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**Bachelor Thesis**

# Building Trust in Peer-to-Peer Marketplaces: An Empirical Analysis of Trust Systems for the Sharing Economy

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# Abstract

Collaborative consumption is a new term that refers to the sharing of products and services between individuals and businesses through online marketplaces. Particularly peer-to-peer (P2P) marketplaces rely on a foundation of trust between users, since they involve higher risks than business-to-consumer e-commerce. Thus there is a need for systems that reduce this risk and measure users' trustworthiness online. Drawing from theories of trust from various disciplines and eleven qualitative interviews with different stakeholders of the collaborative consumption movement, this thesis investigates how to build trust between strangers in P2P marketplaces. The results indicate that measuring trustworthiness with an online trust system is a challenging endeavor, since trust is a multidimensional, subjective, situational and culturally dependent construct. The findings also suggest that companies attempting to create a trust system for P2P marketplaces must find the right balance between accurate trust measurement and practicality of the system for users. Building online communities of people with similar values and tastes is also proposed as an effective way of building trust. Suggestions for the practical implementation of online trust systems and future research are discussed.

# Table of Contents

# List of Figures

# List of Abbreviations

| | |
|---|---|
| CD | Compact disc |
| DVD | Digital video disc |
| et al. | And others |
| e.g. | For example |
| f/ ff. | And following |
| Fig. | Figure |
| p. | Page |
| PSS | Product service systems |
| P2P | Peer-to-peer |
| UN | United Nations |
| U.S | United States |
| $ | U.S. dollars |

# Appendix

1. Selection of interview questions
2. CD:
    - Transcripts expert interviews
    - Field notes from participant observation

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# 1. Introduction

Collaborative consumption and the sharing economy are becoming the buzzwords of 2012. These terms refer to the growth of online marketplaces that enable people to share tangible and intangible resources over the Web. Fueled by network technologies, the economic crisis and environmental concerns, online platforms that allow the sharing of cars, apartments, tools, space, skills and experiences are emerging across the globe (Sacks, 2011). Rachel Botsman, a key advocate of collaborative consumption, explained the genesis of this movement as follows: "For the first time in history, the age of networks and mobile devices has created the efficiency and social glue to [enable] the sharing and exchange of assets" (Conway, 2011).

Having recognized that collaborative consumption is an important movement with a large potential to generate jobs and income in urban areas, the mayor of San Francisco decided in March 2012 to form the *sharing economy work group* for the purpose of promoting the sharing economy and solving policies issues surrounding it (Gorenflo, 2012). Collaborative consumption has also received a vast amount of media attention in recent months from major news corporations and has even been described as one of the top ten ideas that will change the world by TIME magazine (Walsh, 2011). While some claim that this movement is a sign of a fundamental societal attitude shift, others believe it to be no more than a trend (Keen, 2011).

Some pioneering collaborative consumption marketplaces include peer-to-peer (P2P) auction platform eBay, CouchSurfing.com, a hospitality service that connects travelers looking for free accommodation with local hosts, and ridesharing company Carpooling.com. Such platforms provide access to goods without personal ownership and can thus lower costs and reduce waste. Neal Gorenflo, the founder of online magazine Shareable, believes that sharing can "help us tackle bigger problems like poverty and environmental degradation" (personal communication, February 02, 2012).

There is however a crucial factor that may determine the success or failure of the sharing economy: the ability to create trust between strangers (Maag, 2012). According to Ingram (2012), the sharing economy can only function if it is built on a solid web of

trust, which could become the “new currency” (Canigueral, Ortiz, & Léonard, 2012, p. 15) for P2P interactions. As marketplace owners and users are becoming increasingly aware that trust plays a decisive role for the functioning of an economic model based on sharing, a number of companies attempting to create trust systems that measure the trustworthiness of individuals have emerged.

These developments highlight that building trust on P2P platforms is a relevant topic for further investigation. This thesis will thus address this topic by first introducing the new research field of collaborative consumption and examining factors that enable and promote this phenomenon. After an introduction to the basic idea of collaborative consumption, the first five chapters will discuss how these factors have influenced the rise of collaborative consumption, such as the shift from ownership to access, growing awareness among consumers for sustainability as well as technological advances and characteristics of online communication.

The following chapters will discuss the construct of trust on the basis of literature that deals with trust in general as well as trust in e-commerce. Subsequently different approaches to creating online trust systems for P2P marketplaces will be applied to the theoretical models of trust by Mayer, Davis & Schoorman (1995) and Mcknight, Choudhury & Kacma (2002). The empirical section will examine why trust systems could be necessary and what characteristics they must have on the basis of participant observation and qualitative interviews with different stakeholders of the collaborative consumption movement. The stakeholders that were interviewed are researchers and social innovators, P2P platforms and companies attempting to create trust systems.

Although there is an abundant amount of popular literature on the topic of collaborative consumption, there is as of yet little academic literature that deals with the topic. Therefore the theoretical foundation of this thesis is based on a variety of academic literature from the fields of sociology, political science and management.

## 2. Collaborative Consumption Defined

The term collaborative consumption was coined by Algar (2007) in an article on collective bargaining. However the meaning of collaborative consumption as it is used today was established by Botsman & Rogers. In their book *What's Mine is Yours* (2010) they define collaborative consumption as "traditional sharing, bartering, lending, trading, renting, gifting and swapping, redefined through technology and peer communities on a scale and in ways never possible before" (p.xv). These concepts have been rapidly adopted by the movement's advocates worldwide, since their introduction by Botsman & Rogers as well as in Lisa Gansky's 2010 book *The Mesh: Why the Future of Business is Sharing*.

The economic model referred to when we speak of collaborative consumption is one based on the notion that access to goods and services can be preferable to ownership, since this often leads to a more efficient allocation of resources. As a consequence, collaborative consumption has many financial and environmental benefits (Kaye, 2012), such as reduced production of waste and pollution and can lead to a more practical and flexible lifestyle. Moreover it also provides emotional benefits for consumers, since it makes people feel generous and part of a community (Campbell Mithun, 2012).

The latter has a lot to do with the fact that collaborative consumption platforms not only enable interactions *online*, but also facilitate real life experiences and face-to-face encounters. By bringing together neighbors to share their belongings or plant a communal garden, collaborative consumption provides people with enriching social experiences and gives them a sense of community that seems to have been lost in many Western societies (Gansky, 2010, p. 50).

As this movement is still very new, there are few estimates of the actual impact of collaborative consumption on the world economy and the environment. In terms of the economy, the directory in Gansky's book (2010) shows, however, that more than 1,000 collaborative consumption ventures have been established. According to her calculations based on industry reports, Botsman estimates the sharing economy will reach a market size of at least $800 billion by about 2020 (personal communication,

April 18, 2012).[1] Venture capitalists also expect the next billion-dollar companies to emerge in this space (Pishevar, 2012). Looking at the rapid growth rates of some collaborative consumption companies gives a view to the number of people participating in this movement. Couchsurfing.com for instance, a platform with approximately 2 million members in Europe, currently gains about 40,000 new members per week (CouchSurfing International, 2012). Airbnb, a P2P travel site which enables people to rent rooms or apartments to travelers, has reached 5 million nights booked since 2008 and is growing exponentially worldwide (Airbnb, Inc., 2012). Over 500,000 North Americans participated in carsharing in 2010, according to a study by Shaheen & Cohen (2010), compared to only about 2,500 members a decade ago (ibid).

Although it is still too early to assess the long term environmental impact of collaborative consumption, there have been attempts to assess the potential positive impact of individual applications such as carsharing. According to an article by Zimmer (2012), personal vehicles are responsible for 20% of total U.S. energy-related CO2 emissions. Since 80% of cars on U.S. roads have unoccupied seats and every shared car replaces nine to 13 owned ones (Stoll, 2012), car and ridesharing companies contribute to reducing CO2 emissions and pollution by decreasing the number of cars on the road.

Four factors have been identified as driving the collaborative consumption movement: technology, economy, environment and community (Hammer, 2012). As Gorenflo puts it, the "Internet provides us with the means and the down economy provides us with the motivation for sharing and collaborating" (personal communication, February 02, 2012). Especially in times of economic recession people are happy for the extra income they can generate from sharing their car or renting out spare rooms. To add to this, a growing distrust of large corporations, banks and governments is pushing people to search for alternative business models and lifestyles (Gansky, 2010, p. 64). Lastly, growing environmental consciousness and longing for community is popularizing the

[1] This number is based on the following estimates of future market values:
$80 billion P2P accommodation rental
$10 billion global carsharing market by 2020
$85 billion product rental
$117 billion ridesharing estimated in US alone
$500 billion secondary goods market
$16 billion P2P money lending by 2015

sharing economy. Some of these drivers will be illustrated briefly in the following chapters.

**Definition of Peer-to-Peer**

Since collaborative consumption is part of a general shift from centralized, hierarchical forms of social organization with high entrance barriers (Bauwens, 2005, p. 7) to P2P collaboration, it is necessary to define P2P before continuing with the discussion. P2P systems are decentralized networks based on distributive intelligence "[…] organized through the free cooperation of *equals* in view of the performance of a common task, for the creation of a common good" (Ibid, p. 6f.). In an interview, Bauwens (personal communication, February 07, 2012) also described P2P as a "horizontal dynamic between people." Thanks to the proliferation of smartphones, wireless Internet and social networks, P2P platforms have been thriving, enabling anyone who chooses to participate and publish content on the Web regardless of time and space (Döbler, 2010, p. 391). Pioneering applications of P2P on the Web include file and music sharing, video streaming and the sharing of code necessary to develop open source software programs such as Linux. Today, P2P marketplaces are eliminating the need for a traditional middleman (such as businesses) in many types of transactions and are therefore facilitating the sharing economy. In the following analysis the term P2P marketplace, platform and community will be used synonymously.

**Underlying principles of the sharing economy**

To date Botsman & Rogers are the only authors that have examined the sharing economy in an academic manner that enables a structural analysis of the phenomenon. Therefore this thesis must rely on their findings to a large extent, although this may be one sided. To gain a better understanding of their concept of collaborative consumption, I will briefly present basic characteristics that they identify as well as their categorization of collaborative consumption systems.

According to Botsman & Rogers (2010, p. 75) collaborative consumption is based on four fundamental principles: critical mass, idling capacity, belief in the commons and trust between strangers. Critical mass, defined as "the minimum size of a network for it to be worthwhile for potential users to enter" (Arroyo-Barriguete, Ernst, Lopez-

Sanchez, & Orero-Gimenez, 2010, p. 645), is crucial for sharing platforms, since it determines how convenient and satisfying a service is to its participants (Botsman & Rogers, 2010). For instance lending or swap platforms like swapstyle.com or *Bag Borrow or Steal* can only compete with regular retailers if they offer a large enough choice of products. Since every additional member increases the number of products offered for swapping, a growing number of members increases the probability of finding exactly what you are looking for. The same is the case for car or flat sharing. If no one is driving where you want to go or there are no apartments available in the city you want to visit, the benefit for users is limited.

Secondly, Botsman points out that collaborative consumption only makes sense for goods with idling capacity or "untapped value of unused or underused assets" (Heimbuch, 2011). This applies especially to products with a high value that are seldom used, such as power drills and cars. With the help of technology, the sharing economy is trying to redistribute this unused potential of objects to maximize its benefit. Thirdly, we must revive our belief in the commons and the value of communities of shared interests (Botsman & Rogers, 2010, p. 90) to make collaborative consumption work. Trust between strangers is the most complex of these principles and will be discussed in more detail in chapter 6 and the subsequent chapters. It should be mentioned though that Botsman & Rogers only give this aspect brief attention and claim that "P2P trust is relatively easy to create" (2010, p. 93), something that can be questioned.

**The three systems of collaborative consumption**

To gain a better understanding of the possibilities of collaborative consumption as a business model, Botsman & Roger's (2010, p. 71ff.) categorization into product service systems (PSS), redistribution markets and collaborative lifestyles is helpful.

In a PSS, "goods remain in the ownership of the provider(s) and what a PSS customer actually buys is the functionality or performance of the goods in the form of a service" (Ericson, Müller, Larsson, & Stark, 2009, p. 62). Zipcar for example—currently the largest carsharing company in the United States—enables its members, so-called *Zipsters*, to access rental cars at an hourly rate of $6 –$10, which includes insurance and gas costs up to 180 miles (www.zipcar.com). This is an attractive alternative to owning

a car that would sit in the garage most of time, because one does not need it regularly. Just like carsharing, P2P rental sites for books (Chegg), fashion (Dress Vault), toys (Rent-a-toy), art (Artsicle) as well as generalized rental sites like Zilok, Getable, Snapgoods and Leihdirwas enable consumers to receive the value of a product without actually owning it, thus maximizing its utility (Botsman & Rogers, 2010, p. 72).

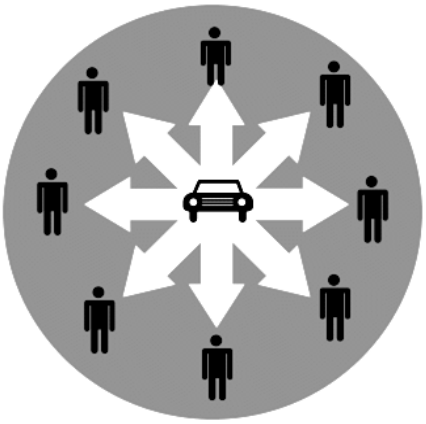

*Figure 1*. Product service systems, Botsman & Rogers (2010)

Redistribution markets, as defined by Botsman & Rogers (2010, p. 72f.), reallocate pre-owned goods from a person who no longer needs them to someone who does. They promote the reuse of products as an alternative to buying new ones and thereby drastically reduce the amount of waste we produce. From classic thrift shops, to large marketplaces like eBay and craigslist to numerous newer swap sites like Swap.com, Gumtree and thred-Up (Botsman, n.d.), redistribution markets efficiently match people's wants with others' needs. Thanks to the Internet these marketplaces have been able to reach a critical mass of participants, which in turn improves their efficiency by increasing the probability of finding someone who sees value in another person's trash.

*Figure 2*. Redistribution markets, Botsman & Rogers (2010)

The sharing of "less tangible assets such as time, space, skills and money" (Botsman & Rogers, 2010, p. 73) can be described as collaborative lifestyles. On TaskRabbit, a site where you hire your neighbors to carry out tasks for you, time and skills are shared; on StudioMates, people share office space. Sharing has even reached the financial sector with an array of P2P money lending sites like Prosper, Zopa and The Lending Club, which allegedly offer cheap loans and good returns. New ideas are popping up regularly, from food, to parking spots to garden sharing (Botsman, n.d.). Since these

collaborative lifestyles mostly entail real life encounters between strangers or the sharing of high risk assets such as money or houses, they require an especially high level of trust, which will be addressed later on in this thesis.

# 3. From Consumer Society to the Access Economy

Starting with the Industrial Revolution, the goal of the manufacturing industry became to mass produce products at the lowest possible cost in an assembly line fashion. Economic progress and increased efficiency in production made many formerly high end products affordable to the masses (Brinkmann, 2008, p. 94), which lead to an improvement in living standards (Wendt, 2010, p. 10). Ownership became a core value and a decisive part of people's identities. The automobile, for example, was regarded as a status symbol and extension of one's personality (Rifkin, 2000). Consumption can be understood as a three-phase process: the formation of needs, the search for information/decision making and the usage and disposal of the product (Wendt, 2010, p. 9). Although this type of consumption has always existed, its basic purpose has shifted from a means for the gratification of basic needs to a choice to fulfill wishes not necessary for survival (Ibid, p. 23).

After the transition from an industrial to a consumer society at the end of the 20$^{th}$ century, the concept of consumption as an activity spread and individuals started seeing themselves as consumers instead of owners (Brinkmann, 2008). Fueled by the advertising industry, companies now specialize in creating consumer needs and maximizing consumption (Bauman, 2001). Superseded by *hyper-consumption* (Botsman & Rogers, 2010, p. 20), consumption has become an end in itself without need for justification other than its own pleasurability (Bauman, 2001, p. 13).

Happiness, however, is not achieved by *satisfying* the desire to consume, but rather by keeping desire *alive* (Ibid, 2001). Since consumer needs in Western societies are becoming saturated (Langrock-Kögel, 2012), people are realizing that a life swamped with material objects can be very restricting as "the things you own start to own you" (Botsman & Rogers, 2010, p. 15). Natalie Ortiz believes we have reached a tipping

point: “people are waking up and thinking about the real value of buying things. They are looking for more meaningful and transparent ways to consume” (personal communication, January 25, 2012).

Anecdotal evidence obtained from my thesis research indicated that, at least in the developed economies of the U.S. and Europe, people’s relationship to physical products and their understanding of property is undergoing a shift. As the success of iTunes and Netflix shows, consumers are less interested in owning goods (e.g. DVDs or CDs), than they are in receiving access to their value (Fehrenbacher, 2011). Another factor behind this shift is the speed of technological innovation. With drastically shortened product lifecycles, consumer goods are frequently upgraded or substituted within a matter of months, making ownership obsolete. (Rifkin, 2000, p. 20).

As a consequence, products are dematerializing as they are converted into services (Botsman & Rogers, 2010, p. 98) and “ownership is being steadily replaced by access” (Rifkin, 2000, p. 4). Leaving the age of hyper-consumption behind, the new collaborative era emphasizes “creative play, P2P interactivity, social capital, participation in open commons and access to global networks” (Rifkin, 2011, p. 259).

Especially Millennials, the first generation to come of age after the year 2000 (Pew Research Center, 2010), also known as Generation-Y or “Digital Natives” (Windisch & Medman, 2008), are embracing the idea of access versus ownership. Since this generation no longer primarily defines itself by what it owns, but by what it likes and which groups it belongs to, it is accelerating an attitude shift away from consumerism and towards sharing (Gansky, 2010, p. 71). The motto of the sharing platform ohsowe “Share more. Consume less”(www.ohsowe.com) or the mission of the French garbage recycling company Wiithaa (www.wiithaa.com) reflect the values of many participants in the collaborative consumption movement: “We want to give the people the power to choose, act and change the meaning of consumption to create a more sustainable and intelligent world.“[2]

[2] Translated by author: “ Nous voulons donner le pouvoir aux gens de choisir, d’agir et de changer le sens de la consommation pour un monde plus durable et plus intelligent.“

A study by Zipcar (2011) also found that Millennials were more likely to participate in carsharing than members of older generations. Having grown up downloading music instead of buying CDs and looking at digital pictures on a laptop instead of a picture album, the jump to sharing other products is easier for Millennials than their forerunners from Generation X and the Baby Boomers (Botsman & Rogers, 2010). Millennials are also more technology savvy and accustomed to using social networks for connecting with peers and sharing details from their personal life (Pew Research Center, 2010, p. 28ff.). This may also have an influence on this generation's perception of trust, which will be examined in chapter 7. Although examining the profile of users that participate in the sharing economy is crucial to understanding how trust can be generated online, a detailed analysis of users goes beyond the scope of this thesis. This is an important topic for future research on collaborative consumption.

Another value mentioned previously that is driving the sharing economy is sustainability. As this is a large topic it cannot be addressed in detail here, but—for the sake of completeness—its role in the collaborative consumption movement will be outlined briefly in the next chapter.

# 4. The Sustainability Movement

Due to growing global awareness of economic, social and environmental problems like climate change, population growth, excessive waste and inhumane working conditions, sustainability has become a fundamental goal of governments, businesses and organizations in the 21st century. The United Nations (1987, p. 1) defined sustainable development as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs." According to them, sustainability is built on three pillars: economic development, social development and environmental protection (UN General Assembly, 2005).

The global players in Western societies as well as individuals are realizing that continuous economic growth coupled with an exponential population increase will lead to the depletion of our resources. As Leonard (2010) states in her movie *The Story of*

*Stuff*, "we cannot run a linear system in a finite planet indefinitely." From the standpoint of numerous writers and activists, the planet is already in an ecologically dire state and in need of a revolution (Senge, Smith, Kruschwitz, Laur, & Schley, 2008). Fed by the fact that the Internet makes it is easier to inform oneself about companies and their products (Gansky, 2010, p. 75), sustainability issues have also become a growing concern for consumers (Buttin, 2010, p. 50). They are seeking ways to contribute to sustainability and are changing their lifestyles by recycling or using public transport (Ibid, p. 50). As an alternative to joining traditional organizations like Greenpeace to combat environmental problems, people are participating in transnational (Giddens, 2009, p.1022) as well as local grassroots movements like the US initiative *transition towns*, *350.org* or the *Majora Carter Group*. Moreover the boom in environmentally friendly products like organic and Fair Trade food or eco-fashion indicates that "going green" has gained broad societal acceptance among all age groups (Pew Research Center, 2010, p. 59).

Consequentially one reason for the popularity of collaborative consumption is that it offers solutions for sustainable development in the environmental sphere. Especially PSS and redistribution markets can help tackle problems of pollution, scarcity of resources and waste by extending the life of products and turning "waste into profit" (Gansky, 2010, p. 81). In contrast to Gidden's (2003) assumption that environmental protection is a "matter of national policy" (p.58) that is difficult to link to economic development, collaborative consumption is a bottom-up movement with the potential to create a win-win situation for businesses and the planet. Therefore it is an attractive economic model for the future.

# 5. New Technologies & Online Communication

Before examining trust in P2P marketplaces, I would like to address the enabling technologies for collaborative consumption. I will also highlight specific characteristics of online communication that determine how trust can be created online.

**The impact of Internet & mobile phones**

The Internet and especially social media, wireless networks, mobile phones and GPS are energizing the growth of P2P platforms (Gansky, 2010, p. 28) and are enabling the collaborative power that is driving the sharing economy (Rifkin, 2011, p. 5). Smartphone applications make P2P marketplaces, such as carpooling.com, more attractive to users, because they increase the convenience and flexibility of the service and enable collaboration in real-time, regardless of the user's location. Additionally, GPS guarantees that you are shown only results relevant to your location. For example, carpooling.com shows users those drivers in the same geographic location who are offering car seats. The application can also show users Facebook friends that use the platform and display their reviews of people they have ridden with. All these mechanisms create content with improved depth for the user and add a social component to the products being consumed (Conway, 2011).

These new technologies also simplify the distribution of high cost goods (Ibid, 2011) by facilitating formerly laborious communication and coordination processes. Using Ronald Coase's terminology, the transaction costs (Coase, 1937) of sharing, renting or swapping items have diminished to the extent that they are becoming worthwhile again. Before the Internet age, "the transaction costs of coordinating groups of people with aligned wants and needs […] were high, making the sharing of products tricky and inconvenient" (Botsman & Rogers, 2010, p. 126). In comparison today, renting a power drill over Neighborgoods, an online neighborhood rental platform, is easier than buying a new one; giving away an old couch on Freecycle, a P2P gifting platform, is more convenient than bringing it to the dump.

The Internet, an inherently participative medium, has promoted the sharing economy not only in a strictly technical sense, but may have also induced a value shift, since it strongly encourages collaborative efforts, cross-cultural communication and the production of collective knowledge (Döbler, 2010, p. 402). Already in 1998 Giddens (2002) pointed out that new communication technologies are "shake[ing] up local communities and everyday patterns of life" (p. 31) Today, according to Gorenflo, the Internet has "retaught us the value of sharing and created a global culture of citizenship

where transparency and community are core values" (personal communication, February 02, 2012).

New media always brings new challenges. As Botsman & Rogers (2010, p. 107) highlight, sharing must become convenient, secure and more cost-effective for ownership to become an attractive alternative for consumers. As the discussion above demonstrates, new technologies have made sharing more *convenient* and *cost-effective*. The issue of security however, which among other factors depends on trust between peers, remains unsolved. The proliferation of e-commerce starting in the late 1990s first raised similar questions regarding trust in vendors (Gefen, 2000). Even though there are many similarities between e-commerce and collaborative consumption platforms, the existing methods for establishing trust on e-commerce sites are not sufficient for P2P transactions, since they require a different dimension of trust. This will be discussed in more detail later on.

**The impact of online communication**

Communication is an important determinant of trust formation, since trust is built on two way interactions (Gefen, 2000, p. 726). Therefore the subsequent analysis of trust demands an understanding of the Internet's influence on communication and the consequences this has for creating trust in an online environment.

As Luhmann (2005, S. 111ff.) defines, communication is not the transmission or exchange of information between two people, but depends on three components: *information, message* and *understanding.* Based on his assumptions, communication is only successful when it is followed by subsequent communication. This is the case when the message is understood by the recipient. The relationship between the three components of communication, however, is altered when communication takes place over the Internet (in comparison to face-to-face communication), because conversation partners lack mutual perception of each other and cannot use non-verbal communication (Fuhse, 2011). This lack of information and visibility of people's action—in other words "the absence in time and space" (Giddens, 1990, p.33)—creates the need for trust.

When looking at online communication it is necessary to differentiate between the Internet as a first-order medium that provides technical infrastructure and an array of second-order media, such as websites, email and chat that build on top of this framework. These second-order media offer a multitude of communication channels (from text, to sound to video) that are easy to switch back and forth between (Beck, 2010, p. 16ff.). According to Döring (2010), there are three forms of communication that an individual can engage in with second-order media: unilateral, interpersonal and group communication. Unilateral communication takes place through websites, videos and publications. Email, chat and messaging programs are examples of interpersonal communication, whereas social networks, discussion boards and forms of personal publishing (Schmidt, 2009), such as blogs and twitter, entail group communication (Döring, 2010, p. 160). All three communication types also take place in P2P marketplaces (e.g. the company website, private messages between users and group discussions) and are therefore relevant for analyzing trust creation through different communication modes and channels.

The amounts of feedback communicators receive as well as the rhythm of turn-taking in online interactions are linked to the synchronicity of the communication channel being used. While communication over online chat is generally synchronous and enables a high level of turn-taking, email communication tends to be slower and more asynchronous (Fuhse, 2011, p. 40). Even though websites, videos and publications are traditionally unilateral and do not involve feedback, bilateral elements like comment or feedback functions are becoming more common. In addition synchronicity is increasing with shorter communication intervals, for example between emails. Thus in comparison to its precursors print, television and radio, communication on the Web is most similar to face-to-face communication (Ibid, p.43) and is an “extension of our own views, own businesses and our own things” (Brogan & Smith, 2009, p. 18).

Finally there are two further characteristics of online communication that are worth mentioning in the context of collaborative consumption platforms: lack of non-verbal communication (Ibid, p.190) and anonymity. In the absence of non-verbal communication, like gestures, facial expressions or tone of voice, misunderstandings are more likely to occur, since it is harder to understand the intention of the sender.

Although the use of emoticons tries to counteract this loss of mutual perception by framing communication and giving indications of, for instance, irony (Fuhse, 2011, p. 37), real life interactions cannot be replaced. Since non-verbal cues also influence human perception of a person's trustworthiness, this gives an indication as to why it is more challenging to gain trust online than through face-to-face interactions. Despite these drawbacks, the lack of identifying information in electronic communication can also be advantageous, since it prevents prejudice towards usually disadvantaged groups, such as woman and minorities (Giddens, 2009).

A further aspect which also plays a significant role in people's willingness to trust someone is anonymity. In an online context anonymous activities can be understood as online messages that cannot be attributed to the online activity of a person. Anonymity and fake identities are often used for expressing offensive or provocative messages, since one cannot be held accountable for them (Döring, 2010, p. 165f.). Even though navigating the Internet anonymously may also help people open up about their feelings or take on a desired identity, this can also lead to more extreme behavior (Brogan & Smith, 2009, p. 192f.), and thus discourage trust between users. However according to Döring (2010, p. 165) users rarely have reasons to act anonymously or with fake identities in the first place, since it limits one's ability to connect with others and be taken seriously. Instead, it is more typical for users to present fragments of their identity in the form of pseudonyms that portray an improved or different self. This enables users to create meaningful relationships while at the same time protecting their privacy (Ibid, p.166). This brings up several questions that will be addressed in the following chapters: how much personal data must a user provide to be trusted by others? How much privacy should one give up for the sake of having a transparent online identity? Must online and offline identities coincide to be regarded as trustworthy?

**Summary of chapters 1 - 5**

To sum up, the above discussion has shown that collaborative consumption is a movement based on the notion of sharing and redistributing physical and intangible resources that is revolutionizing the way people consume. In response to the economic downturn and growing environmental concerns, the value shift from ownership to access has promoted the emergence of P2P business models that are sustainable, cost

saving and enable meaningful off- and online relationships between users. Since collaborative consumption businesses are primarily Internet-based, new challenges are emerging in how humans interact within these systems and how mutual trust can be established. This will be the subject of the following chapters.

# 6. Collaborative Consumption and Trust

In June 2011, a woman returned from vacation to find that her house, which she had rented out on Airbnb, had been ransacked and robbed by her tenants (Arrington, 2011). This incident severely damaged the company's reputation and pushed Airbnb to establish stronger security measures and offer a $50,000 host guarantee in the case of vandalism. Several months later HiGear, a P2P carsharing service that specialized in high end luxury vehicles was forced to shut down, because four of its member's cars valued at $300,000 were stolen by a criminal ring (Perez, 2012). This occurred despite an array of security precautions the company had put in place, including member screening, credit checks, collision insurance and security deposits. For this reason the founders decided that the inherent risk of the business was too high for its members for them to stay in operation (Ibid).

After an initial period of wild enthusiasm and some naivety towards collaborative consumption, these events brought on a sorely needed wave of skepticism towards P2P business models. With growing concerns as to the safety of P2P marketplaces and controversial opinions on the scalability of collaborative consumption circulating the Web (field notes, p.6f.), many start-ups realized that "they had lost sight of an element that was critical to their survival" (Gorenflo, personal communication, February 02, 2012), trust. And as explained earlier, trust between strangers is one of the key factors the sharing economy is built on. For this reason people will only choose sharing over ownership or conventional rentals when it is sufficiently *secure* (Botsman & Rogers, 2010).

Accordingly the spread of P2P marketplaces creates a need for some type of online reputation system (Léonard, personal communication, 2012) or mechanism that reduces

the uncertainty of transacting with strangers (Xiong & Liu, 2004, p. 844). These mechanisms already exist for face-to-face encounters, but are still in their early stages for Web transactions. eBay's user rating system for example helps buyers and sellers increase their chance of carrying out successful transactions by earning a good rating.

These reputation systems and trust-fostering mechanisms will be main subject of the following chapters. By looking at trust on an abstract level as a mechanism of complexity reduction (Luhmann, 1979), this thesis will draw conclusions for how trust-building processes can be replicated online. As mentioned earlier on, observant participation of the collaborative consumption landscape on the Internet took place to gain a fundamental understanding for the research field. Qualitative, open interviews with different stakeholders, especially entrepreneurs that have founded companies solely devoted to creating a centralized, portable reputation system, widen and deepen this research. Before investigating trust in the particular context of collaborative consumption I would like to take a step back to look at general trust frameworks.

# 7. Literature Review & Theoretical Framework

## 7.1 Introduction to Trust Research

The field of trust research is very challenging. Despite a multitude of studies in the fields of psychology, sociology, business and political science dedicated to investigating trust over the past decades, scholars have lamented how scattered, ambiguous and underdeveloped the literature is (Deutsch, 1958; Newton, 2001; Möllering, 2001). Although no universal definition of trust has been established to date, there is consensus among scholars that trust is a fundamental element of social capital (Fukuyama, 1995; Newton, 2001; Uslaner, 2002), which is the sum of resources one possesses based on group affiliation and networks of relationships (Bourdieu, 1983, p.191).

**Definitions of trust**

In accordance with the more recent literature, trust is understood as a multidimensional construct (Freitag & Traunmüller, 2009) or process (Khodyakov, 2007) that depends on

a set of multidimensional conditions, e.g. consistency, accessibility, loyalty and predictability (Butler, 1991, p. 644 ff.). As Freitag & Traunmüller (2009) define, trust is "the expectation that others will contribute to the well-being of a person or group, or at least refrain from harmful actions" (p.782f.). Although the many synonyms that are used for trust such as empathy and reciprocity (Newton, 2001, p. 203), credibility and belief (Quinn, Lewis, O'Sullivan, & Wade, 2009, p. 103) as well as confidence and faith (Khodyakov, 2007, p. 116) create some confusion, many definitions indicate that trust involves expectations and predictability regarding others' actions (Deutsch, 1958, p. 266; Möllering, 2001, p. 404). This also becomes evident in Rotter's (1967) definition of interpersonal trust as "the generalized expectancy that the verbal statements of others can be relied upon" (p. 644). Trust increases when a person's behavior meets the expectations that were created (Gefen, 2000, p. 726). In contrast Schoorman, Mayer & Davis (2007) include the notion of risk in their description of trust as the "willingness to be vulnerable to another party" (p.347). I have chosen to use this definition in the rest of this paper, since I find it most adequate for discussion of this topic.

The functionality as well as different forms and foundations of trust have also been subject to research. Luhmann (1979) stipulates that trust has the function of reducing social complexity by absorbing risk and uncertainty which would otherwise hinder us from acting in the first place. Without a basic level of trust, he argues, we would be unable to survive in a world that is growing in complexity. Trust is "a basic fact of social life" (Ibid, p.4) and motivator of behavior that forms the basis of economic exchanges and human interaction (Gefen, 2000, p. 727). Since this basic trust is often habitual and not something one chooses consciously (Ibid, p.28f.), it lowers the transaction costs of interacting and monitoring others' behavior (Fukuyama, 1995, p. 90; Uslaner, 1999, p. 34). This is an important aspect which will be examined in more detail in the context of P2P communities.

It should be mentioned here that much of the existing literature discusses trust in connection with social capital and its function in politics and civil society. Specific subjects that have been researched are the differences between high and low-trust societies (Fukuyama, 1995), changing public trust in institutions and government (Khodyakov, 2007; Mishler & Rose, 1997; Newton, 2001) as well as the correlation

between trust and economic inequalities (Uslaner, 2000). A lot of effort has also been focused on trust in American society under changing political and social conditions (Delhey, Newton, & Welzel, 2011; Uslaner, 2002). Although some of the findings from this research may be useful later on, these studies cannot be discussed in further detail here, as they are less relevant for the theoretical framework of this thesis.

Before continuing the discussion on the conditions of basic trust I find it necessary to specify the multiple varieties of trust that different authors define. One of the recurring distinctions is made between institutional and interpersonal trust. The latter refers to trust between individuals and is frequently divided into thick trust - which is characterized by "familiarity and strong emotional ties" (Khodyakov, 2007, p. 128) - and thin trust, which is based on weak ties. Additionally Uslaner (2000) differentiates between trust based on experience and knowledge, namely strategic trust, and trust that "transcends personal experience" (p.573), which he calls moralistic trust. These categories seem to overlap with the concepts of specific and global or situational and attitudinal trust (Butler, 1991; Scott, 1990). Although all these variations emphasize different dimensions of trust, I find the concept of particularized and generalized trust, which will be explained now, most helpful for the purpose of this thesis.

**Particularized and generalized trust**

The most common distinction made by scholars in trust research is the difference between particularized trust and generalized trust (Delhey, Newton, & Welzel, 2011; Freitag & Traunmüller, 2009; Uslaner, 2000, 2002), which are both a form of interpersonal trust. Particularized trust is based on personal experiences and refers to faith in the people we know such as family, friends and acquaintances. People with particularized trust, for example fundamentalists, only believe their group can be trusted and distrust all strangers. Generalized trust, also described as thin interpersonal trust (Delhey et al., 2011; Khodyakov, 2007), is an "abstract attitude" (Freitag & Traunmüller, 2009, p. 784) and fundamental belief that people can be trusted. Uslaner (2000) argues that generalized trust is a "core value [that is] stable over time" (p.574) and is based on a person's predisposition to trust (Freitag & Traunmüller, 2009). Accordingly trust depends on a mixture of *prior experiences* and a person's general *inclination* to trust. In the case that a person lacks experience with a potential trustee,

*information* is also crucial for judging a person's trustworthiness (Freitag & Traunmüller, 2009; Luhmann, 1979, p. 33).

As can be derived from the previous chapters about collaborative consumption, the creation of "trust between strangers" (Botsman & Rogers, 2010) mainly concerns the areas of interpersonal, generalized trust. Since trust between users that already know each other is less of an issue, particularized trust will not be discussed further. Institutional trust will briefly become relevant when looking at users' trust in the companies that offer P2P marketplaces or third party trust aggregation (to be discussed later) as opposed to trust in other users.

There are several factors that should be considered in connection with generalized trust that are crucial for building trust between members of P2P communities. According to Uslaner (2002), the reason we are able to trust in strangers is "the fundamental ethical assumption […] that other people share your fundamental values" (p.2). Could this imply that the sharing of resources between strangers is only possible when they have similar values? In the past this was often a given since people generally shared their assets within their local villages and communities. If you weren't sharing among closer acquaintances, namely within radius of particularized trust, you could usually assume that a person from your region had *similar values*.

In the 21st century however this is seldom the case, since sharing assets over the Internet often entails interacting with people from various countries, cultures and sociodemographic backgrounds with different value systems. Giddens (1990) states that the technological progress of modernity has lead to the disembedding of "social relations from local contexts of interaction and their restructuring" (p.21) across time and space. This, he argues, creates a larger need for trust. Due to these increasing complexities as well as economic inequalities specifically in the United States, Uslaner (2000, p. 585; 2002, p. 10) concludes that generalized trust has been vastly decreasing in American society since 1960 and is yielding to particularized trust (Fig. 3). This is an interesting statement in view of the recent upsurge of collaborative consumption businesses, since these platforms demand a high level of generalized trust from users.

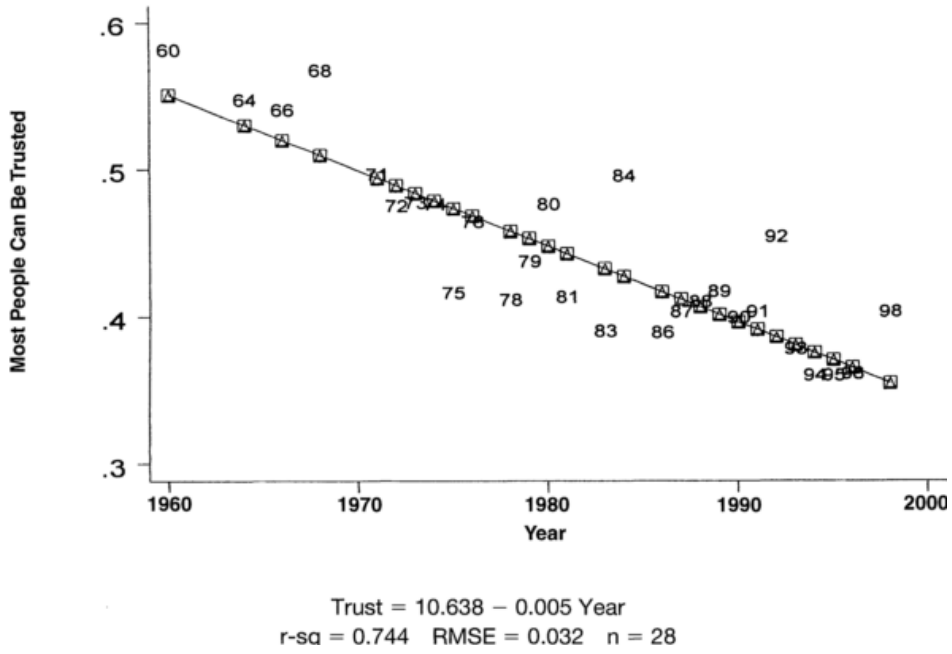


*Figure. 3:* The decline of trust from 1960-1998, Uslaner, 2000

Another drawback of generalized trust is that *monitoring of misbehavior* is more difficult than with particularized trust (Freitag & Traunmüller, 2009, p. 787), since social control is lower (Delhey et al., 2011, p. 787) and there are fewer interdependencies between trustees (Luhmann, 1979, p. 37). In a tight-knit community, performing acts of untrustworthiness can have severe consequences like reputation loss, making it more profitable over the long-term for individuals to engage in trusting behavior (Freitag & Traunmüller, 2009). Communities with weak ties, as for example many P2P platforms, often lack these automatic sanctioning mechanisms, as individuals cannot be identified or tracked and enforcing sanctions is costly (Tonkinwise, 2012, p. 10). This touches on the issue that people behave differently when they are anonymous (Brogan & Smith, 2009, p. 192), as discussed earlier. In fact research has shown that people are more inclined to act morally when they know they are harming a definable individual as opposed to an abstract entity such as governments or companies (Uslaner, 1999, p. 49). This indicates that lowering anonymity in P2P communities is key to creating a trusting environment.

In a nutshell trust can be understood as a favorable expectation or willingness to take risk regarding the actions of others, which is determined by past experiences and a person's disposition to trust. Generalized trust has been found to be most relevant for

P2P platforms. Having established these basic parameters of trust I will now highlight some particularities of creating trust in an online environment.

## 7.2 Online Trust Research

The proliferation of e-commerce and Internet-based services has resulted in the emergence of a large body of literature focused on trust in Internet environments (Brogan & Smith, 2009; Gefen, Benbasat, & Pavlou, 2008), e-commerce (Gefen, 2000; Mcknight et al., 2002) as well as reputation and feedback systems such as that of eBay (Ba & Pavlou, 2002; Quinn et al., 2009; Resnik & Zechhauser, 2001). In the following I will attempt to apply relevant aspects of this research to the field of collaborative consumption.

It is important in doing so to keep in mind the essential difference between e-commerce and collaborative consumption. E-commerce belongs to the business to consumer (B2C) category as it always involves a transaction between a vendor such as Amazon.com and a buyer. Collaborative consumption businesses however can range from P2P to B2C businesses, depending on the type of platform they offer. In many cases PSS are B2C businesses, while redistribution markets and collaborative lifestyles are mostly based on P2P collaboration. It must be noted though that it is difficult to create clear categories, as the line between businesses and individuals is blurring (Gansky, 2010, p. 42ff.). In taking a closer look, it is noticeable that many collaborative consumption applications have been implemented as B2C as well as P2P business models, for instance with carsharing (B2C: DriveNow by BMW - P2P: RelayRides) and online rentals (B2C: Getable - P2P: Zilok). The range of business models demands different levels of trust from users, enabling people to use the type of service that corresponds to the level of trust they are most comfortable with. Since B2C businesses are nothing new to consumers, trust is the largest issue for those collaborative consumption businesses operating in the realm of P2P sharing, which is why I have chosen them as the focus of my research.

**Trust issues in e-commerce**

According to Mcknight et al. (2002), the central trust-related issues in e-commerce are delivery of the vendor's and the buyer's promises, data privacy and fear of hacking or Internet security. As briefly touched upon in chapter 5, consumers generally perceive new technologies as risky and uncertain due to their lack of experience with them. This is consistent with Freitag & Traunmüller's (2009) finding that experience is a foundation for trust. Yet over time acceptance and institutional trust towards the infrastructure of the Internet has increased, as the exponential growth of e-commerce (Gefen, 2000, p. 725) also demonstrates. Nevertheless concerns of Web security are still an obstacle to building users' trust and may also influence users' overall institutional trust in e-commerce websites and P2P businesses (Mcknight et al., 2002, p. 340).

How a company handles its data is a growing concern of users and privacy advocates (Gefen et al., 2008, p. 278) and has been shown to influence people's willingness to register for e-commerce websites (Joinson, Reips, Buchanan, & Schofield, 2010, p. 3). Data privacy, a "cornerstone of trust" (as cited in Joinson et al., 2010, p. 4), is becoming a key issue for all online-based services including P2P platforms. Since it is a broad topic in itself that pertains to the field of institutionalized trust (rather than interpersonal trust), it cannot be examined in more detail here.

Finally *whom* users decide to share their information or transact with involves trust between vendor and buyer, or—in the case of P2P marketplaces—between users. One should bear in mind that Internet platforms enable people to interact without ever meeting in person. This engenders "transaction risks rooted in uncertainty about the identity of the online trading parties or product quality" (Ba & Pavlou, 2002, p. 244), and can impede one's ability to judge a company's or user's trustworthiness. However in some P2P models, such as P2P travel, task networks or P2P carsharing, more is at stake than receiving a bad quality product. Welcoming a traveler into your home to stay the night, letting a person run personal errands or giving them the keys to your car entail a high level of personal risk, as the examples of the Airbnb and HiGear incidents have demonstrated.

Since trust is not able to build gradually between parties through bilateral face-to-face communication, Gefen (2000) suggests that building trust on the Web must follow a different pattern than offline. In accordance with Luhmann's (1979) conception of trust Gefen (2000, p. 728) argues that familiarity is a prerequisite for trust in e-commerce, because it provides users with important contextual information. This complements Tonkinwise's (2012, p. 13f.) proposition that people trust others with similar interests and tastes. In an online environment the only source for receiving such information is personal profiles which enable people to portray themselves through pictures, friends and personal information. This means of portraying one's identity in a social environment is a foundation of trust (Luhmann, 1979, p. 62) and is, as a result, necessary for P2P platforms to be able to build trust between users.

As is also the case with data privacy, P2P businesses should not underestimate the influence that institutional trust can have on users' interpersonal, generalized trust and vice versa. In other words, users' impression of a company also affects their willingness to trust users of the platform, whereas a positive experience in the realm of interpersonal trust can also improve users' overall perception of the company (Mcknight et al., 2002, p. 340). Studies have shown that website design is crucial to the formation of initial trust (Brogan & Smith, 2009; Mcknight et al., 2002; Zhou, 2011), but also elements such as domain name, number of comments and links, information on the author, time period the site has existed, and the volume of productivity (e.g. number articles) (Brogan & Smith, 2009, p. 83f.) are used by consumers to evalute the trustworthiness, legitimacy and relevance of websites. In particular, the importance of website design or domain name demonstrates that trust is often influenced by emotions.

**Models of trust**

The model of trust constructs in e-commerce by Mcknight et al. (2002) shown in Fig. 4 gives a good overview of the process of trust formation online. Since the model cannot be explained in its entirety here, I will only point out a few relevant aspects. According to the model, trust in a Web vendor is determined by institution-based trust and an individual's disposition to trust, which was defined earlier as the fundamental belief in the trustworthiness of people (Uslaner, 2000). It also illustrates that people's general experiences on the Web influence their trusting beliefs and trusting intentions regarding

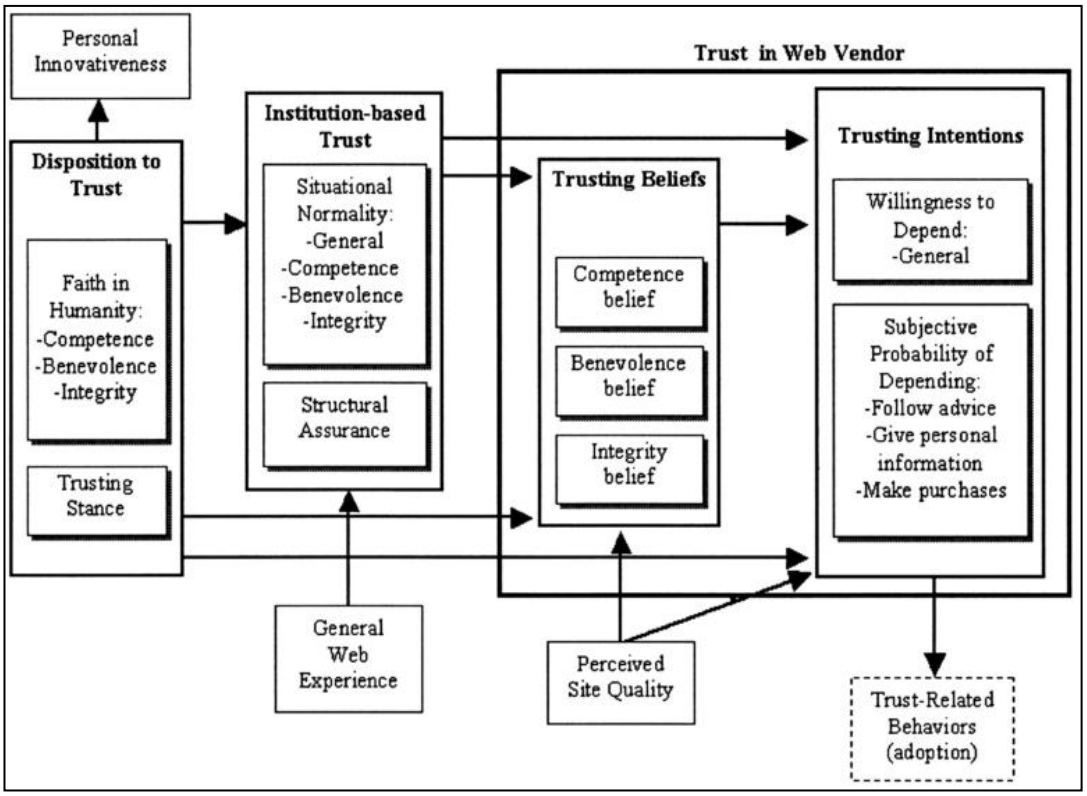


*Figure 4:* Trust model for e-commerce, Mcknight et al. (2002)

a Web vendor, which could result in trust-related behavior. The influence of perceived website quality on trust in the Web vendor has also been taken into account.

To transfer this model to the realm of P2P marketplaces, "trust in Web vendor" must be substituted by trust in peers, and "institution-based trust" would need to refer to general Web experiences as well as experiences with the specific platform used. Still it is difficult to draw relevant conclusions for creating trust between peers from this model, since it mainly focuses on institutional rather than interpersonal trust and is missing some necessary elements.

This is why I would like to draw attention to the attributes of benevolence, competence (or ability) and integrity, which Mcknight et al. (2002) as well as Mayer et al. (1995) use in their model of trust. They suggest that these three characteristics determine the trustworthiness of a person and will, when fulfilled, increase trusting intentions (p. 717). Mayer et al.'s (1995) slightly less complex model of trust (Fig. 5) visualizes very clearly the relationship between perceived trustworthiness and outcomes, namely trusting behavior. Disposition to trust, which is referred to as the trustor's propensity in

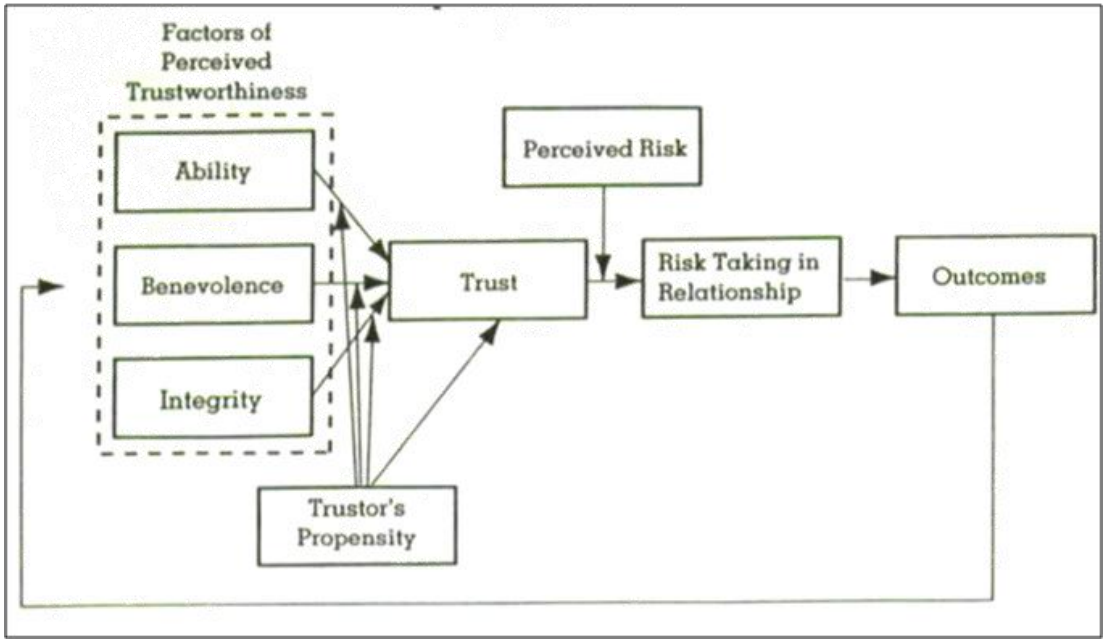


*Figure 5.* Basic trust model, Mayer et al.(1995)

this model, affects "the likelihood the party will trust" (Ibid, p. 715). In correspondance with their definition of trust, Mayer et al. (1995, p. 726) also stipulate that the level of trust depends on the trustor's percieved level of risk. Only when his level of trust exceeds the level of risk does the trustor engage in trusting behavior.

One deficiency of the model is the disregard of the influence of prior experience on trusting intentions. Nevertheless I find it very useful for understanding and possibly solving the trust-related issues P2P platforms face. For instance it reveals the necessity for P2P platforms and their users to communicate that they posses the qualities benevolence, competence and integrity, if they wish to be perceived as trustworthy. Secondly mechanisms must be found to reduce users' perceived risk and encourage them to expose themselves to vulnerability. This brings me to the last theoretical aspect of this thesis, the need for what I would like to call trust systems that offer P2P market tools and mechanisms for reducing the risk of trusting strangers.

## 7.3 Trust and P2P Marketplaces

When looking at research on P2P marketplaces, it is important to differentiate between platforms on which intangible goods such as files or videos are shared, and the type of collaborative consumption platforms that have so far been the subject of this paper. The

former has been the subject of copious research, whereas the latter is less developed as it is a fairly new field. However a huge body of research on trust between strangers in P2P marketplaces, among others by Botsman and Gansky, is beginning to emerge, which is unfortunately not yet available.

As Gansky (2010) puts it, "the mesh [or the sharing economy] offers more opportunities to win a customer's trust, and more occasions to put it at risk" (p. 90). As I just noted, this is why P2P businesses need to make use of these opportunities while reducing the risks of using their platform. The emphasis lies on *reducing* rather than eliminating risks, since "trust remains a risky undertaking" (Luhmann, 1979, p. 26). For this reason businesses have been working on tools that encourage people to take the necessary "leap of faith" (Arbogast, 2012) despite remaining risks. For lack of a more adequate term I will call the sum of these tools and mechanisms meant to establish trust between strangers online *trust systems*. After also considering the term trust *measurement* systems, I decided for the more general term, because not all existing systems actually measure trust, as will be shown later. Before moving on to the empirical research in which I take a look at specific trust systems that have emerged in reaction to the sharing economy, I will mention some theoretical thoughts on their requirements and briefly present reputation systems. Since there is not yet any peer reviewed literature on this topic, the following pages must rely on unpublished or not yet reviewed research.

**Reputation systems**

Reputation can be defined as recommendations and judgments of others that people base their decisions on when they lack personal experience with something (Eisenegger, 2009, p. 12). Therefore, it is one dimension of trust (Quinn, Lewis, O'Sullivan, & Wade, 2009, p. 105). According to Bourdieu (1983, p.183) people can accumulate different forms of capital during their lives that enable them to act and be successful in specific fields. Even though Bourdieu does not mention it as such, reputation capital could be seen as a form of social capital, as it functions as a type of credit rating that is determined by networks of relationships and recognition (Ibid, p.191f.).

To date the majority of the systems meant to enhance users' trust make use of this reputation capital through reputation or feedback systems like those of eBay or

Amazon. As Resnik & Zeckhauser (2002) explain in their paper on eBay, "a reputation system collects, distributes, and aggregates feedback about participants' past behaviors" (p.129). In other words, these systems measure users' reputation capital by enabling them to give each other feedback in the form of comments or ratings. The purpose of this is to increase transparency (Tonkinwise, 2012, p. 10f), to encourage trustworthy and discourage untrustworthy behavior (Resnik & Zeckhauser, 2002, p. 129), as well as provide users with recommendations based on others' past experiences (Xiong & Liu, 2004, p. 2). Even though studies have shown eBay's feedback system to be extremely effective (Botsman, 2010), reputation systems have been subject to criticism due to dishonest feedback and abuse (Xiong & Liu, 2004, p. 3f.). Despite the fact that these systems need further developing, the previous discussion of trust highlights that it is not enough to merely measure reputation to create effective trust systems for the sharing economy.

**Characteristics of trust systems**

Quinn et al. (2009) stipulate that every person has an individual perception of trust, making it necessary for trust systems to "capture [its] subjective nature" (p.104). Moreover, these systems must take into account that every person's trust is influenced by cognitive and emotional factors to a different extent. According to Quinn et al. (2009), reputation systems fail to capture this subjective, multifaceted nature, since they incorporate only one of its dimensions. In accordance with the characteristics of trustworthiness mentioned earlier, they suggest that trust systems should measure the dimensions credibility, honesty, reliability, reputation and competency. In contrast Xiong & Liu (2004) have developed a mathematical model with algorithms that measures trust in P2P online communities. Due to its high complexity, this model cannot be elaborated on further here. Nonetheless the general question of using algorithms to measure trust will be discussed later on. A popular existing system that is based on an algorithm is Klout.com, a platform that aggregates data from social media activities into a so-called *Klout Score*. Rather than trust, Klout solely measures people's *influence* on other people in their social networks.

Lastly, an important question that arises in the context of trust systems is, who should offer them? Should it be the companies that own the P2P platform or an external third

party? Does there need to be one centralized system for all platforms, or should every type of platform have its own? Due to the fact that a multiplicity of P2P marketplaces for every area imaginable already exist, the idea of having one centralized system seems practical. Tonkinwise (2012, p. 9) notes that even though one generally trusts a friend or family member, that does not guarantee that they are a good driver or have the skills to fix the broken dishwasher. Just because somebody is a great host on Airbnb does not mean they are a safe driver. This points to the need for a centralized trust system that takes contextual variables into account and offers user information that is tailored to every specific platform.

**Research question**

The preceding analysis has established the importance of trust in day to day life and online interactions. Yet the theoretical framework indicates that there are various academic standpoints on how trust can be defined, measured and encouraged. P2P platforms have been identified as being very dependent on trust between strangers, thus creating the need for trust systems. The goal of these systems is to reduce the risk of trusting behavior and recreating trust mechanisms of local communities in a global environment (Arbogast, 2012) that are able to bridge the "time-space distanciation" (Giddens, 1990, p.21) created through the Web. How this is possible in practice however remains uncertain. For this reason the empirical section of this thesis focuses on examples of the practical implementation of online trust systems and investigates the following research question: how can a centralized trust system be designed that successfully builds generalized trust between strangers in P2P marketplaces?

# 8. Methodology

The research question on how generalized trust can be built between users of P2P platforms by the use of trust systems will be explored with different qualitative research methods. Due to the multidimensional, subjective nature of trust and more importantly the novelty of this research field, qualitative research is a suitable method for investigating P2P marketplaces (Holstein, 2006, p. 20). Since the research is explorative, no hypotheses will be generated a priori (Bohnsack, 2003, p. 17ff.). Accordingly this research serves the purpose of providing first insights into the field of

P2P trust and reveals a variety of areas suited for subsequent quantitative and qualitative research. The research methods that were applied are participant observation and expert interviews. These methods are frequently combined since participant observation provides the context for interpreting interviews.

## 8.1Participant Observation

Participant observation is a research method prevalently used in ethnological field studies. It can be understood as the direct observation of human behavior, verbal statements, nonverbal responses and symbols during which the observer visibly participates in interactions (Diekmann, 2009, p. 548ff.). Depending on the type of study the observation is conducted in a structured or unstructured manner and takes place in a natural or artificial situation (the lab) (Ibid, p. 564). After the observation phase, experiences and insights are documented in the form of field notes.

In this study the participant observation was unstructured and took place in a natural environment. However, it somewhat deviates from the usual characteristics of the research method. Since the field of P2P marketplaces does not exist physically but is *online*, the participant observation naturally also took place on the Web. Thus I was not able to *go* to an actual place—for instance an organization, a public place or another culture—and observe, but had to actively *find* my research field. As a result my findings are strongly influenced by the Web pages I chose to visit, creating a high level of selectivity. As observation on the Internet is a somewhat unusual and new way to conduct research, the validity of the findings is thus limited. Nevertheless selectivity (Ibid, p. 567f.) and subjectivity (Flick, 2010, p. 28) are common issues in qualitative research. Thus it is not seen as a large concern here, since the main purpose of the participant observation was to gain access to the field of collaborative consumption and become familiarized with important players and current issues in the movement. This approach proved very successful, since it lead me to narrow this research paper to trust systems for P2P marketplaces. As a result the specific research topic was only defined after the first period of participant observation, which lasted from about October 2011 through January 2012. The second period of observation, which took place simultaneously to the expert interviews, was used to stay informed on further

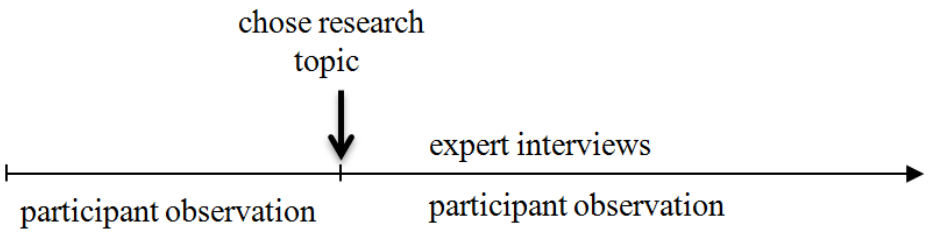


*Figure 6.* Timeline of research

developments in the field and gather material for the interviews. Fig. 6 illustrates this process.

I used several different channels to access the research field through observation: Twitter, Google Alerts, blogs and websites. These channels were chosen because they all provide relevant information on collaborative consumption and P2P platforms in an efficient manner. Google alerts is an application that allows users to tell Google to forward them all new entries on the Internet that include a specific keyword chosen by the user. Thus this application enabled me to quantitatively monitor how much is being written on the Web about collaborative consumption, which was the keyword that was entered. It should be noted though that unfortunately the Google settings did not allow me to receive articles from countries other than Germany. It can be assumed though that the number of results for collaborative consumption would have been a lot higher in the United States, since the movement is more widespread there than in Germany.

Twitter, a "social networking and microblogging service that enables its users to send and read posts, known as tweets" ("Twitter," 2012), proved to be the most effective channel for observant participation, since it lets users search for people and tweets by topic. Apart from being able to read what others were posting it was very easy for me to participate as a researcher by posting my own tweets. After a few weeks of research it became evident that Twitter was the most direct way to connect with people involved in the collaborative consumption movement. This is also how I found many of my interview partners. In addition Twitter was the medium that directed me to blogs and websites with the most recent articles related to P2P trust. Apart from examining content, I focused in particular on the group discussions that often follow online blogs and articles.

## 8.2 Expert Interviews

Eleven semi-structured interviews with stakeholders from the field of P2P trust represent the core of my qualitative research. The interviews were based on five to ten questions (see appendix) that varied by stakeholder group and had a length of 30 to 60 minutes. The questions that were asked were similar within every group to ensure the comparability between results (Diekmann, 2009, p. 537). Yet the interviews were semi-structured, since most questions were formulated openly and the order was adapted to each specific interview situation. Thus the questions in the interview guideline were also altered or added to be able to react to the interviewees' answers as well as to create a pleasant and logical conversation flow.

One of these interviews took place face-to-face, while the other ten were conducted via Skype, an instant-messaging and phone service that enables video chat. The use of this crossover medium between a telephone and a personal interview was chosen for this research—even though it was experimental in nature—because it was the most convenient yet effective way to reach experts on P2P marketplaces. Of course Skype has the disadvantage that it is more impersonal than a face-to-face interview, and provides less contextual information on the environment the interviewees are in, for instance their office. Regarding the interview situation it must also be noted that most interviewees had never been interviewed on Skype before by a complete stranger. This situation may have made the interviewees feel uncomfortable and could have lead to errors such as bias or answer distortion (Diekmann, 2009, p. 446f.).

Nevertheless using Skype had several benefits for this study. First the service's video function made it possible for the interview partners to see each other's gestures and facial expressions, thus combining the advantages of a phone interview, e.g. bridging large distances, with those of a face-to-face interview. Secondly Skype enabled me to interview people from Germany, the United States, France, Belgium, Portugal and Thailand, thus unexpectedly adding an intercultural perspective to my research. Without this communication channel it would not have been possible for me to reach such a large number of interesting and influential people in the field of collaborative consumption. Especially the fact that I was able to speak to people from different

cultural backgrounds as well as various environments, such as the Silicon Valley start-up scene or collaborative communities in Paris significantly enriched my research. Furthermore it became apparent that similar to Twitter, Skype was a good way to reach the target audience for this research, since the majority of the interviewees belongs to the generation of digital natives. In essence the methodology of this thesis has been slightly adapted to fit its topic by altering the classic research methods of participant observation and qualitative interviews. This is consistent with Flick (2010, p. 26ff.), who emphasizes that the subject of analysis should determine the research methods, not the other way around.

Another thing worth noting is that (at that time) there was, to my knowledge, no tool available for recording the interviews that were conducted via Skype, which is why I took notes on my laptop during the interviews. As a result the interview transcripts are only one to two pages in length each and do not include every small detail of the conversation. This is not seen as problematic though, since it is not the object of this research to deeply analyze and interpret the details of the interviewees' phrasing. On the contrary, the analysis of the interviews is primarily focused on the extraction and interpretation of content. Commonalities and differences between interviewee's statements are to be identified and interpreted. Thus the goal of the interviews is to gain insights and different perspectives on the issue of P2P trust and compare existing approaches to creating trust systems.

To achieve this it is necessary to incorporate all relevant stakeholder groups of the research field. These are the P2P platforms themselves, their users, researchers and thought leaders in the field (such as Botsman and Gansky), as well as the companies that are working on or already offer trust systems for P2P marketplaces (referred to as trust aggregation businesses here). Representatives from all these groups were interviewed for this study, including five researchers and social innovators, four founders of trust aggregation businesses and two members of P2P platforms, of these one currently operating and one still in development. Unfortunately it was not possible to include users in this study, since it was difficult to gain access to a representative and large enough number of them. This would be a very important area for further research

though, since studying users is crucial for understanding how trust on P2P platforms can be established.

During the interviews, members of the same group were asked similar questions, some of which addressed collaborative consumption in general and others which specifically raised the issue of trust. Due to the novelty of this field I found it very important to ask all interviewees, but particularly the group of researchers and social innovators, these more general questions about the movement to gain an understanding for the broader context that the trust issue is positioned in. The founders of the trust aggregation businesses, evidently being the only group with well-grounded knowledge on trust, were asked about their understanding of trust and their transformation of the concept into a business model. In contrast, as companies in the collaborative consumption space, the P2P platforms were asked whether they saw the need for such a centralized trust system, and if so, whether they would be willing to use one of the solutions currently being developed. A selection of the interview questions can be found in the appendix on page 59.

Since the case of every interviewed individual is unique, the findings from the interviews are not universally applicable. They are only significant for the particular circumstances that were presented. These findings will be discussed in detail in the next chapter. Before continuing with the analysis of the interviews, it must also be noted that consistent usage of the terms *trust* and *reputation* was not always possible, since most interviewees had no prior knowledge of trust theory.

To sum up, this study attempts to answer the question of *how trust systems must be designed to establish trust between users* with qualitative interviews with individuals involved in the issue of P2P trust as well as participant observation, which provides the context for the interviews. Fig. 7 presents an overview of this methodology.

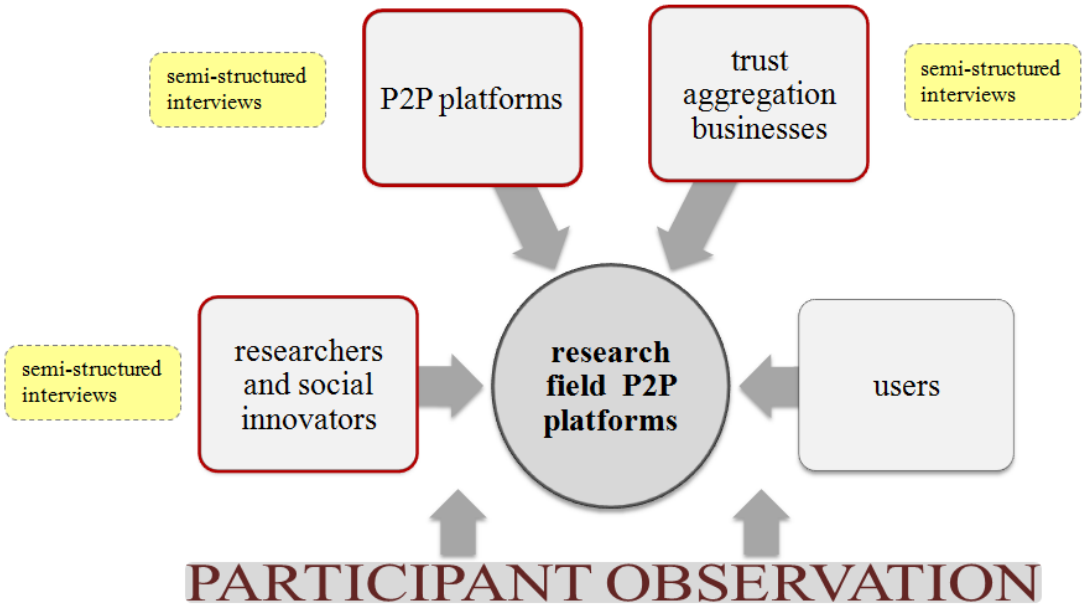


*Figure 7.* Overview of methodology

# 9. Findings & Analysis

In this chapter the findings from the research will be presented and analyzed. To avoid repetition when analyzing the interviews I would like to point out that, unless indicated otherwise, all of the following quotes refer to the qualitative interviews and can be found in the transcript on the enclosed CD. I also chose to use the full names of the interviewees, with their permission, but only when they are seen as relevant to the statements provided. Below is a brief overview of the interviewees and their professions by stakeholder group. Ortiz and Buttin can however be attributed to both the group of researchers and social innovators as well as P2P platforms.

**Researchers and social innovators**

Natalie Ortiz, service designer at the French carsharing company Deways

Antonin Léonard, co-founder of the collaborative community Ouishare

Etienne Hayem, consultant for complementary currencies

Neal Gorenflo, former equities analyst, strategist and founder of the non-profit magazine Shareable.net

Michel Bauwens, university lecturer and founder of the P2P Foundation

**Trust aggregation businesses**

Xin Chung, co-founder of TrustCloud

Mauro Nunes, founder of Briiefly / WhyTrusted

Jeremy Barton, co-founder of Legit

Sébastian Arbogast, founder of Peertrust

**P2P platforms**

Simon Baumann, PR Spokesperson of Carpooling.com

Nicolas Buttin, founder of Wiithaa, a community for P2P garbage repurposing

## 9.1 Tools for Rating Trust Online

Before looking at the findings from the interviews, the first step in understanding what an optimal trust system for P2P platforms could look like is to investigate which mechanisms for lowering the perceived risk of a service are already in use. Once these individual elements have been identified they can be combined with new components to create one holistic trust system. As described earlier, the rise of e-commerce has lead to the development of a variety of feedback and reputation measurement tools. Here is a brief overview of the important tools that are currently being used by P2P platforms.

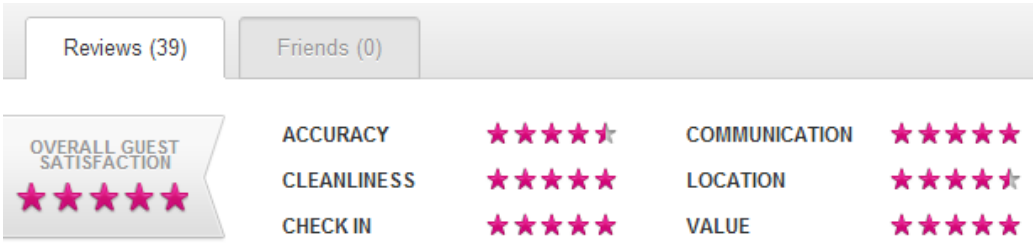


*Figure 8.* Multi-criteria rating system, www.airbnb.com

**a) Numerical ratings**

One of the most prevalent mechanisms that can be found on many websites is the ability to rate other users with whom one has transacted. Commonly users can rate others on a scale from one to five stars. The advantages of this are that users receive feedback from each other and at the same time enable others to profit from their experience, since the ratings are publicly visible on users' profiles. The majority of P2P platforms already use such systems, as for example Taskrabbit, Swap.com and RelayRides. Additionally some

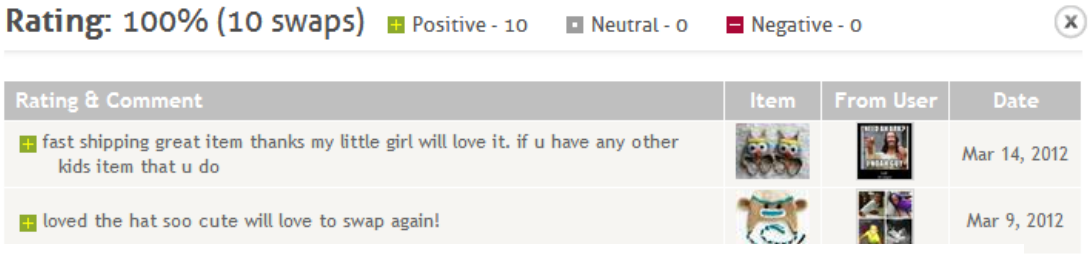


*Figure 9.* Rating system with comments, www.swap.com

sites make it possible to rate individual criteria separately. Airbnb for instance lets users rate their overall impression as well as six different categories, which can be seen in Fig. 8. These rating systems have worked very successfully on eBay and Amazon, since they enable the policing of bad behavior.

EBay's system however lost some credibility when it was discovered that a market for feedback (Brown & Morgan, 2006), on which good ratings can be bought, has emerged. This poses a huge threat to marketplaces that solely rely on this type of rating system and thus creates the need for alternatives.

**b) Comments and reviews**

Numerical ratings are often supplemented by comments and reviews, thus adding a descriptive component to users' profiles. This has the advantage that although trust cannot always be built through personal experience (see chapter 7), many can profit from the reviews of a few. Users seem to be very willing to share a vast amount of details about their experiences with a person or service with other users, as the large number of reviews on websites like the P2P carsharing service Whipcar, Taskrabbit, Airbnb and its German equivalent 9flats indicates. Swap.com for instance displays the number of transactions people have been involved in as well as their rating (positive, neutral or negative) and links this directly to the corresponding comments, as shown in Fig. 9.

**c) Social media connect**

"Facebook Connect" is one of the more recent additions to a variety of tools developed to foster trust and transparency. Almost every collaborative consumption platform offers the option to sign into the platform via one's Facebook account. This application is represented by a large blue button, as shown in Fig. 10, which is located on the sign-

in page. Most websites only have Facebook Connect, although some are beginning to offer it with other social networks such as Twitter and Google+. The advantage of this function is that users do not have to create a separate account for every platform they join, but can use their Facebook account data everywhere. Apart from the aspect of convenience connecting to a social network is a form of identity verification and thus reduces anonymity. It is also believed to foster trust, because it provides background information on users such as occupation, interests, friends and photos, which are retrieved from the social media profiles that have been connected. With the wide usage rates of Facebook among Internet users worldwide, Facebook Connect highlights the company's potential to function as a centralized identity system. As will be presented later, this is a project that some companies are currently working on independent of Facebook.

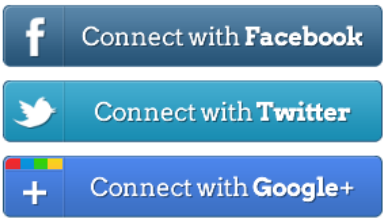


*Figure 10.* Social media connect buttons, www.-uniiverse.com

**d) Identity verification**

The concept of verifying the identity of users through a series of steps predates the development of Facebook Connect. EBay for example verifies its members with an automated system that calls users' phone numbers. Email verification is a commonly used standard for website registration, including most P2P platforms. Taskrabbit even does background checks on its members, as Fig. 11 illustrates. Uniiverse, a skill sharing platform, has a slightly more complex, multi-step verification system. In order to register, users are required to upload a picture and then either verify their phone numbers or link their accounts to a social network. According to the website this is supposed to improve trust by decreasing anonymity and confirming that a real person is at the other end of the transaction (http://www.uniiverse.com).

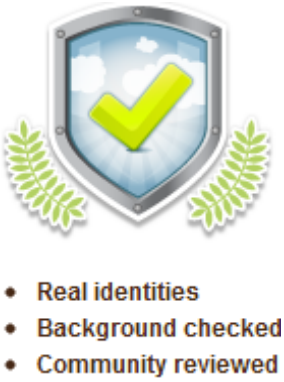


*Figure 11.* Safety principles at Task-rabbit, www.-taskrabbit.com

**e) Further tools**

Official certificates such as the VeriSign Trusted and Trusted Site certificate (see Fig. 12) are also common elements found on the websites of platforms that involve payment

processes or sensitive data. As the website of VeriSign Trusted states, the certificate is designed to convey to users a feeling of trust, credibility and loyalty (www.verisign.de/trust-seal/features benefits/index.html).


*Figure 12.* Two different official website trust seals, www.verisign.de; www.-tuvit.de

Many P2P platforms have also created trust and safety centers that offer advice and 24-hour customer support to users experiencing an emergency (www.airbnb.com/trustandsafety). Especially since the vandalization incident that took place at an Airbnb apartment in June 2011, Airbnb has strongly improved in this area by verifying pictures of apartments by visiting them and encouraging people to present themselves on their profiles with short videos of themselves. Profiles now also display a person's response rate, indicating how fast users reply to requests. The platform Uniiverse for example takes care of the payment transactions between buyers and providers of a service to ensure that both sides deliver on their promise. This does not necessarily help establish interpersonal trust between users, but it lowers the perceived risk of using the platform.

Such certificates and safety measures are geared towards improving institutionalized trust of the respective platform. In accordance with the terminology of Mayer et al. (1995), these tools were developed to give the user the impression that the company they are dealing with has integrity, benevolence and competence. Although diverse tools for creating a trusting and secure online environment for P2P platforms exist, the call for a more complex, centralized trust system became apparent during the participant observation as well as the interviews.

## 9.2 Why are Trust Systems Necessary for the Sharing Economy?

As the question of the necessity of trust systems was addressed in chapter 7 from a theoretical standpoint, I will now present further insights on this topic on the basis of the qualitative interviews.

Interestingly, the founders of PeerTrust and WhyTrusted had a similar story as to why they decided to work on building trust systems for the sharing economy. Both had tried to launch P2P platforms and had come to realize that their business ideas would not work without an underlying structure of trust. Arbogast, who founded Kodesk, a company that enables companies to rent out empty office space to individuals, encountered the following problems:

> The most recurring feedback we got [from companies] was the issue of trust and security. […] They were very worried about confidentiality problems, people using their network, and even startups were afraid that their work atmosphere could be disturbed (p.20).

These difficulties prompted Arbogast and Nunes, the founder of the two companies Briiefly and its proof-of-concept WhyTrusted, to put their ideas for P2P platforms on hold and work on a solution for the trust problem first.

Among the other interviewees there was broad agreement that aggregating trust was necessary for the sharing economy to grow. This was also the impression I received from various tweets, online discussions and articles (Solon, 2012) during my participant observation. As Léonard put it, "centralizing reputation is a necessary path for scaling collaborative consumption" (p.4). According to Ortiz "an online identity and online reputation [is necessary], because it will facilitate our life and […] motivate people to be better" (p.3). This infers that a reliable trust system could lower transaction costs as well as offer an incentive for users to follow certain rules of conduct. It was also pointed out that a person who has worked hard to build up a good online reputation will not want to jeopardize it easily (p.15).

Thus although there was general consensus that trust is an issue that must be tackled, opinions diverged as to how to put such a system in place. While some favored a one-size-fits-all solution for all platforms, it was also expressed in the interviews that every platform may require a system tailored to its specific needs. Being a good driver is very different, for example, from being a friendly and reliable CouchSurfing host. And as one interviewee mentioned, trust cannot be measured the same way for P2P task and

service networks as it can for P2P lending or asset sharing platforms (p.16). Most surprisingly the representatives of P2P platforms seemed to see the least necessity for a cross-platform trust system and rather emphasized the use of self-regulating communities. Seeing that P2P platforms, apart from users, are the target audience for trust systems, this is an important aspect that will be addressed shortly.

The founders of trust aggregation businesses raised a key argument in favor of a portable cross-platform system, namely practicality. The drawback of platforms using individual trust ratings (as those described above) is that users with a good rating on one platform must start from zero again when they join another. As Nunes stated, "when you go to Airbnb for the first time, you are a stranger. If you don't have a digital footprint that people can read, nobody will trust you (p.17)." A cross platform system solves this problem by enabling users to take their trust scores with them, instead of having to go through the laborious process of building one on every platform separately.

Since most P2P platforms already use their own trust systems, analyzing the development of cross-platform solutions is of most interest here for the trust issue. This leads to the question, which entity should have the authority over such a system. One impression I received from an interview was that P2P platforms do not necessarily want to give away the authority over their trust measurement to a third party. As Baumann from Carpooling.com noted, "the question is always, how trustworthy the trust measurement is."[3] This indicates that it is crucial for trust aggregation businesses to prove their trustworthiness and gain users' institutional trust, especially since building trust online involves a lot of sensitive user data.

Even Barton, who himself is developing a trust system called Legit, pointed out that it will be a challenge to be accepted as a third party that creates trust scores for other companies. Still he claims that, "marketplaces are starting to realize that they need […] help with the trust issue." According to feedback he has received, access to the right data is the bigger challenge for P2P platforms rather than access to technological knowledge (p.19). With these challenges in mind I will now discuss some concrete solutions to the trust problem.

[3] Translated by author: „Die Frage ist eben immer, wie vertrauenswürdig die Vertrauensmessung ist."

## 9.3 What Could These Trust Systems Look Like?

Recently there has been an upsurge in companies attempting to create systems that tackle the trust issue in P2P marketplaces. Apart from Facebook Connect, which currently functions as a type of cross-platform identity system, no such centralized system run by a third party has been in operation for more than a few months. Several others will be launched over the course of 2012. As a result, very little information about these companies can be found on the Web. For this reason I interviewed entrepreneurs to receive insights into their trust systems. Since the solutions they have designed are all very different, I find it worthwhile to briefly describe their approaches and discuss different aspects of them.

### 9.3.1 Examples of Trust Systems

All the companies I interviewed have the goal of empowering the sharing economy by building trust between strangers. Each attempts to do this in a very different way, however.

**TrustCloud** (www.trustcloud.com), a platform that was launched in early 2012, is creating a next generation credit score for the sharing economy. To create this "trust score", which is a measure of someone's trustworthiness, users sync their social media accounts and other personal data with the TrustCloud website. Then an algorithm weighs the different criteria and calculates a personal trust score on a scale from 1 to 1000, which can be displayed on one's profile on various P2P platforms (see Fig. 13). Founder Chung pointed out that people today no longer have time to build trust slowly. Therefore TrustCloud shortens this trust building process by "replac[ing] [it] with information and data" (p.16) on factors such as transparency, frequency and responsiveness. Furthermore contextual information is added as a foundation to the following trust equation, which has been developed to "measure trust online the same way it's done in the real world" (p.15):


*Figure 13*. TrustCloud trust score badge, www.trustcloud.com

*trustworthiness = (credibility + reliability + familiarity + consideration)*context*

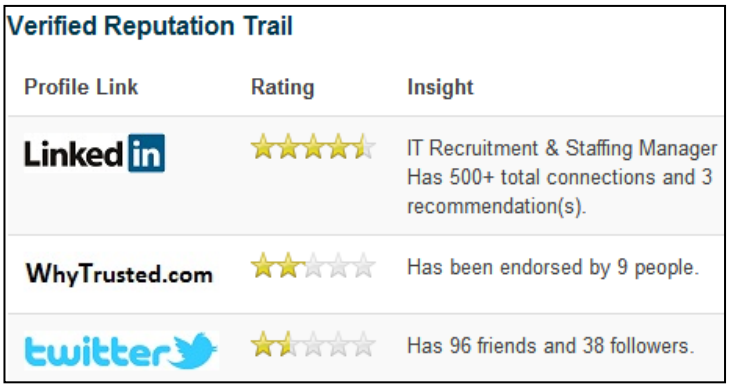


*Figure 14.* WhyTrusted profile, www.whytrusted.com

All components of this equation, such as credibility and reliability (Quinn et al., 2009), and familiarity (Gefen, 2000; Luhmann, 1979) can be found in the literature. As scholars have in particular been researching how trust parameters vary in different situations, context is also a crucial component that not all trust systems presented here take into account. The characteristics of trustworthiness—integrity, benevolence and competence (Mayer et al.,1995)—already discussed here are, however, not included. This illustrates that the complexity of trust and the fact that to date no singular model of trust has been agreed upon makes it highly challenging to create an equation that incorporates all dimensions of trust.

To sum up, this approach could assist users in judging a person's trustworthiness in day to day online transactions as it vastly reduces complexity for users by reducing the multidimensional construct of trust to one trust score. The use of algorithms does have some drawbacks, however. Since my research shows that the use of algorithms is a somewhat controversial issue, it will be discussed separately later on.

**WhyTrusted** (whytrusted.com) has taken a somewhat similar approach to TrustCloud, but differentiates itself in one key way. WhyTrusted is a trust aggregation service that calculates a trust score on a scale of 0 to 5 by enabling users to link their data with the system as well as receive endorsements from other WhyTrusted users. However this score, which Nunes described as a "summary of a person's trustworthiness" (p.17), is only a fraction of the information that users receive. Instead they can click on the score and see the person's transparent WhyTrusted profile, which openly displays all the sources and information that went into the calculation of the trust score (see Fig. 14). Nunes emphasized that for them it is about "how the information can be made useful to

others. At the end of the day, people must decide for themselves whether a person is trustworthy enough" (p.17). The final judgment on whether to trust or not to trust is for the individual to decide.

As opposed to only having one number to base one's decision making on, this requires somewhat more time and effort on the part of the user, since the system maintains a certain level of complexity. On the other hand it increases transparency and acknowledges the subjective nature of trust (Quinn et al., 2009). In line with the literature, the system enables individuals to weigh the different factors presented on the profiles according to their personal disposition to trust (Freitag & Traunmüller, 2009; Mcknight et al., 2002).

It must be noted that during the course of my research the development of WhyTrusted was halted and replaced by a new company called Briiefly (www.briiefly.com).

**Legit** (legit.co) also initially started out as a site similar to those websites just described. However after a test phase the founders decided to go in a different direction. Barton explained that they realized they "were forcing people to go outside of the initial transaction they were carrying out" (p.18). For this reason they began working on an accountability system for P2P marketplaces as an equivalent to the credit bureaus and credit scoring agencies in the financial industry, such as FICO or Experian.

In contrast to most other companies working on global P2P trust systems, social network data is not the basis of Legit, since most of this data is self-reported. Barton noted: "We are interested in what people *do* and how they *act* and not what they *say"* (p.18). This is why Legit aggregates P2P feedback data and information including damage reports, peer reviews, complaints, and transaction history. However, gaining access to this information is far more complicated than accessing social network data, which can be obtained simply by letting users connect their accounts to the system. Therefore partnerships with P2P marketplaces that are willing to contribute such data in exchange for using the trust system form the foundation of Legit (called the *Legit Reputation Group*). A social layer that enables users to provide information (e.g. from social networks) themselves will only be added in a second step.

Another aspect I found interesting is that Legit does not want to substitute, but provide additional context for reputation systems of individual platforms. Due to the fact that Legit is currently still in the partner acquisition phase, there are unfortunately no further specifics available on the implementation of their trust system. But as mentioned earlier, convincing P2P marketplaces to transfer their data may be a challenge for this model. A further question that arises is whether marketplaces are legally permitted to give the above mentioned user data to third parties.

**Peertrust** (peertru.st) has a completely different approach to the trust concept. In contrast to the other systems, the company believes that before one can start aggregating reputation from different sources, an adequate identity system must be in place first. Peertrust takes the identity verification one step further than classic phone or email verification by developing a mobile application that helps users identify each other. In practice this means that the app collects personal information such as name, address and age so that it can then be validated by another person to make sure the data is correct. To do this in an efficient way Peertrust has come up with an alternative to the costly validation processes that already exist for background checks for e.g. e-commerce merchants. The app enables users to create a Peertrust passport with their identity information. Arbogast described the process as follows:

> When you meet a person, let's say at an event, your phone will tell you that this person also has a Peertrust passport. Then […] you can exchange passports and validate each other by confirming that the passport is the same as the person's ID […]. So instead of having an institution validate identities, peers check each other's passports (p.20).

The more such validations people collect, the more meaningful their passports become. After establishing this solid identity system, a layer of reputation will be added. Then when two users want to carry out a transaction on a P2P platform, they can request each other's passport through the application and see each other's validated information and reputation data. To improve its ease of use Peertrust also intends to form partnerships with platforms that are willing to integrate the application into their website.

To prevent privacy concerns, the user data entered in the application is not transferred to the servers of Peertrust, but remains on the phone of the user. Other individuals only receive access to it when a user chooses to transfer it. Arbogast strongly emphasized that "this is really important for [them] since the privacy issue is a problem and [they] need to reassure […] users that their information is safe" (p.21). This highlights that the issue of transparency and caution in handling user data is an issue that goes beyond e-commerce (Gefen et al., 2008) and is a topic that all companies attempting to create a trust system face. Since Peertrust has not been launched yet, further information on its reputation system (that will be added later) is not available.

All together I find the idea of using identity as a basis for building trust a good one. In connection with the literature discussed earlier, this indicates that identity systems help avoid the problem of anonymity (Ba & Pavlou, 2002; Döring, 2010) on the Web and promote trustworthy behavior by making it possible for individuals to be held accountable for their actions (Tonkinwise, 2012). Since the process of collecting identity verifications is time-consuming, it discourages fraud, but also requires more effort on the part of the users. Although this is perhaps less comprehensive than using a trust score, this system acknowledges the complexity of trust by providing information (Luhmann, 1979) about users while at the same time leaving room for personal preferences regarding trust (Freitag & Traunmüller, 2009).

As this comparison of trust systems has demonstrated, all four companies I spoke to are trying to reproduce offline trust-building processes in an online environment. Some are attempting to do this by calculating a trust score with algorithms, while others are solely aggregating data to make it available to users; others are creating an identity system. What these systems have in common is a common motivation: the fear of reputation loss makes it worthwhile for users to act in a trustworthy way (Freitag & Traunmüller, 2009). In turn they are also designed to assist users in judging the trustworthiness of strangers and thus increase their willingness to trust. Furthermore positive experiences with the trust systems as well as the P2P platforms can be expected to improve generalized trust in the users of P2P platforms.

The basis of all these systems is the ability to collect a large amount of sensitive data as well as the linking of people's actions on the Web with their real identities. Even though it is practically unavoidable when actively using P2P platforms, individuals must ask themselves whether they want this data about them to be collected. Regarding the question as to how much of one's identity one is willing to reveal, Gorenflo made the interesting statement that while in some situations it is clearly advantageous to be as transparent as possible, the Internet must also "leave room for spaces in which one can be anonymous [as] this is crucial for free speech and cultural expression" (p.8).

A further issue for trust systems that are not run by the platforms themselves, which was mentioned in the interviews, is gaining the acceptance of a sufficient number of users. As Arbogast explained, "the biggest issue we anticipate is the momentum we need to reach a network effect" (p.21). Without a critical mass of members it is difficult to compare trust scores, thus limiting the usefulness of the trust system for its existing members. On the other hand it is hard to convince platforms to employ a trust system if it does not already have a significant number of users. Baumann for instance said that Carpooling.com would only consider using such a system if it was a *standard* (p.11f.) in the industry. Many Internet-based companies face this chicken-egg problem, meaning that they must either begin convincing users *or* the P2P marketplaces to use their trust system. Since most platforms are starting with the users, it may be a wise approach to establish partnerships with platforms, as for instance Legit is attempting to do.

Finally, the fact that four entrepreneurs in different countries decided to build a universal trust system for P2P marketplaces around the same time period emphasizes the evident need for such a system. When I started my interviews in January there were, to my knowledge, only four companies working on this issue. Since then, several other companies have emerged in this space, such as Repify (www.repify.com), Scaffold (www.getscaffold.com), Whitli (www.whit.li), Tru.ly (http://tru.ly) and Project Trust, a project organized in cooperation with Rachel Botsman (projecttrust.tumblr.com).

### 9.3.2 Algorithms

As briefly touched upon above, using algorithms for trust measurement is a controversial topic. Even though it is not always the most important element, most trust

systems rely on algorithms in some way to analyze data. As trust is such a complex construct, trying to capture it with a mathematical formula could be a source of errors, as this requires pinning trust down to specific dimensions. When I asked the interviewees about their opinions on the use of algorithms for trust measurement, the majority of them, especially the group of researchers and social innovators, were critical. Most of them agreed that an aggregation of trust-related data across platforms is necessary, but did not think it should be done mathematically (p.3). While Buttin expressed the view that "measuring trust that way could be dangerous," Arbogast emphasized that the use of algorithms makes it difficult for people to decide themselves what level of risk they would like to take. "Finding the right data" and aggregating from the right sources were also mentioned as important issues in creating a trust algorithm. According to Bauwens "measuring trust is possible and useful. [However] I find the idea of one number problematic. Even if trust is aggregated it must be transparent and open and must incorporate the different dimensions of trust" (p.9).

In general most interviewees emphasized that the integrity and transparency of the companies offering the trust systems are key. If a trust system is itself not transparent, why should users be willing to trust it in the first place? Klout for instance caused much frustration among its users because it constantly altered its algorithm, thus changing users' Klout Score for no comprehensible reason. Hayem also pointed out that, as in real life, the risk of doing business with somebody can never be entirely eliminated, regardless of whether algorithms are used. He also added that "the trust you […] create online is never going to match my inner feeling of trust towards somebody" (p.6). This again highlights the intangibility and subjectiveness of trust, which most interviewees expressed.

In essence an algorithm is a mechanism for the reduction of the complexity of trust in online environments (Luhmann, 1979). This has the advantage that the typically slow process of building trust between strangers is shortened and the perceived level of risk of trusting a user may be lowered (Mayer et al., 1995). However, this perceived risk could also be increased due to non-transparency of the method and over-simplification of this complex phenomenon. Considering that people build trust at different speeds and some may be more likely to trust a score than others, the question also arises whether

the process of trust building can be in fact *speeded up*, as some companies are attempting to do. Despite these criticisms, it must be noted that without algorithms, it would almost be impossible to analyze the vast amounts of data that are collected on the Web to build trust.

### 9.3.3 The Role of Communities

An alternative method of building trust that came up during the interviews is building communities. Interestingly the two P2P platforms I interviewed spoke out in favor of self-regulating communities as a type of trust system. Carpooling.com, a ten year old company, only recently introduced a user rating and an optional booking system for payments that is accessible to non-premium members. Nevertheless, the company is not aware of any serious incidents occurring since its founding. According to Baumann, the users develop a "feeling" for the platform and know which safety precautions to take, as for example checking if the driver's license plate correlates with the one stated on the person's profile (p.11). He explained that actual users seldom bring up safety concerns, whereas this is a common issue that is mentioned by people who do not use the platform. For Buttin, founder of Wiithaa, a platform for garbage repurposing, the primary goal is to create a small, self-regulating community that can then grow slowly. He does not see himself as the manager of the company, but rather wants to enable members to connect and organize themselves.

These examples indicate that good communities can foster trust, because they create close ties and increase familiarity (Gefen, 2000) between members. As mentioned earlier, communities facilitate the punishment of misbehavior, since the "social costs of breaking trust […] [are] high" (p.5) and the interdependencies between users are greater (Luhmann, 1979). Several interviewees underlined these advantages and claimed that the sharing economy will take place in small communities that do not need reputation systems, because "trust will already be there" (p.6). Especially the interviewees living in France said that due to growing distrust towards the French government, trust is disappearing from institutions and reemerging at a local level (Canigueral, Ortiz, & Léonard, 2012, p. 15). The drawback of building tight-knit communities as a mechanism for creating trust is that it cannot be done quickly (p.5) and entails a stronger orientation towards personal relationships. In a way this is similar to how the

sharing of resources used to take place before the 21st century, with the difference that communities today are fueled by network technologies. As said by Hayem, Internet platforms cannot replace the relationships that are necessary to build trust, "but […] will create and enable them" (p.7).

Apart from the trust systems that were just described, several other topics that are relevant for trust in P2P marketplaces were brought up in the interviews, such as similarity between trustees, people's motivation to share as well as the effect of cultural differences. These will be discussed in the following chapter.

## 9.4 Further Findings

**Trust is built more easily among similar people**

One aspect that was mentioned in almost every interview that can also be found in the literature (Khodyakov, 2007, p. 121) was that humans are more likely to trust people that are similar to themselves and whom "they can identify with" (p.2). Ortiz for instance, who works at the French P2P carsharing company Deways, explained that the service is mostly used by students that are "all in similar situations and have similar resources" (p.2). Likewise Buttin affirmed that, from his experience, common interests generate trust. According to him the Internet also supports the emergence of trusting relationships, because it makes it easier for people to connect on the basis of common interests regardless of time and space.

This correlates with Tonkinwise's (2012, p. 13f.) claim that people with similar interests and tastes are more likely to trust each other. He describes a case at Taskrabbit from which it could be observed that different size profile pictures had an effect on the number of task requests a user received. Even though it is only an assumption, Tonkinwise suggests that the reason a shot taken from the waist up yielded the most requests was that it allowed users to recognize the person's choice of clothing and thus decide whether this person's taste matched theirs. This indicates that to be able to build trust on a P2P platform it is important to offer a space, for example on personal profiles, in which users can portray their identities (Luhmann, 1979, p. 62) and provide information about their interests. As Arbogast noted, Airbnb for example now lets users

upload short self-made videos about themselves and has created groups in which people can connect over common interests. There is even a new social media platform called Formspring (www.formspring.me) that was created solely for the purpose of allowing people to connect around common interests. Facebook Connect is also a mechanism that permits users to gain a better impression of each others' personalities and provides diverse insights into another person's life, such as shared friends, location, hobbies or hangouts. This may increase familiarity between users and thus increase willingness to trust (Gefen, 2000; Luhmann, 1979).

The notion of similar interests also brings to mind Uslaner's (2002) proposition that generalized trust is based on similar values. Thus I would like to repeat the question posed earlier: must people have the same values to share on P2P platforms? Many interviewees seemed to agree that common values are a prerequisite to sharing. It was also noted that different platforms demonstrate different sets of values, thus attracting different types of people. Hayem affirmed that "CouchSurfing and Airbnb are two *very* different communities of people" (p.6), because CouchSurfing attracts people who are interested in joint experiences whereas Airbnb is often used solely for financial reasons. These value differences also influence people's motivation to use P2P platforms in the first place, thus bringing me to the next point.

**Motivation for using P2P platforms**

The most evident conflict I observed in the course of my research was the divergence in people's motivation for using P2P platforms. Especially during my interviews with the group of researchers and social innovators it became apparent that collaborative consumption can be understood as two different movements with two different fundamental motivations. These motivations can be financial or practical as well as non-materialistic, for example, focused on building relationships or contributing to a sustainable future.

In line with these motivations, Léonard differentiated between the sharing economy and the collaborative economy, saying that the latter transcends the mere sharing of assets for financial reasons and is more about community, relationships, sharing experiences and "fulfil[ling] people's expectations towards a more meaningful life" (p.4). This

underlines that people are "questioning […] the real value of buying" (p.2) due to the attitude shift from ownership to access as demonstrated in chapter 3. It should be noted here that due to the fact that four interviewees came from the same group of acquaintances in Paris, they all had similar standpoints regarding the aim and purpose of collaborative consumption. All of them being extremely passionate advocates of the sharing economy, they were of the opinion that collaborative consumption should be more about collaboration than about consumption. The following quote by Hayem about the sharing economy excellently expresses the motivation of this group:

> It is a new era of humanity. We have everything we need to fulfill everyone's needs on this planet. It is time to open our heart and our mind to find solutions to taking care of us and our planet (p.5f)

The members of this Parisian group also clearly stated that their motivation for partaking in the sharing economy was not economic. They see the movement as an attempt to become less "dependent on corporations and governments" (p.7) and induce social change. Frequently the concern was also expressed that the economic advantages of collaborative consumption are being put forward more than the social and environmental benefits, thus leading to its commercialization and loss of authenticity.

Many companies however see this as an opportunity to make money. As Chung stated: "If that [collaborative consumption] is the gold rush, we want to offer the picks and shovels to enable it, make it more secure and fast" (p.15). Furthermore not all users of P2P platforms "care about resources, sustainability" (p.2) and creating meaningful relationships. Numerous articles on collaborative consumption as well as user comments from the participant observation showed that many people do not necessarily choose to consume less or share their assets, but use P2P platforms as a way out of financial constraints, for example due to the economic recession. As a result there seems to be a large discrepancy as to how the collaborative consumption movement is being defined. This also indicates that the users of P2P platforms may have very different sets of values and expectations towards each other.

Why am I addressing this? Although it was not clear to me in the beginning, it became increasingly evident during the course of my research that these fundamental differences in motivation are a crucial factor for solving the trust issue in P2P marketplaces. Since P2P platforms depend on generalized trust, the fact that users do not share fundamental values is an obstacle to creating it (Uslaner, 2002, p. 2). In comparison to a person who is not interested in money, but would like to meet new people, someone using P2P platforms for solely utilitarian reasons may be more likely to take advantage of the system. As a user commented on an article about the shutdown of the carpooling company HiGear "the terminal flaw of the [collaborative consumption] business only becomes evident when it becomes mainstream and people with less benign intentions start joining" (field notes, p.6). Even though these assumptions cannot be proven, this suggests that generalized trust between strangers could in fact improve if there were separate platforms for people with different intentions. This is already partly the case though since different platforms attract different types of people.

Another important aspect regarding motivation to share that was brought up several times was the fact that most people currently using P2P platforms are well-off "bourgeois-bohemians" (p.3) or are highly educated. According to Ortiz' experience at Deways, "the people using it in France are definitely more upper class" (p.3). Baumann also confirmed that at Carpooling.com, "the users have an above-average income as well as above-average education."[4] This is somewhat paradox since collaborative consumption would be especially helpful for people who cannot afford much. On the other hand this corresponds to the trend described in chapter 3 and may explain why there have only been a comparably small number of incidents in the collaborative consumption industry: possibly most people currently use P2P platforms for ideological or social reasons and thus have similar values. An interviewee mentioned though that this may change as collaborative consumption becomes more popular and spreads to other parts of society.

[4] Translated by author: „Unsere Nutzer verfügen im Schnitt über ein überdurchschnittliches Einkommen sowie überdurchschnittliche Bildung."

**Culture**

The last finding from my research I would like to briefly highlight is the influence of culture on trusting behavior. Due to the fact that I interviewed people from many different countries, the topic of culture came up several times. Ortiz for instance, a Costa Rican living in Paris, explained that to date, introducing the concept of collaborative consumption in Costa Rica would be almost impossible. Besides the fact that Costa Rica is struggling with other prominent problems, such as crime and security issues, she described that "the sense of community is a lot stronger than here [France], people are closer. If you need something – you just knock on the neighbor's door. Connecting through the Internet would feel unnatural (p.2)." This indicates that other cultures still have intact communities to share assets that no longer exist in Western cultures. Collaborative consumption may be an attempt to reestablish these communities with the help of the Internet.

As Léonard emphasized, it is important to understand how different cultures relate to trust to create trust systems. He claimed that in comparison to Americans, who are ahead of the Europeans in this area, the "French will have a very different view on these reputation systems" (p.4). Baumann also noted that since Carpooling.com has been expanding outside of Germany, they have realized that the concept of ride-sharing must be marketed differently in every country in accordance with its average level of generalized trust. In Spain it is ok to compare ride-sharing to hitchhiking, whereas in England one must speak of a "new form of mobility" (p.11).[5] In Greece on the other hand, the concept is completely unknown, which means that the company must start from zero in building trust and familiarizing people with this concept.

These anecdotes show that the adaptation of sharing through Web platforms may not only be limited by users' personal preferences to trust strangers (Freitag & Traunmüller, 2009), but also by regional and cultural factors. This factor, and for example the influence of high and low context cultures (Hall, 1989), must especially be taken into account when introducing P2P platforms and trust systems in other countries. As there is a large body of literature that deals with the relationship of culture and trust, its influence should not be underestimated. Unfortunately the role of culture cannot be

[5] Translated by author: „Neue Form der Mobilität"

examined further here. However it is an important topic for further research on trust in P2P marketplaces.

# 10. Discussion

Even though generalized conclusions cannot be drawn based on findings that came from only a small representative group of people, they indicate that, despite the fact that individual platforms have reputation and identity systems, the need for a more holistic, portable, cross-platform systems has been recognized by many researchers and entrepreneurs involved in the collaborative consumption movement. While the existing reputation systems may have been sufficient for e-commerce, the newer P2P platforms, such as car or flat sharing, involve greater risk on the part of users and thus require more complex trust systems.

TrustCloud, WhyTrusted, Legit and Peertrust are companies attempting to lower the perceived risk of transactions between strangers and increase interpersonal trust between users as well as institutionalized trust in companies or platforms. In accordance with the trust model by Mayer et al. (1995), these systems help users judge the benevolence, integrity and competence—in sum, the trustworthiness—of users of P2P platforms by providing different types of information and making it useful to others. They also enable users to recognize similarities between each other. Additionally the more positive experiences people gain with users of a platform, the higher their generalized trust in all users is expected to be (Freitag & Traunmüller, 2009).

The fact that all four companies have very different approaches to building a trust system reflects once again how complex, subjective (Quinn et al., 2009) and multidimensional (Freitag & Traunmüller, 2009) trust is. Since scholars have not yet agreed on one model of trust, creating a trust system that takes all necessary dimensions into account is challenging. For this reason most interviewees expressed criticism towards the use of algorithms. A closer look at all the presented trust systems shows though that algorithms are to an extent unavoidable, since otherwise it would impossible to manage and use the large volume of available Web data to build trust. Therefore the

main question should not be whether an algorithm is *necessary*, but *how* it should be designed and *what significance* it should have for the entire trust system.

The findings show that the right data and reliable sources as well as transparent presentation of this data should be the utmost priority for companies creating trust systems. Since the risk of trusting behavior can never be fully eliminated (Luhmann, 1979, p. 26), transparency is particularly important for making users aware of potential risks and providing them with reliable information to base their decisions on. Due to the fact that people's willingness to trust varies from person to person and trust is highly context dependant (Scott, 1990), it should be possible for each individual to weigh different factors according to the situation and their personal disposition to trust (Mcknight et al., 2002). A further factor that must be taken into account is the wide variety of P2P platforms that require different levels of trust between users, for example the difference between swapping clothes and giving a person your house key.

Based on these findings it can be hypothesized that designing a trust system involves a trade-off between accuracy and practicality. As established earlier, algorithms reduce complexity and thus increase the practicality and simplicity of a system. Accuracy of trust systems can be achieved by maintaining a high level of complexity and leaving the majority of the effort of decision making up to the user. Complete accuracy is not desirable in this case, because it would mean returning to the laborious, gradual trust building process that one is trying to avoid. Consequently the more accurate the trust measurement, the less practical it is and vice versa. Although it is hard to make assumptions based on this research, the findings indicate that there is no one right way to measure users' trustworthiness. The challenge that companies face is creating a system with the right balance between accuracy of trust measurement and practicality for users.

As the example of Peertrust shows, identity verification is also an important foundation for building trust systems. However this also requires people who use the trust system to give up their anonymity. Even though most people do not use the Internet anonymously (Döring, 2010, p. 165), it must be considered that users may not be willing to reveal the personal details that could be necessary for these trust systems to work.

An alternative to this type of trust system that enables people with similar values and motivations for sharing (financial versus social) to connect is communities. As described earlier with the help of the example of the small village, the knowledge that people have the same core values as oneself will increase generalized trust in the community one belongs to. Not only does a sense of community play an important role in building trust (Brogan & Smith, 2009, p. 87), but being part of a community has also been found to "reinforce values promoting cooperation" (Uslaner, 1999, p. 36) and thus leads to moral behavior. According to Uslaner, "people who have faith in others and strong ties to their communities will abjure self-interest and act for the common good" (p.33). The interviews with Carpooling.com and Wiithaa showed that the idea of letting communities regulate and monitor themselves has already been successfully put into practice.

Tonkinwise (2012) however sees connecting people that are similar to each other from a critical perspective. In line with Bourdieu's (2002, p.283ff.) finding that people's social class is reflected in their aesthetic and ethical choices, Tonkinwise (2012) believes that this leads to the reproduction of social categories and "perpetuate[s] a class-partitioned world" (p.14). In connection with the finding that current users of P2P platforms tend to come from a more educated, prosperous background, this stipulation would be an interesting topic to pursue.

# 11. Conclusion & Outlook

This paper has introduced the new research field of collaborative consumption and has examined the construct of trust on the Internet and specifically on P2P Web platforms used for sharing tangible and intangible assets. It can be concluded from the preceding analysis that these P2P platforms create the need for a type of cross-platform trust system that increases people's willingness to trust strangers in an online environment. Since trust is perceived in many different ways, it is difficult to pin down how exactly a trust system can foster the generalized trust of P2P platform users. However, the research has shown that this trust system could be an application or website that aggregates data with the help of algorithms or even a community of people with similar

interests and values. Creating such a system presents many challenges including the adequate handling of user data, transparency of the system, the use of algorithms, the trade-off between accuracy and practicality of the trust measurement and convincing P2P platforms to use the system.

Since online P2P marketplaces are such a new phenomenon and trust is also an understudied concept, there is still much need for research in both fields. For instance the role of identity and anonymity for creating trust on the Web could be a fruitful area for further research, as this paper only touched upon it briefly.

As noted above, the influence of culture and gender on trust would also be an interesting field to explore (Gefen, Benbasat, & Pavlou, 2008)**.** With regard to Uslaner's (2002) statement that "as countries become more equal, they become more trusting" (p.3), it would also be interesting to investigate the correlation between political systems and adaptation or acceptance of collaborative consumption in various countries over time. As mentioned in chapter 8, research on the users of P2P platforms is also absolutely necessary for gaining further insights into trust. It could for instance make sense to examine the identified discrepancy between people's motivation to share. To make this possible however, P2P platforms must be more willing to make the necessary data available to researchers.

In sum, the area of collaborative consumption is developing and growing very quickly, making it hard to present a "current" status quo regarding the emergence of trust systems. All the systems presented here are still in their early stages and have very different approaches. Only time can tell which one will establish itself. Even though it does not provide reputation data, it is also imaginable that Facebook Connect becomes the universal identity system for the Web, since it has already reached the critical mass of users that other platforms lack. Then again it is also possible that a variety of systems will exist simultaneously, permitting them to specialize in different categories of P2P platforms, different communities of people or even different cultures.

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# Appendix

## Selection of interview questions

**Researchers and social innovators**

1. It has recently been claimed that collaborative consumption is in fact a revolution as significant as the Industrial Revolution. Do you agree with this and why or why not?

2. What are the limits of collaborative consumption? How much do you think people are willing to share?

3. When do you think people are willing to trust others?

4. What is your opinion of the companies that are trying to measure trust online? What do you think about the use of algorithms for creating trust?

5. Do you think we need a portable trust metric across platforms?

**P2P platforms**

6. Do you think the sharing economy is a sustainable concept and under what conditions do you think it will work?

7. Which measures does your company implement to build trust between users and how effective do you think they are?

8. Did the Airbnb scandal have any impact on your company?

9. What challenges in building trust have arisen through the expansion of your company throughout Europe?

**Founders of trust-aggregation businesses**

10. How would you describe the role of trust in the sharing economy?

11. In general, what factors do you think are crucial for creating trust offline as well as online? How exactly does your system measure or aggregate trust?

12. How is your service being accepted so far?

13. What issues has your company faced since its founding or what issues do you anticipate? Have you been confronted with skepticism regarding the attempt to quantify trust?

## 1. Ehrenwörtliche Erklärung

Ich erkläre hiermit ehrenwörtlich, dass ich die vorliegende Bachelorarbeit mit dem Thema:

*Building Trust in Peer-to-Peer Marketplaces: An Empirical Analysis of Trust Systems for the Sharing Economy.*

selbstständig und ohne fremde Hilfe angefertigt habe.

Die Übernahme wörtlicher Zitate sowie die Verwendung der Gedanken anderer Autoren habe ich an den entsprechenden Stellen der Arbeit kenntlich gemacht.

Ich bin mir bewusst, dass eine falsche Erklärung rechtliche Folgen haben wird.

Friedrichshafen, den 26.04.2012

Francesca Pick

Unterschrift