when their actual behavior is measured or when preferences between two alternatives are measured (conjoint analysis). In case of this research, it was not possible to measure real actions because it was not feasible to design a sharing platform to test different actions. The Dutch sharing website Peerby.nl was still developing their platform by the time of the design of this research and no other real format was available to research actual behavior or to perform a conjoint analysis. By using this kind of direct measuring there is a risk that people do not really answer the question of willingness to rent or rent out, which diminishes the validity of the results.

Trust model. The model of online trust by McKnight et al. (2002) on which this research is based on, is based on the theory of reasoned action. This theory assumes that intentions can be measured as a proxy of actual behavior. Although this is an often used method in social science, there is a risk involved in measuring intentions because they can represent something different than when you measure real actions. In case of this research it was not possible to measure real actions because it was not feasible to design a sharing platform to test different actions, and Peerby.nl was not online yet by the time of the data collection.

Construct validity. The formulation of high and low scenarios of each institutional mechanism has been done with care. However, it could be possible that not all respondents interpreted these scenarios in the same way or they could not have understood the situation that was created which might lead to biased responses.

Predictive validity. The survey asked respondents for their willingness to participate in a specific case of renting or renting out a projector in ten different scenarios. It measured the feeling of respondents at that moment and this feeling is therefore likely to differ when asked at a different time again. This means that the predictive validity is low for describing how respondents will behave later on in the real online network.

7.2 Reliability

The reliability of the measurements refers to the method by which the data is gathered, the consistency of the measurements and the extent to which the results can be generalized.

Reliability. The method of this study consist of an experimental survey design. Two questionnaires have been constructed to be able to find differences between high and low scenarios of certain institutional variables. However, the order of the scenarios in the two questionnaires were fixed. It would have been better if this order would randomly change between respondent because that would eliminate possible biases that might arise from the order of the scenarios. Furthermore, the ten institutional mechanisms have been derived from online trust literature. It could be that there are other mechanisms which also influence the willingness to participate on sharing websites that have not been investigated here. These could for instance be the image of the platform, user interface or number of participants in the network.

External validity and generalizability. The sample consist of 168 respondents which gives a reasonable preliminary insight in the willingness and preferences of Dutch consumers. However, the sample is no pure random sample and is over represented by female respondents and students which gives a sampling error. Therefore, external validity and generalizability to all Dutch consumers is limited. Furthermore, the survey is specifically directed to P2P product-service platforms. The results have therefore a limited generalizability to general online e-commerce but do have a higher generalizability to other sharing platforms such as car sharing or room sharing.

Replicability. The replicability of this study is rather high. It consist of an online survey with an experimental design which can be conducted by other researchers to check the results generated by this study.

7.3 Recommendations

7.3.1 Recommendations for improvement

As a result of this research, several new questions have come up. Although some institutional mechanisms did have a significant effect on the willingness to rent or rent out the projector, they did not explain a large part of the variance. This indicates that there are other factors that influence the willingness of respondents to participate in sharing website. It is also recommended to replicate the

study to see if the same results occur when a different, more indirect, research design is used such as a conjoint analysis in which preferences are analyzed instead of direct measurements of willingness to participate. Furthermore, a bigger and more heterogeneous sample would allow for more generalizability of the results to the average Dutch consumers.

7.3.2 Recommendations for P2P sharing platforms

Although the results should be interpreted with the before mentioned limitations in mind, they provide a preliminary insight in which institutional mechanisms have an influence on the willingness to participate in sharing platforms. It is therefore recommended that current and future collaborative consumption start-ups pay attention to these institutional mechanisms and try to incorporate them in their platform.

The results suggest that special attention should be paid to a guarantee mechanism in the form of an insurance through the website or a deposit payment. This reduces the risk for both renters and lenders in case something happens with the good that is shared. Furthermore, a high degree of cooperation was preferred by both renters and lenders. The feeling of risk is reduced when participants can form their own private networks within the platform with friends or other sorts of groups. Additionally, an identity check and high information disclosure about participants seems to convince renters to rent an item on a sharing website. The possibility to refer 'good' participants to other friends seemed to enhance the willingness of lenders to rent out their personal item and should therefore be a considered feature on a sharing website. Regarding the monitoring of inappropriate behavior, lenders would like to have the option to report people publically on the website by giving them a bad review.

Furthermore, the results give some insights in the target group of Dutch consumers and indicates that no clear differences exist in how different people with different attributes react to institutional mechanisms. There is little indication that younger and older people deal differently with online sharing. Start-ups could decide to approach younger and older participants in different ways to enhance their trust and their willingness to participate.

Additionally, several preferences are given regarding the information and review system that participants preferably see on a sharing website. The two most preferred items in a review system were public review messages and an average review score. Regarding the information that is provided about other participants, the number of transactions that this participant engaged in was a highly preferred item. This indicates that people are interested in the experience that others have with sharing. Several different preferences were found between older and younger participants. It can therefore be recommended to sharing platforms that they take these differences in preferences into account and provide all the preferred information. Also when directly asked to participants, a guarantee mechanism in the form of an insurance or deposit was listed as highly preferable.

Additionally, identity verification and a secure money transfer mechanisms was preferred. It is therefore recommended to sharing platforms that these mechanisms are included to reduce the feeling of risk.

7.3.3 Recommendations for new research questions

Other online collaborative consumption platforms. Some of the institutional mechanisms which are investigated in this research might also be applicable to other online sharing platforms. It would be interesting to see if the same institutional mechanisms are found important by users of care sharing, carpooling, crowd funding, skill sharing or swapping websites. Or are there other mechanisms that are needed to reduce a different kind of risk that is present on these other platforms?

Other institutional mechanisms. The ten institutional mechanisms that have been investigated might not be the only relevant features of a sharing platform. Maybe there are other institutional mechanisms that have an influence on trust and the willingness to participate in sharing platforms besides the ones that are investigated here.

Sharing economy in other cultures. The results of this research are based on a sample of Dutch consumers which had quite some experience with general e-commerce and P2P e-commerce. New sharing platforms are recently launched in Turkey (Hemenkiralik.com and sahibinden.com) and the Middle East (Arabrooms.com and Gweet.com). It would be interesting to see how important online trust is in these cultures and if there are other institutional mechanisms or factors involved that influence the willingness of people to participate (Ozkan, 2012).

Business product-service systems. As the field of collaborative consumption is growing every day and expanding and exploring new fields of sharing, also the field of business-to-business sharing is rising. The start-up, Floop2, launched their B2B sharing platform in May 2012. The institutional mechanisms involved in B2B sharing might be different than for P2P sharing. It would therefore be interesting to investigate the trust mechanisms involved in B2B e-commerce and its influence on online sharing.

Growth of the sharing economy. It is often expected and proposed that people, once experienced collaborative consumption, will be more open to other ways of collaborative consumption and sharing? It would be interesting to research the growth potential for the sharing economy. What is the consumer segment that is willing to engage in sharing? The potential impact on a change in consumer mindset is also interesting. Do online platforms have the ability to bring about a transition from ownership based consumption to access based consumption?

Impact on design paradigm. In a broader sense, the field of collaborative consumption has some interesting impacts that are worth being research. A recent conference with the world's largest

consumer brands (Unilever, Coca-cola etc) focused partly on the impact of the sharing economy on their business models (Elks, 2012). What is the impact of collaborative consumption for these companies? It is expected that a growing impact of collaborative consumption will have an impact on the design paradigm. Will the transition from ownership to access influence companies to design consumer products more appropriate for sharing? For instance, will car manufacturers shift from offering cars towards offering mobility services?

Social impact. Online sharing platforms are expected to have an impact on the community because it makes use of local resources and connects people in the real world. It would be interesting to research if people who engage in sharing indeed feel more connected to their community. Additionally, there might be other positive or negative impacts that need to be investigated.

Economic impact. The growing sharing economy is often stated to disrupt existing business (Botsman and Rogers, 2011). Airbnb seems to have a considerable impact on the hotel business in the big cities. It would be interesting to investigate the impact of these platforms on local businesses and which industries are impacted most. Furthermore it is interesting to investigate the economic effect of the sharing activities. Participants on sharing websites can be seen as small entrepreneurs because they are making money with their belongings. These economic activities are currently not accounted for in the national GDP figures. This does not mean that it has no considerable impact and therefore, it is interesting to investigate.

Political and legal impact. Often discussed on collaborative consumption blogs is the legal impact or the possible legal changes that will come when the sharing economy will be rising. The Finnish government has claimed that 'crowdfunding'¹⁷ is against the law and officials in France have been looking at the growth of Airbnb in Europe (Meyer, 2012). It might be interesting to see how governments and big incumbents are reacting to the potential disrupting effect of collaborative consumption platforms.

¹⁷ Crowdfunding is a way for businesses to raise money on a platform by asking people (the crowd) to invest in their project. Examples are kickstarter.com, oneplanetcrowd.nl and symbid.nl

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9. Appendix

Appendix A – Collaborative consumption start-ups

The following tables provide a selection of the collaborative consumption start-ups. This is by no means an exhaustive list but gives an indication of the variety of application fields. An overview is given of the product-service systems, redistribution networks and collaborative lifestyles. This thesis has only researched the P2P product-service systems in which items are rented (Table 15).

A. Product-service systems

Table 15.

Overview of P2P product-service system start-ups directed at general goods

P2P product-service system	Country	P2P product-service system	Country
TheShareHood	International	The borrowers	UK
Neighborgoods	International (also NL)	Peerby	NL
Zilok	US, EU, NL, BE	Goodsha.re	NL
Frents	Germany/EU	SpullenDelen	NL
Rentalic	US	Untash	Canada
Snappgoods	US	FriendsWithThings	Australia
RentStuff	US	Rentoid	Australia
Neighborrow	US	OpenShed	Australia
Bid&Borrow	UK	HireThings	New Zealand
Ecomodo	UK	HeyNeighbor	?
RentMyItems	UK		

Table 16.

Overview of P2P product-service system start-ups directed at specific goods

P2P product-service system	Country	Activity
<i>P2P renting for specific goods</i>		
GoodShuffle	US	Home garden items
Tijdelijktehuur	NL	Spaces and big equipment
<i>Co-owning items</i>		
Jointly	?	Co-owning underutilized items

Table 17.

Overview of B2B sharing

P2P product-service system	Country
Floow2	NL, Germany

Table 18.

Overview of P2P product-service system start-ups directed at P2P car sharing

P2P product-service system	Country
RelayRides	Massachusetts San Francisco
GetAround	San Francisco
JustShareIt	California
SprideShare	US
WhipCar	UK
Blablacar	UK
SnappCar	NL

P2P product-service system	Country
MyWheels	NL
WeGo	NL
Autopia	Belgium
BuzzCar	France
Nachbarschaftstauto	Germany
Tamyca	Germany
DriveMyCarRentals	Australia

Table 19.

Overview of P2P product-service system start-ups directed at P2P ride sharing

P2P product-service system	Country
DuckSeat	International
CarpoolWorld	International
GoLoco	International
Avego	US and EU
NuRide	US
ZimRide	San Francisco LA and Tahoe
Carpooling	EU
LiftShare	UK
GoCarShare	UK
Toogethr	NL

P2P product-service system	Country
CarpoolDate	NL
Meerijden	NL
BackSeatSurfing	NL
CarpoolPlein	NL
Samenrijden	NL
Tickengo	Canada
ERideShare	Canada
Zebigo	US (Seattle)
Jayride	Australia, New Zealand
Mitfahrgelegenheit.de	Germany

B. Redistribution Systems

Table 20.

Overview of Redistribution system (swapping, giving, bartering) start-ups

Redistribution system	Items - Country	Redistribution system	Items - Country
Clothingswap	Clothes - US	SwapitBaby	Baby goods - Australia
Swaystyle	Clothes and entertainment	Freecycle	Give away for free
Swapaholics	Clothes	Yoink	Give away for free – US
Theswapteam	Clothes – US, Canada	OzRecycle	Give away for free – Australia
Rehash	Clothes, books	Zilch	Give away for free – Australia
Bookmooch	Books – EU, US, China	Netcyclor	Swap, buy, sell, give away – EU, US
Paperbackswap	Books, CD, DVD	Swapyourshop	Swap offices
Swap	Books, CD, DVD, games	Barteryourbusiness	Business service swapping – NL, Switzerland
Valet.Swap	Kids' items		

C. Collaborative Lifestyles

Table 21.

Examples of skill sharing, space sharing, personal finance and crowdfunding start-ups

Redistribution system	Items - Country
<i>Skills</i>	
Taskrabbit	Skill sharing - US
Konnektid	Skill sharing – NL
Airtasker	Skill sharing - AU
Timebanks	Skill sharing - US, UK
<i>Space</i>	
CouchSurfing	Free accommodation – 230 countries
Airbnb	Room sharing - International
Wimdu	Room sharing – NL (150.000 international accommodations)
Spaceout	Space in home or business - Australia
Hemenkiralik	Roomsharing – Turkey
Arabrooms	Roomsharing – Middle East

Redistribution system	Items - Country
Gweet	Roomsharing – Middle East
Park at my house	Parking space sharing
Divvy	Parking space sharing – Australia
Landshare	Sharing land with gardeners
<i>Personal finance</i>	
Zopa	Peer based loans – UK
Prosper	Peer based loans
Lending Club	Peer based loans
<i>Crowdfunding</i>	<i>(many more examples)</i>
Kickstarter	Connecting investors and entrepreneurs – US
Crowdaboutnow	Connecting investors and entrepreneurs – NL

Appendix B – Questionnaires

Questionnaire A

Instruction

The following questionnaire is about a website which will be further explained. All questions need to be filled in and you cannot go back to change an answer. Your anonymity will be guaranteed.

A. Trust

The following statements are about your trust in others. Please indicate to which extent you agree or disagree with the following statements.

- | | Completely disagree | | | Completely agree | | |
|---|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| 1. In general, people care about the wellbeing of others. | <input type="radio"/> |
| 2. In general, people keep their promises. | <input type="radio"/> |
| 3. I think that most people do a very good job at their work. | <input type="radio"/> |
| 4. I usually trust people until they give me a reason not to. | <input type="radio"/> |

B. Website

Imagine a website on which it is possible to rent goods from people in your neighborhood and to rent your own goods to them. You can think of tools, lawn mower, barbecue, trailer wagon, camping goods, movie projector, photo camera's etc.

For the following questions, please imagine the next two situations:

Situation 1. You want to organize a movie night and project a movie on your wall with a projector but you don't have one yourself. Tim lives two streets away and offers his projector for rent for a day. The price is a fair price for which you could imagine renting the projector.

Situation 2. You own a projector but you only use it a couple of times a year during special occasions. Two streets away lives Martijn who would to organize a movie night and wants to rent your projector for a day. The price is a fair price for which you could imagine renting out the projector.

A few descriptions of this website will follow. Please indicate after each description to what extend you are willing to rent a projector from Tim and to what extend you are willing to rent your projector to Martijn.

Description 1: The website has an application procedure in which the identity of Tim and Martijn is verified. Their phone number and address are verified on existence.

5. The chance that I rent the projector from Tim is:
- | | | | | |
|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| 0% -20% | 20-40% | 40-60% | 60-80% | 80-100% |
| <input type="radio"/> |
6. The chance that I rent out my projector to Martijn is:
- | | | | | |
|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| 0% -20% | 20-40% | 40-60% | 60-80% | 80-100% |
| <input type="radio"/> |

Description 2: The website has a privacy statement on the website in which it is stated that personal information will be handled with care and that this information will not be shared with third parties. Your personal information will not be shared with other participants and your search behavior on the website will not be recorded.

7. The chance that I rent the projector from Tim is:
 0% -20% 20-40% 40-60% 60-80% 80-100%

8. The chance that I rent out my projector to Martijn is:
 0% -20% 20-40% 40-60% 60-80% 80-100%

Description 3: The payment of rent between you and Tim and you and Martijn has to be arranged between the two of you.

9. The chance that I rent the projector from Tim is:
 0% -20% 20-40% 40-60% 60-80% 80-100%

10. The chance that I rent out my projector to Martijn is:
 0% -20% 20-40% 40-60% 60-80% 80-100%

Description 4: If something happens with the projector, you have to make an arrangement with Tim and Martijn yourself.

11. The chance that I rent the projector from Tim is:
 0% -20% 20-40% 40-60% 60-80% 80-100%

12. The chance that I rent out my projector to Martijn is:
 0% -20% 20-40% 40-60% 60-80% 80-100%

Description 5: If a participant is not behaving according to the rules, the website will eliminate the participant from the website after two warnings.

13. The chance that I rent the projector from Tim is:
 0% -20% 20-40% 40-60% 60-80% 80-100%

14. The chance that I rent out my projector to Martijn is:
 0% -20% 20-40% 40-60% 60-80% 80-100%

Description 6: The profile of Tim and Martijn shows the reviews from other participants according to a mean rating based on 5 stars.

15. The chance that I rent the projector from Tim is:
 0% -20% 20-40% 40-60% 60-80% 80-100%

16. The chance that I rent out my projector to Martijn is:
 0% -20% 20-40% 40-60% 60-80% 80-100%



17. Which of the following elements would you like to know about a participant's online behavior to judge his or her reliability? (2 answers possible)

- Mean review rating
- Last 3 reviews
- Public review messages
- The number of reviews
- Reviews on other websites such as Marktplaats or eBay
- Someone's activities on social media websites such as Facebook, Twitter or LinkedIn.

Description 7: The profile of Tim and Martijn contains the following information: name, age, gender, place of residence, time of membership, number of transactions, short personal description, hobbies and occupation.



18. The chance that I rent the projector from Tim is:
 0% -20% 20-40% 40-60% 60-80% 80-100%

19. The chance that I rent out my projector to Martijn is:
 0% -20% 20-40% 40-60% 60-80% 80-100%

20. Which of the following information would you like to know about a participant? (3 answers possible)

- | | |
|---|---|
| <input type="checkbox"/> Time of membership | <input type="checkbox"/> City |
| <input type="checkbox"/> Number of times he or she rented or rented out something | <input type="checkbox"/> Postal code |
| <input type="checkbox"/> Number of advertisements | <input type="checkbox"/> Short personal description |
| <input type="checkbox"/> Age | <input type="checkbox"/> Hobbies |
| <input type="checkbox"/> Gender | <input type="checkbox"/> Occupation |
| | <input type="checkbox"/> Photo |

Description 8: Another (unknown) participant vouches for Tim as a reliable renter and vouches for Martijn as a reliable lender from his own experience.

21. The chance that I rent the projector from Tim is:
 0% -20% 20-40% 40-60% 60-80% 80-100%

22. The chance that I rent out my projector to Martijn is:
 0% -20% 20-40% 40-60% 60-80% 80-100%

Description 9: On the website it is possible to have a private group where you only rent or rent out with people from that group. You are a member of a private group with only friends and acquaintances you invited. Tim and Martijn are also a member of this group.

23. The chance that I rent the projector from Tim is:
 0% -20% 20-40% 40-60% 60-80% 80-100%

Questionnaire B

Instruction

The following questionnaire is about a website which will be further explained. All questions need to be filled in and you cannot go back to change an answer. Your anonymity will be guaranteed.

A. Trust

The following statements are about your trust in others. Please indicate to which extent you agree or disagree with the following statements.

- | | Completely disagree | | | Completely agree | |
|---|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| 1. In general, people care about the wellbeing of others. | <input type="radio"/> |
| 2. In general, people keep their promises. | <input type="radio"/> |
| 3. I think that most people do a very good job at their work. | <input type="radio"/> |
| 4. I usually trust people until they give me a reason not to. | <input type="radio"/> |

B. Website

Imagine a website on which it is possible to rent goods from people in your neighborhood and to rent your own goods to them. You can think of tools, lawn mower, barbecue, trailer wagon, camping goods, movie projector, photo camera's etc.

For the following questions, please imagine the next two situations:

Situation 1. You want to organize a movie night and project a movie on your wall with a projector but you don't have one yourself. Tim lives two streets away and offers his projector for rent for a day. The price is a fair price for which you could imagine renting the projector.

Situation 2. You own a projector but you only use it a couple of times a year during special occasions. Two streets away lives Martijn who would to organize a movie night and wants to rent your projector for a day. The price is a fair price for which you could imagine renting out the projector.

A few descriptions of this website will follow. Please indicate after each description to what extend you are willing to rent a projector from Tim and to what extend you are willing to rent your projector to Martijn.

Description 1: The website has a subscription procedure in which participants have to give a valid email address.

5. The chance that I rent the projector from Tim is:
- | | | | | |
|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| 0% -20% | 20-40% | 40-60% | 60-80% | 80-100% |
| <input type="radio"/> |

6. The chance that I rent out my projector to Martijn is:
- | | | | | |
|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| 0% -20% | 20-40% | 40-60% | 60-80% | 80-100% |
| <input type="radio"/> |

Description 2: The website has a privacy statement.

7. The chance that I rent the projector from Tim is:
- | | | | | |
|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| 0% -20% | 20-40% | 40-60% | 60-80% | 80-100% |
| <input type="radio"/> |

8. The chance that I rent out my projector to Martijn is:
 0% -20% 20-40% 40-60% 60-80% 80-100%

Description 3: The payment of rent can be arranged with a secure method. The renter pays the rent to the website. When the payment is received, the renter can pick up the projector. If the renter is content with the projector, it notifies the website that the rent can be released to the lender.

9. The chance that I rent the projector from Tim is:
 0% -20% 20-40% 40-60% 60-80% 80-100%

10. The chance that I rent out my projector to Martijn is:
 0% -20% 20-40% 40-60% 60-80% 80-100%

Description 4: As a participant you are insured through the website. If the projector is not returned in its original state, the lender can apply for a compensation.

11. The chance that I rent the projector from Tim is:
 0% -20% 20-40% 40-60% 60-80% 80-100%

12. The chance that I rent out my projector to Martijn is:
 0% -20% 20-40% 40-60% 60-80% 80-100%

Description 5: If a participant is not behaving according to the rules, you can publically give this participant a bad review.

13. The chance that I rent the projector from Tim is:
 0% -20% 20-40% 40-60% 60-80% 80-100%

14. The chance that I rent out my projector to Martijn is:
 0% -20% 20-40% 40-60% 60-80% 80-100%

Description 6: The profile of Tim and Martijn shows the review from other participants according to:

- A mean rating based on 5 stars.
- The number of people that rated them.
- A mean rating of the last 3 transactions.
- Short review messages of other participants.
- Review scores on other websites such as Marktplaats or eBay.

15. The chance that I rent the projector from Tim is:
 0% -20% 20-40% 40-60% 60-80% 80-100%

16. The chance that I rent out my projector to Martijn is:
 0% -20% 20-40% 40-60% 60-80% 80-100%



17. Which of the following elements would you like to know about a participant's online behavior to judge his or her reliability? (2 answers possible)

- Mean review rating
- Last 3 reviews
- Public review messages
- The number of reviews
- Reviews on other websites such as Marktplaats or eBay
- Someone's activities on social media websites such as Facebook, Twitter or LinkedIn.

Description 7: The profile of Tim and Martijn contains the following information: name, time of membership and number of transactions.



18. The chance that I rent the projector from Tim is:
 0% -20% 20-40% 40-60% 60-80% 80-100%

19. The chance that I rent out my projector to Martijn is:
 0% -20% 20-40% 40-60% 60-80% 80-100%

20. Which of the following information would you like to know about a participant? (3 answers possible)

- | | |
|---|---|
| <input type="checkbox"/> Time of membership | <input type="checkbox"/> City |
| <input type="checkbox"/> Number of times he or she rented or rented out something | <input type="checkbox"/> Postal code |
| <input type="checkbox"/> Number of advertisements | <input type="checkbox"/> Short personal description |
| <input type="checkbox"/> Age | <input type="checkbox"/> Hobbies |
| <input type="checkbox"/> Gender | <input type="checkbox"/> Occupation |
| | <input type="checkbox"/> Photo |

Description 8: A good friend vouches for Tim as a reliable renter and vouches for Martijn as a reliable lender from his own experience.

21. The chance that I rent the projector from Tim is:
 0% -20% 20-40% 40-60% 60-80% 80-100%

22. The chance that I rent out my projector to Martijn is:
 0% -20% 20-40% 40-60% 60-80% 80-100%

Description 9: On the website it is possible to have a private group where you only rent or rent out with people from that group. You are a member of a private group with only people that live less that 10 km away. Tim and Martijn are also a member of this group.

23. The chance that I rent the projector from Tim is:
 0% -20% 20-40% 40-60% 60-80% 80-100%

24. The chance that I rent out my projector to Martijn is:
 0% -20% 20-40% 40-60% 60-80% 80-100%

Questionnaire C

Questionnaire C is identical to questionnaire B except for characteristic 3 and 4:

Description 3: The payment of rent can be arranged with a credit card. The rent has to be paid by credit card to the lender. If the projector is not being delivered to the renter according to the agreement, the renter can get a refund through the credit card service.

9. The chance that I rent the projector from Tim is:

0% -20% 20-40% 40-60% 60-80% 80-100%

10. The chance that I rent out my projector to Martijn is:

0% -20% 20-40% 40-60% 60-80% 80-100%

Description 4: The renter pays a deposit to the website. If the projector is not returned in its original state, the lender can apply for the deposit.

11. The chance that I rent the projector from Tim is:

0% -20% 20-40% 40-60% 60-80% 80-100%

12. The chance that I rent out my projector to Martijn is:

0% -20% 20-40% 40-60% 60-80% 80-100%

Appendix C – Code book

Table 22.

Codebook for data in SPSS – Dependent variables

Name variable	Measure	Description	Answer	Code
Ver_1	Interval	Verification - Renting		
Ver_2	Interval	Verification - Renting out		
PA_1	Interval	Privacy assurance– Renting		
PA_2	Interval	Privacy assurance - Renting out		
Mon_1	Interval	Monitoring - Renting		
Mon_2	Interval	Monitoring - Renting out		
ID_1	Interval	Information disclosure - Renting		
ID_2	Interval	Information disclosure - Renting out		
CN_H_1	Interval	Cooperative norms high - Renting		
CN_H_2	Interval	Cooperative norms high - Renting out	0-20%	1
			20-40%	2
SFp_1	Interval	Security payment service – Renting	40-60%	3
			60-80%	4
SFp_2	Interval	Security payment service - Renting out	80-100%	5
SFg_1	Interval	Security guarantee - Renting		
SFg_2	Interval	Security guarantee - Renting out		
RS_1	Interval	Review system - Renting		
RS_2	Interval	Review system - Renting out		
V_1	Interval	Vouching - Renting		
V_2	Interval	Vouching - Renting out		
SP_1	Interval	Social presence - Renting		
SP_2	Interval	Social presence - Renting out		

Table 23.

Codebook for data in SPSS – Independent variables

Name variable	Measure	Description	Answer	Code
Condition	Nominal	High scenario / low scenario	Low	0
			High	1
Condition SFp	Nominal	Security payment service	Low	0
			High-Escrow	1
			High - Credit	2
Condition SFg	Nominal	Security payment service - Renting out	Low	0
			High-Deposit	1
			High – Insurance	2

Table 24.

Codebook for data in SPSS – External variables

Name variable	Measure	Description	Answer	Code
E_DF	Ordinal	Disposition to trust: faith in humanity	Completely disagree	1
E_DI	Ordinal	Disposition to trust: Integrity	Partially disagree	2
			Neutral	3
E_DC	Ordinal	Disposition to trust: Competence	Partially agree	4
			Completely disagree	5
E_DB	Ordinal	Disposition to trust: Benevolence		
E_Dtotal	Scale	Total disposition to trust		-
E_Age	Scale	Age		-
E_Gender	Nominal	Gender	Male	1
			Female	2
	Ordinal	Level of education	High school	1
E_Education			MBO	2
			HBO	3
			University	4
E_Postalcode	Nominal	Postal code		-
E_EG	Nominal	General e-commerce	No	0
			Yes	1
E_EP	Nominal	P2P e-commerce	No	0
			Yes	1

Appendix D – Regression analysis, main effect

Several regression analysis are conducted to control for the following possibly confounding variables: disposition to trust, age, gender, place of residence (city or village), education, experience with general e-commerce and experience with P2P e-commerce. The following two tables shows the B values of each of the separate regression analysis. The first column shows the B values of the 'plain' regression of the institutional mechanism (independent variable) with the willingness to *rent* or *rent out* (dependent variable). The other columns show the B values of the regression analysis in which the indicated variable is included in the regression. In most cases, these additional variables seem to have no significant confounding effect on the influence of the institutional mechanism on the willingness to *rent* or *rent out*. Mechanisms that were significant before, were still significant after controlling for the other variables. The other way around, mechanisms that were not significant before, were still not significant on a $p < .01$ level after controlling for the other variables.

Table 25.
B values of the regression analyses

	B	Trust	Age	Gender	Place of residence
Verification – Renting	-.518 *	-.512 *	-.419 *	-.392 *	-.414 *
Verification - Renting out	-.223	-.241	-.215	-.027	-.172
Privacy assurance – Renting	-.424 *	-.418 *	-.360	-.299	-.422 *
Privacy assurance - Renting out	-.097	-.091	-.121	-.063	-.096
Monitoring – Renting	.213	.215	.466 *	.323	.311
Monitoring - Renting out	.589 **	.590 **	.736 **	.732 **	.674 **
Information disclosure – Renting	-.431 **	-.428 **	-.458 **	-.428 **	-.449 **
Information disclosure - Renting out	-.229	-.227	-.288	-.191	-.257
Cooperative norms – Renting	-.456 **	-.454 **	-.502 **	-.418 **	-.512 **
Cooperative norms - Renting out	-.342 **	-.341 **	-.378 **	-.300 **	-.395 **
Review system – Renting	.307	.305	.337	.280	.267
Review system - Renting out	.169	.168	.235	.121	.186
Vouching – Renting	-.183	-.185	-.226	-.205	-.163
Vouching - Renting out	-.425 **	-.426 **	-.467 **	-.466 **	-.427 **
Social presence – Renting	.108	.106	.146	.090	.210
Social presence - Renting out	-.065	-.067	-.006	-.083	.033
Security feature payment – Renting Escrow vs. no mechanism	.177	.163	.160	.149	.149

Security feature payment – Renting Escrow vs. credit card	-.548 *	-.570 *	-.609	-.407	-.664 *
Security feature payment - Renting out Escrow vs. no mechanism	.042	.027	.024	.014	-.007
Security feature payment - Renting out Escrow vs. credit card	-.115	-.140	-.202	-.050	-.426
Security feature guarantee - Renting Deposit vs. no guarantee	-.303	-.290	-.327	-.460	-.355
Security feature guarantee - Renting Deposit vs. insurance	.512	.543	.501	.374	.491
Security feature guarantee - Renting out Deposit vs. no guarantee	-1.151 **	-1.139 **	-1.025 **	-1.385 **	-1.177 **
Security feature guarantee - Renting out Deposit vs. insurance	.408	.438	.549	.220	.437

* Significant on a $p < .05$ level.

** Significant on a $p < .01$ level.

Table 26.
B values of the regression analyses

	B	Education	Experience general	Experience P2P
Verification – Renting	-.518 *	-.407 *	-.419 *	-.386 *
Verification - Renting out	-.223	-.156	-.027	-.065
Privacy assurance – Renting	-.424 *	-.331	-.319	-.289
Privacy assurance - Renting out	-.097	-.057	.055	.068
Monitoring – Renting	.213	.300	.287	.334
Monitoring - Renting out	.589 **	.861 **	.714 **	.749 **
Information disclosure - Renting	-.431 **	-.400 **	-.420 **	-.410 **
Information disclosure - Renting out	-.229	-.222	-.187	-.183
Cooperative norms - Renting	-.456 **	-.471 **	-.438 **	-.425 **
Cooperative norms - Renting out	-.342 **	-.352 **	-.324 **	-.306 **
Review system - Renting	.307	.259	.298	.289
Review system - Renting out	.169	.137	.123	.130
Vouching - Renting	-.183	-.186	-.186	-.206
Vouching - Renting out	-.425 **	-.437 **	-.453 **	-.462 **
Social presence - Renting	.108	.149	.119	.093

Social presence - Renting out	-.065	-.014	-.064	-.081
Security feature payment - Renting Escrow vs. no mechanism	.177	.166	.155	.119
Security feature payment - Renting Escrow vs. credit card	-.548 *	-.540	-.387	-.461
Security feature payment - Renting out Escrow vs. no mechanism	.042	.032	.004	-.020
Security feature payment - Renting out Escrow vs. credit card	-.115	-.254	.102	.011
Security feature guarantee - Renting Deposit vs. no guarantee	-.303	-.284	-.415	-.467 *
Security feature guarantee - Renting Deposit vs. insurance	.512	.538	.417	.399
Security feature guarantee - Renting out Deposit vs. no guarantee	-1.151 **	- 1.203 **	- 1.379 **	- 1.381 **
Security feature guarantee - Renting out Deposit vs. insurance	.408	.387	.224	.242

* Significant on a $p < .05$ level.

** Significant on a $p < .01$ level.

Appendix E – Regression analysis, interaction effect

Table 27.

B values of the interaction effect between the institutional mechanism and the external factor

	Trust	Age	Gender	Place of residence	Education	Experience general	Experience P2P
Verification Renting	.004	-.017	.031	.379	.437 -.347 .116	-.593	-.388
Verification Renting out	.043	-.016	.273	.151	.618 -.771 -.193	1.603	.188
Privacy assurance Renting	.031	-.025	-.006	-.083	.242 -.580 .199	-.694	.172
Privacy assurance Renting out	.024	-.042 *	.243	-.098	.674 -1.092 .037	1.728	.484
Monitoring Renting	-.070	-.020	-.521	-.344	-.608 -.863 -.265	-.802	.327
Monitoring Renting out	-.122	-.026	-.350	-.751	-.390 -1.312 -.390	2.841	.767
Information disclosure Renting	-.099	.000	.149	.048	.200 -.050 .409	-1.356	.387
Information disclosure Renting out	-.079	-.004	.234	.046	.167 -.139 .193	1.721	.375
Cooperative norms Renting	-.057	.005	-.119	.355	.668 .257 .077	.192	.252
Cooperative norms Renting out	-.063	-.005	.074	.197	.271 .029 -.126	.075	.239
Review system Renting	.057	.013	.181	.263	.088 .932 .108	1.225	-.256
Review system Renting out	.011	.020	.220	.344	-.036 1.225 .330	-.381	-.436
Vouching Renting	.084	.022	.578 *	.259	.016 .421 .039	.445	-.420

Vouching Renting out	.081	.039 **	.382	.536	.033 .772 .255	-1.322	-.303
Social presence Renting	.091	-.002	.233	-.273	-.591 -.025 -.235	.643	-.208
Social presence Renting out	.093	.016	.187	.017	-.671 .229 -.001	-1.209	-.128
Security feature payment Renting	.050 -.041	.038 .064 *	.571 .817	.017 1.239	-.103 .431 .190 -.310 .134 .437	3.915 * 2.450	.125 -.465
Security feature payment Renting out	.091 -.017	.066 * .044	-.825 -.495	.284 1.208	.512 .378 .704 -.356 -.245 .599	1.021 1.969	-.327 -.791
Security feature guarantee Renting	.196 * .085	.010 -.045	-.184 .315	.161 .214	.510 .788 -.118 -.100 -.156 -.248	1.112 .269	-.039 .009
Security feature guarantee Renting out	.155 .103	.042 -.042	-.140 .582	.321 -.663	.456 1.200 .562 -.040 -.429 .101	-1.998 .436	-.571 -.574

* Significant on a $p < .05$ level

** Significant on a $p < .01$ level