

Understanding Resource Sharing in C2C Platforms: The Role of Picture Humanization

(Research-in-progress Paper)

Timm Teubner
Institute of Information Systems and Marketing
Karlsruhe Institute of Technology, Germany
Email: timm.teubner@kit.edu

Marc T. P. Adam
School of Design Communication and IT
University of Newcastle, Australia
Email: marc.adam@newcastle.edu.au

Sonia Camacho
DeGroote School of Business
McMaster University, Canada
Email: camachsm@mcmaster.ca

Khaled Hassanein
DeGroote School of Business
McMaster University, Canada
Email: hassank@mcmaster.ca

Abstract

Sharing spare resources on customer to customer (C2C) web platforms yields economic advantages for users on both supply and demand sides. It also increases resource efficiency by enabling better utilization patterns, which in turn provides societal and environmental benefits. Establishing trust among users is a key factor in facilitating the sharing of resources in such platforms. Among other methods, the use of profile pictures has proven to increase trust in peer-to-peer interactions. However, this comes at a considerable cost of privacy. In this study, we compare different levels of user representations (i.e. picture humanization) in a lab experiment involving 216 users and analyze their effect on users' sharing behaviour on a C2C platform. Our results indicate that an increased level of picture humanization increases users' perception of social presence and decreases their perception of anonymity. In turn, perceived anonymity has a marginal negative impact on users' sharing behaviour while perceived social presence impacts positively users' sharing behaviour through a path that involves trust and perceived reciprocity.

Keywords

e-commerce, C2C, social presence, anonymity, sharing

INTRODUCTION

In 2013, the online sharing platform RelayRides managed to break the barrier of one million rental hours since its inception in 2010¹ and Airbnb coordinated accommodation for an average of 40,000 people per day in over 250,000 private apartments². In addition, more than 200 start-ups, backed by a total funding of \$2 billion, competed in a growing market for peer-to-peer sharing of physical assets such as cars, rides, accommodation, and household appliances (Ito and Kearns, 2013). These online sharing platforms coordinate the exchange of spare goods and services directly among people and have become a legitimate alternative to traditional businesses in obtaining those goods or services. An example is the automotive market in the United States, where this so called "Sharing Economy" has the potential to replace an additional 1.2 million purchases of new vehicles by 2021. Allowing strangers to have access to an individual's good (e.g., apartment, parking lot, car) offers the benefits of i) generating revenue from an otherwise idle resource, ii) creating a valuable offer for a consumer, and iii) reducing the environmental impact of consumption. Patterns like "use rather than own" can markedly increase resource efficiency (Leismann et al., 2013).

One of the elements that contribute to the success of those online sharing initiatives and of e-commerce in general is establishing and maintaining a high level of trust towards interacting partners (e.g., online vendors) (Gefen, 2000; Tamjidyamcholo et al., 2013). A variety of mechanisms are employed to create trust such as (mutual) rating systems, text reviews, verification (e.g., by passport or phone number), mutual friends (e.g., using Facebook Connect), and insurance (e.g., against damage or theft in the case of Airbnb and various car sharing business models). In addition, the use of expressive profiles and particularly of profile photos have been identified as a powerful means to create trust for e-commerce applications based on user-to-user interactions (Bente, 2012). The utilization of user representations such as profile photos contributes to create a sense of

¹LeBeau, P. "Car-sharing a growing threat to auto sales: Study," retrieved 06 August, 2014, from <http://www.cnbc.com/id/101386723>

²The Economist. (2013, March 9). "The rise of the sharing economy," retrieved August 8, 2014, from <http://goo.gl/fWTNn4>

warmth and human contact (i.e. social presence) and thus, allows users to assess better potential transaction partners in terms of reliability and risk. Users' perceptions of social presence can help them form their trust beliefs towards the online platform, which may in turn help them form trust beliefs towards the partners they interact with using this platform (Gefen and Straub, 2004; Hassanein and Head, 2007).

User representations in online communities are referred to as avatars. Annetta (2010) stated that "avatars become the incarnation of the player and convey his or her identity, presence, location, and activation with others" (p. 106). Therefore, an avatar is the graphical representation of a human being in an Information System (IS) (e.g., a website, an online market platform, a virtual world). The selection of an avatar is varied, since a user can choose the image of a movie star, an image customized by the user (e.g., by using styles and properties from a predefined gallery), or even her/his own photo (Ma and Agarwal, 2007). In this regard, a service called FaceQ—allowing its users to create avatar pictures for social media applications like WhatsApp—recently experiences massive growth. It is important to note, however, that when designing an avatar, the image does not necessarily have to be similar to the user. Moreover, other platform's users or its operator cannot verify whether the avatar resembles the user. An alternative to this shortcoming of a user's designed avatar is the utilization of an *accredited avatar*, which resembles the user as per the design elements selected in creating the avatar (e.g., colour of hair) and the accreditation of a third party. The use of design elements might vary from a set of few elements such as "gender" to more sophisticated properties like clothing and facial features. The resemblance is checked and certified by a commonly trusted party (e.g., the platform operator), and this process may require the user to provide a copy of an ID document (e.g., driver's license, passport).

Considering the varying levels of user representations that could take place in an online sharing community and their potential to affect users' behaviour in the community, this paper presents an experimental study where three different levels of user representation are manipulated in a simulated online sharing community. Those levels are conceptualized to vary in the degree of user picture humanization, which refers to the extent to which the user picture represents a human being (Cyr et al., 2009). This manipulated variable was used in an experimental task consisting of a gift exchange game, in which the members of a group repeatedly transferred goods to one another for a small cost (Berninghaus et al., 2008). The payoff function was designed in a way such that transferring goods was beneficial from the group perspective. However, from an individual perspective, it was preferable to not transfer any goods. Strategically, the game thus constituted a dilemma situation.

With this experimental study, this paper intends to investigate the role of using different levels of user picture humanization in facilitating increased trust and resource sharing in C2C environments. In addition, this paper aims to investigate the role of two factors related to user representations that may be relevant in a user's sharing behaviour. First, the degree of anonymity perceived by an individual in the different levels of user representation (i.e. perceived anonymity, PA) may affect sharing behaviour. Second, employing different user representations may affect a user's perception of the social presence afforded by the medium (i.e. perceived social presence, PSP), which in turn may affect a user's decisions.

The remainder of this paper is organized as follows. Section 2 describes the theoretical background of our study, while the theoretical model and proposed hypotheses are presented in Section 3. Section 4 presents the experimental design of our study. In Section 5, we report our results. Finally, in Section 6, we discuss our findings, outline the study's limitations, and suggest ideas for future research.

THEORETICAL BACKGROUND

In order to explore the effect of user picture humanization on resource sharing, streams of literature associated with three concepts involved in this paper are reviewed: Sharing behaviours, Social Presence, and Anonymity. A brief summary of this literature review is presented below.

Sharing behaviours

Researchers have explored different aspects of users' sharing behaviour in online platforms in order to better understand which factors foster sharing. Some have focused on specific types of information users share online, such as their travel experiences (e.g., Munar and Jacobsen, 2014), or health-related information (e.g., information about epilepsy; Wicks et al., 2012). Others have explored mechanisms to improve content sharing, such as social recommender systems (Li et al., 2012) or control schemes to avoid propagation of unauthorized/unwanted information (Ranjbar and Maheswaran, 2014). A predominant focus of research studies in this area is the users' motivations to share in different online communities (e.g., investment communities; Park et al., 2014). Of particular interest to this research are those studies that focused on the antecedents of knowledge sharing, as this study explores users' sharing of resources. In online knowledge sharing communities, factors such as rewards obtained (e.g., reputation; Wasko and Faraj, 2005), motivations to share (e.g., reciprocity; Tamjidyamcholo et al.,

2013), identification with members of the community and strength of relationships among members (Chiu et al., 2006) have been found to positively impact the sharing behaviours of users. It is worth noting that those studies have only explored the direct antecedents of sharing behaviours (e.g., reciprocity), without examining the factors that may affect those antecedents. Understanding the factors that may affect those antecedents is important to provide actionable results to practitioners.

Perceived Social Presence

With respect to a communication or interaction medium, social presence can be defined as the extent to which a user experiences other users as being psychologically present (Fulk et al., 1987). This notion is of particular interest for Internet-based interactions and the design of websites. Socially rich design elements on websites are a common means for creating a positive user experience for traditional e-commerce vendors, where “higher levels of perceived social presence were shown to positively impact the perceived usefulness, trust and enjoyment of shopping websites” (Hassanein and Head, 2007, p. 689; Cyr et al., 2009). Other studies confirm social presence as a necessary precondition for trust (Gefen and Straub, 2004) and the positive effect of human and social cues on perceived usefulness, trust, and enjoyment in e-commerce contexts (Cyr et al., 2007). Emphasizing the presence of humans is thus an effective way to increase attractiveness of a service, product, or website and it influences users’ behaviour (Gefen et al., 2003, Hess et al., 2009). Practitioners and researchers have hence strived to better understand and create social presence in traditional e-commerce contexts, for instance using images of human faces, personalized text, shopping assistants, and recommender agents (Qiu and Benbasat, 2010). Such elements are intended to create trust, stimulate purchase decisions, and build up user loyalty. Psychologists trace the positive effect of social presence on the latter measures to the inherent human tendency to strive for the presence of other humans and a sense of human warmth and sociability.

In comparison to traditional e-commerce, C2C online markets *inherently* involve other humans and social presence by design (e.g., they involve usernames, personal pages). Here, user representation plays an important role, and most platforms prompt their users to provide some personal information and a profile photo. This may be directed towards fostering social competition (Malhotra et al., 2008) among users and driving end prices, as practiced by some entertainment shopping and auction platforms (e.g., dealdash.com). It also may be targeted at fostering cooperative and benevolent and considerate behaviour (e.g., Airbnb). In this latter context, a user’s representation and its resulting perception of social presence may be critical for the creation of trust and ultimately for the success of an online sharing platform.

Perceived Anonymity

Providing a photo of oneself in online platforms discloses some identifiable information. Participating in C2C market activity may be associated with a loss of anonymity and privacy, since active participation requires users to share some personal information which may include their personal photos. John (2013b) noted in this context that, “many practices of collaborative consumption [...] involve shifting the boundary between the public and the private” (p. 126). The use of actual profile photos may not be feasible or even desired, because in some contexts users may be reluctant to appear identifiable to a wider audience.³ However, using a profile photo might positively affect the perceptions of trust of other users of a market platform and thus, increase the chances to successfully market one’s good or service.

The designers or administrators of online platforms may need to make a trade-off between facilitating conditions to increase users’ perceptions of social presence (and thus increasing trust) and maintaining users’ anonymity (and hence, their privacy). From the individual user perspective, this cost/benefit analysis is captured by privacy calculus theory (Dinev and Hart, 2006; Laufer and Wolfe, 1977). The analysis of self-disclosure has been widely considered in the context of social networks (e.g., Krasnova and Veltri, 2010). However, only few studies have been concerned with privacy in communities that involve C2C interactions. This is accompanied by the observation of “relatively little evidence that people’s privacy concerns translate to privacy-enhancing behaviours while online” (Joinson et al., 2014, p. 1). In experimental and survey-based studies, Joinson et al. (2014) found an “apparent disjuncture between people’s reported privacy concerns and their actual behaviour” (p. 18). The concepts of privacy and (perceived) anonymity are strongly connected.

Anonymity is often referred to as the “inability of others to identify an individual or for others to identify one’s self” (Yoon and Rolland, 2014, p. 1135). While anonymity ensures privacy, there may be situations in which users act privately, for instance among friends, but not anonymously. This holds, to some extent, for social networking sites. Engaging in a C2C sharing platform reveals personal information like weekend travel plans to a potentially unlimited public. In this context, losing anonymity also implies losing privacy.

³ For example: you plan to travel to another city for the weekend and offer the spare seats in your car for ride sharing in order to regain some money for fuel. You do not necessarily want to let anyone in the ride sharing market know about your concrete plans for the weekend.

RESEARCH MODEL & HYPOTHESES

To investigate the impact of various levels of picture humanization on the antecedents of users' sharing behaviour, the research model presented in Figure 1 is proposed. Support for the hypothesized relationships is provided below.

Picture humanization: As indicated before, the concept of picture humanization is utilized here to refer to the degree to which a profile picture represents a human (e.g., a particular user of a C2C platform). Sharing resources with other consumers is often a non-anonymous activity, as both suppliers and consumers provide identity-related information required to perform the exchanges (e.g., full names, credit card information). It is intuitive to affirm that providing any form of personal information during interactions or exchanges in online platforms will decrease a user's perceptions of anonymity (PA). In this regard, Sosik et al. (1998) found that attaching the originators' names to ideas generated in a creativity task had a negative effect on PA. Displaying photos may even be perceived as a stronger cutback of anonymity, since names are not necessarily meaningful outside the online environment where the interaction occurs (e.g., user does not know others offline). Considering these arguments, we suggest that displaying a user's actual photo as a profile picture reduces a user's own PA. Accredited avatars depict a user's main facial features (e.g., shape, skin colour, hair style), and accessories (e.g., glasses, scarfs) and thus, some degree of anonymity is also lost with them. We thus expect that increased levels of picture humanization will lead to a decrease in PA. In formal terms:

H₁: *In online sharing platforms, higher levels of users' picture humanization lead to lower levels of PA.*

In online platforms, a sense of warmth and sociability can be accomplished by simulating the interaction with other humans through socially-rich text or human photos (Hassanein and Head, 2007). Thus, it appears plausible that displaying profile photos or accredited avatars in online sharing platforms increases users' perceptions of social presence (PSP) compared to displaying default images, since these meaningful profile pictures contain social cues and also convey information on other users' identities. This notion is supported by previous empirical findings (Hassanein and Head, 2007; Cyr et al., 2009). We therefore hypothesize that:

H₂: *In online sharing platforms, higher levels of users' picture humanization lead to higher levels of PSP.*

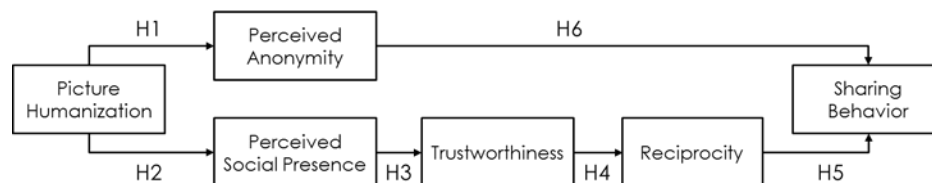


Figure 1: Research model

Perceived Social Presence (PSP): The use of human images (e.g., profile photos) have been found to be enjoyable by users of Websites and to create trust in online contexts through an increased user's perception of social presence (Riegelsberger et al., 2003; Cyr et al., 2009; Steinbrück et al., 2002; Gefen and Straub, 2004). For the traditional e-commerce relationship between consumers and online vendors (B2C), this online trust can be achieved by providing social cues and social presence (Riegelsberger et al., 2003). Since both traditional e-commerce and C2C platforms involve interactions between parties, we suggest that this general principle extends to online C2C interactions, where perceptions of social presence can create a psychological connection between users. In this regard, Jones and Leonard (2008, p. 94) also found that "it may be a good idea for the consumer to include information regarding their views and beliefs," i.e., providing social clues, in order to increase others' trust in them. Therefore, we hypothesize that:

H₃: *In online sharing platforms, stronger perceptions of social presence are related to higher levels of trust.*

Trust: This construct denotes the willingness to rely on others' behaviours with the confidence that one's vulnerabilities will not be exploited (Cyr et al., 2009). In B2C e-commerce transactions, it relates to the vulnerability of a user or consumer to an online vendor (Jarvenpaa et al. 1999). In the context of C2C platforms, it can be thought of as relating to the vulnerability of a consumer towards another one. Engaging in sharing behaviour (i.e. transferring resources to another user) would be reasonable if a user can expect that other users will in return transfer resources to her/him in the future (i.e. reciprocity of behaviours). A positive relationship between trust and reciprocity has been found in previous research studies (Caliendo et al., 2012; Dohmen et al., 2008). Hence, we hypothesize that:

H₄: *In online sharing platforms, higher levels of trust are related to higher levels of reciprocity.*

Reciprocity: Although this concept has not been strictly defined by researchers, it can be viewed as a norm of social exchanges, where any action provided by an individual to another has some utility (i.e. benefits exceeds costs of executing it) and it is expected to be returned (Gouldner, 1960). In the context of knowledge sharing (i.e. resource sharing), authors have found that this process is facilitated when the value added of knowledge sharing (e.g., expertise, recognition) depends on the amount of knowledge they decide to share (Bartol and Srivastava, 2002; Hendriks, 1999). This argument suggests that reciprocity is a motivator of knowledge sharing (Ipe, 2003). In addition, in the context on online communities, authors have found that reciprocity impacts positively users' intention and behaviour in relation to knowledge sharing with members of those communities (Chiu et al., 2006; Tamjidyamcholo et al., 2013). In light of the previous arguments, we hypothesize that reciprocity will be positively related to the sharing behaviour of individuals. In formal terms:

H₅: *In online sharing platforms, higher levels of reciprocity are related to higher amounts of resource transfers.*

Perceived Anonymity (PA): Individuals modify their behaviour in front of others, when they can be identified and held accountable for their actions. The paradigm of social facilitation examines the impact of the presence of other individuals on human behaviour (Zajonc and Sales, 1966). Social facilitation refers to an enhancement in performance provoked by the presence of others, an effect that has been observed in a variety of species (e.g., humans, ants) and across several behaviours. Social facilitation stresses a user's responsibility to perform as expected and thereby, it may alter behaviour. It is closely related to the concept of social desirability (Crowne and Marlowe, 1960), suggesting that subjects will act in a way that is viewed favourably by others. Being exposed to, and thus potentially judged by, others yields a tendency to exhibit pro-social behaviour (i.e. sharing or contributing to the group). Besides other means of creating trust between users (e.g., rating and review systems, etc.), and based on the notion of social desirability, we suggest that non-anonymity contributes to pro-social behaviour. Therefore, an increase in the perception of anonymity would be associated with lower amounts of resource sharing in online platforms. In formal terms, we hypothesize that:

H₆: *In online sharing platforms, higher levels of a user's own PA are related to lower amounts of resource transfers by that user to others.*

RESEARCH METHODOLOGY

Experimental design and participants

In order to investigate how varying levels of picture humanization affect users' sharing behaviour, we conducted a lab experiment in which subjects could share virtual resources with other members of their group, while being motivated by obtaining a monetary reward at the end of the experimental task that depended in part on their resource sharing behaviour. The experiment employed a between-subjects design and the users' graphical representation was varied in 3 treatments (Figure 2): profile photos (PHT), accredited avatars (AVA), and the control (CTR) treatment with default images (a generic silhouette indicating user gender only but no other identifying characteristics). In total, 216 subjects participated in the study (108 female, 108 male), recruited from a pool of university students, using the *Online Recruitment System for Economic Experiments* (Greiner, 2004). Subjects participated in groups of 6, consisting of 3 female and 3 male participants.

In all three treatments, a photo of each participant was taken upon her/his arrival at the lab. Figure 2 provides examples for the graphical representations used in the three treatments: In the PHT treatment, each participant's photo was used as her/his profile picture. In the AVA treatment, the photo was used to create an accredited avatar of the user. The avatars were created by a staff member with an avatar creation tool⁴ that builds on graphical elements from the online game WeeWorld⁵. Finally, in the CTR treatment, subjects were represented by a default image that only indicated gender. Note that each subject only saw one of the three possible graphical representations, which matched the graphical representation seen by the other five members of her/his group.

The experimental interface was implemented using z-Tree (Fischbacher, 2007). After arriving at the lab, participants registered, were escorted into the lab computer room, and their photo was taken. Participants gave their written consent to use their photographs in the course of the experiment and for scientific purposes, including conference presentations and publications. Participants then answered 12 quiz questions, which tested their understanding of the experimental procedure and the payoff rules (see details below). After every participant had successfully completed the quiz, the experimental task started. All experimental sessions were conducted at Karlsruhe Institute of Technology (KIT).

⁴ The avatar creation tool allowed us to vary a wide range of features, e.g., head shape, skin colour, glasses, hair style and colour, facial hair, clothing and accessories, etc., resulting in a total of ~2.19E+14 possible combinations.

⁵ www.weeworld.com

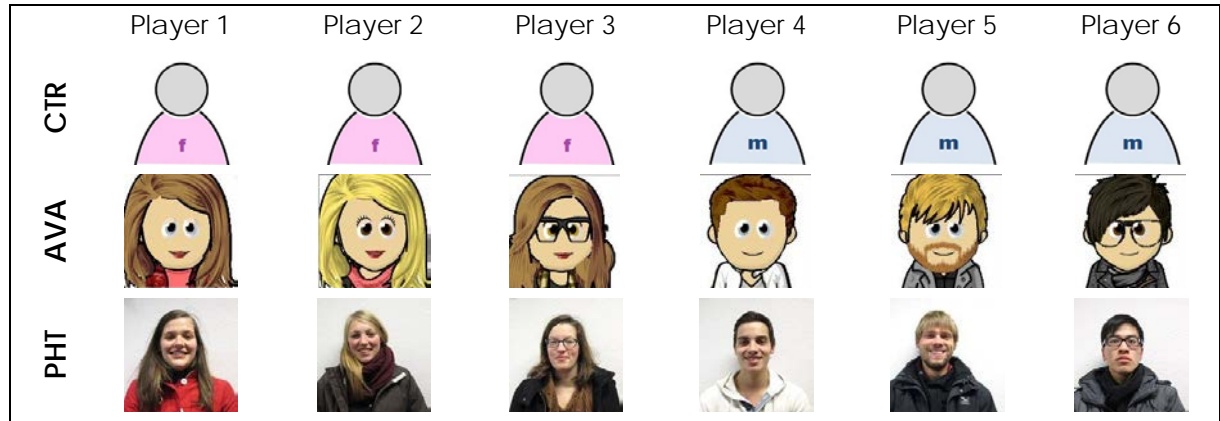


Figure 2: Graphical representations of the users in the three different treatments

Experimental task: Resource Sharing

In the main part of the experiment, participants had the opportunity to share resources in a 15-round gift exchange game based on Berninghaus et al. (2008). Decision-making in the experiment was incentivized through so-called monetary units (MU), which were converted into real money and paid out in cash to subjects after the experiment (1 MU = €0.10). The amount of MU acquired by a user depended on how many resources she/he kept for her/himself, how many resources she/he transferred to others, and how many resources other users in her/his group shared with her/him. The users' average payment was €18.02 (min=€1.85, max=€24.07).

In every round, each user in a group (a group is denoted by $P=\{1, 2, \dots, 6\}$) was endowed with 100 units of a unique good (each good was denoted with a letter – i.e. goods' names varied from A to F). Then, every user decided on the number of units of her/his endowment to transfer individually to the other five users (amount in integers only). The total number of units transferred could not exceed the initial endowment of 100 units. The transfer from user i to j in round n is denoted by $x_{ij,n}$. Every transaction $x_{ij,n} > 0$ yielded transaction costs of 1 MU for user i . Therefore, a user could face transaction costs $c_{i,n}$ varying between $c_{i,n} = 0$ MU (i.e. the user did not transfer any units of her/his good) and $c_{i,n} = 5$ MU (i.e. the user transferred at least 1 unit of her/his good to every other user in the group). The transaction costs aimed at representing typical costs of resource sharing situations (e.g., effort and resource deterioration).

At the end of each round, every user held between 0 and 100 units of the 6 goods (i.e. A to F): The units of her/his own good that she/he kept for her/himself and the units of the other five goods she/he received from the other five users. The payoff $\pi_{i,n}$ for user i in round n was calculated as

$$\pi_{i,n} = \sqrt{A_{i,n}} + \sqrt{B_{i,n}} + \sqrt{C_{i,n}} + \sqrt{D_{i,n}} + \sqrt{E_{i,n}} + \sqrt{F_{i,n}} - c_{i,n}$$

Given the concave nature of the square root function and the specific transaction costs, the social welfare optimum was realized for a perfectly equitable distribution of all goods among all users (i.e. 100/6). Since only integer values were allowed in each transfer, an allocation of (17, 17, 17, 17, 16, and 16) of goods represented the optimal approximation, yielding an average outcome of ~19.49 MU per user and round. Note that the repeated gift exchange represents a social dilemma game (Berninghaus et al., 2008). Individuals may choose to follow the strategy to keep all units for themselves (i.e. not to transfer units with other users). If all users follow this strategy, users have no incentive to deviate by transferring units to others. In this Nash equilibrium scenario, the users' average payoff serves as a natural "lower bound" of 10 MU per user and round. Overall, sharing is desirable for the users; however, every user faces the "temptation" to free-ride and not transfer anything.

Measures

Whenever possible, previously validated scales were used and adapted to the context of this study. PA items were adapted from Sosik et al. (1998), PSP items from Gefen and Straub (2004), Trust items from Jarvenpaa et al. (1998), and Reciprocity from Kankanhalli et al. (2005). Sharing behaviour was calculated as the average amount of units a user (i) of the set of players in a group (P) transferred to any other user (j) over the course of the 15 rounds. The average measure for sharing behaviour is γ_i ; thus expressed as:

$$\gamma_i = \frac{1}{15} \times \frac{1}{5} \times \sum_{n=1}^{15} \sum_{j \in P \setminus \{i\}} x_{ij,n}$$

For all adapted measures, construct reliability and construct validity were established. Construct reliability was examined with Cronbach's alpha and all constructs had a value larger than the 0.70 threshold suggested by

Nunnally and Bernstein (1994). Convergent validity was established by examining the Average Variance Extracted (AVE) by each construct, verifying that this value exceeded 0.5 (Au et al., 2008). Discriminant validity was assessed by verifying that the square root of the AVE by each construct was larger than correlations between that construct and any other construct (Fornell and Larcker, 1981). All adapted measures met the criteria for convergent and discriminant validity.

RESULTS

The proposed research model was validated using Structural Equation Modelling (SEM). Specifically, SmartPLS (Ringle et al., 2005), was used due to its flexibility in terms of sample size, data and residuals distribution (Chin, 1998). The sample size of this study ($n = 216$) exceeded the minimum required to validate a model in PLS, which was determined by following Gefen et al. (2000)'s rule: sample size should be at least 10 times larger than i) the number of path coefficients impacting a dependent variable or ii) the number of items of the most complex construct (i.e. minimum of 50 participants, considering the 5 items used in the scale of trust). It is worth noting that the sample size is also adequate to detect a medium size effect with a power of 0.80 and alpha of 0.05 in between-subjects designs with 3 groups (i.e. $n = 159$) (Faul et al., 2007).

The results of the PLS analysis of the proposed research model are presented below in Figure 3. Following Chin (1998), bootstrapping (500 subsamples) was performed to test the statistical significance of path coefficients (t-tests). Most of the relationships in the model are significant and hypotheses are supported at a least a $p < 0.05$ level. The only exception to this is the path coefficient between PA and sharing behaviour, which exhibited a significance level of $p < 0.10$. Recent IS literature has started to consider significance levels between 0.05 and 0.10 as "marginal" significance (e.g., Dimoka et al., 2012). Considering this, it can be asserted that the relationship hypothesized in H6 is marginally significant.

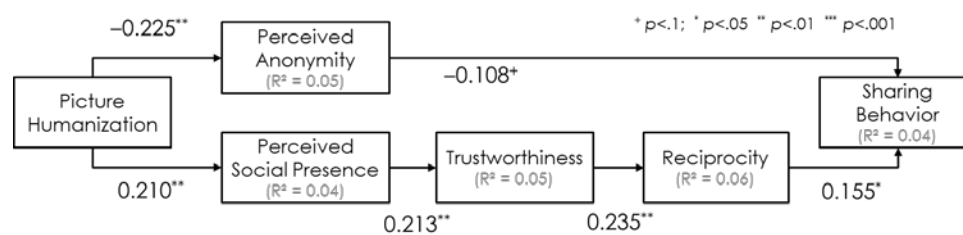


Figure 3: PLS results

CONCLUSION AND FURTHER RESEARCH AGENDA

In this paper, we investigated the effect of picture humanization on sharing behaviour and how this effect is mediated by the constructs PSP and PA. Our preliminary results indicate that from the two constructs of interest, the path derived from perceived social presence is the one that significantly impacts the sharing behaviour of users. Although an increase in users' perceived anonymity negatively impacts sharing behaviour, this effect is only marginally significant. These preliminary results are important because they show that an increased level of picture humanization can lead to an increased perceived social presence, which in turn increases trust and thereby reciprocity, ultimately increasing users' sharing behaviour. Those are actionable results that may be employed by practitioners in their design on online sharing communities. The importance of the results obtained also comes from the fact that this study examined the actual sharing behaviour of users and not just their intention to share. With this study, we highlighted a way for C2C platform operators to increase trust among users without completely dissolving anonymity, using accredited avatars. Future research will need to further analyse the effects of such avatars on PA, PSP, and sharing behaviour in contrast to other modes, e.g., full anonymity or identification.

A limitation of this study is the low R square value obtained for the dependent variables of the model. This may be explained by the fact that only a limited set of predictors for each dependent variable was considered, in line with the main purpose of our study. Future studies may include other variables that may also play a role in defining the sharing behaviour of users or any of the mediating variables studied in this paper. In particular, similarity to other users could be examined. Similarity-attraction theory suggests that people are more likely to be attracted to others with similar features or demographic aspects (Byrne, 1971; Qiu and Benbasat, 2010). Other aspects to be considered are the users' general enjoyment in helping others (Kankanhalli et al., 2005), their inherent propensity to trust (Mayer and Davis, 1999), their willingness to share (Shin et al., 2007), and the perceived value and cost of sharing with others (Wang and Wang, 2010). Moreover, the photos and accredited avatar pictures could be reviewed by an unrelated group, whose members could potentially provide further insights into the pictures' conveyed sense of sympathy, reliability, and trust, among other variables.

REFERENCES

- Annetta, L. A. 2010. "The 'I's' have it: A framework for serious educational game design," *Review of General Psychology* (14:2), pp. 105-112.
- Au, N., Ngai, E., and Cheng, T. C. (2008). Extending the understanding of end user information systems satisfaction formation: An equitable needs fulfillment model approach. *MIS Quarterly*, 32(1), 43-66.
- Bartol, K. M., and Srivastava, A. (2002). Encouraging knowledge sharing: The role of organizational reward systems. *Journal of Leadership & Organizational Studies*, 9 (1), 64-77.
- Bente, G., Baptist, O., and Leuschner, H. 2012. "To buy or not to buy: Influence of seller photos and reputation on buyer trust and purchase behavior," *International Journal of Human-Computer Studies* (70:1), pp. 1-13.
- Berninghaus, S., Güth, W., and Vogt, B. 2008. "Spontaneous evolution of social exchange: An experimental study," *The Journal of Socio-Economics*, (37:3), pp. 976-997.
- Bohnet, I., and Frey, B. S. 1999. "Social distance and other-regarding behavior in dictator games: Comment," *American Economic Review* (89:1), pp. 335-339.
- Botsman, R., and Rogers, R. 2011. "What's mine is yours," Collins.
- Burnham, T. C. 2003. "Engineering altruism: a theoretical and experimental investigation of anonymity and gift giving," *Journal of Economic Behavior & Organization* (50:1), pp. 133-144.
- Byrne, D. 1971. *The Attraction Paradigm*. Academic Press, New York, NY, USA.
- Caliendo, M., Fossen, F., and Kritikos, A. (2012). Trust, positive reciprocity, and negative reciprocity: Do these traits impact entrepreneurial dynamics? *Journal of Economic Psychology*, 33, 394-409.
- Charness, G., and Gneezy, U. 2008. "What's in a name? Anonymity and social distance in dictator and ultimatum games." *Journal of Economic Behavior & Organization* (68:1), pp. 29-35.
- Chin, W. W. (1998). The partial least squares approach for structural equation modeling. In G. Marcoulides, *Modern Methods for Business Research* (pp. 295-336). London: Lawrence Erlbaum Associates.
- Chiu, C.-M., Hsu, M.-H., and Wang, E. T. (2006). Understanding knowledge sharing in virtual communities: An integration of social capital and social cognitive theories. *Decision Support Systems*, 42, 1872-1888.
- Crowne, D. P., and Marlowe, D. 1960. "A new scale of social desirability independent of psychopathology," *Journal of Consulting Psychology* (24:4), pp. 349-354.
- Cyr, D., Hassanein, K., Head, M., and Ivanov, A. 2007. "The role of social presence in establishing loyalty in e-service environments," *Interacting with Computers* (19:1), pp. 43-56.
- Cyr, D., Head, M., Larios, H., and Pan, B. 2009. "Exploring human images in website design: a multi-method approach," *Management Information Systems Quarterly* (33:3), pp. 539-566.
- Dimoka, A., Hong, Y., and Pavlou, P. (2011). "On Product Uncertainty in Online Markets: Theory and Evidence". *MIS Quarterly*, 36 (2), pp. 395-426.
- Dinev, T., and Hart, P. 2006. "An extended privacy calculus model for e-commerce transactions," *Information Systems Research* (17:1), pp. 61-80.
- Dohmen, T., Falk, A., Huffman, D., and Sunde, U. (2008). Representative trust and reciprocity: Prevalence and determinants. *Economic Inquiry*, 46, 84-90.
- Faul, F., Erdfelder, E., Lang, A.-G., and Buchner, A. (2007). G*Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods*, 39, 175-191.
- Fischbacher, U. 2007. "z-Tree: Zurich toolbox for ready-made economic experiments," *Experimental Economics* (10:2), pp. 171-178.
- Fornell, C., and Larcker, D. F. (1981). Evaluating Structural Equations with Unobservable Variables and Measurement Error. *Journal of Marketing Research*, 18(February), 39-50.
- Gefen, D. 2000. "E-commerce: the role of familiarity and trust," *Omega* (28:6), pp. 725-737.
- Gefen, D., and Straub, D. 2004. "Consumer trust in B2C e-commerce and the importance of social presence: Experiments in e-products and e-services," *Omega* (32:6), pp. 407-424.

- Gefen, D., Straub, D. W., and Boudreau, M. C. (2000). Structural Equation Modeling and Regression: Guidelines for Research and Practice. *Communications of the Association for Information Systems*, 4(7).
- Gefen, D., Karahanna, E., and Straub, D. W. 2003. "Trust and TAM in online shopping: an integrated model," *MIS Quarterly* (27:1), pp. 51-90.
- Gouldner, A. W. (1960). The norm of reciprocity: A preliminary statement. *American Sociological Review*, 25(2), pp. 161-178.
- Greiner, B. 2004. "An online recruitment system for economic experiments," in *Forschung und wissenschaftliches Rechnen*, K. Kremer, and V. Macho (eds.), pp. 79-93.
- Hassanein, K., and Head, M. 2007. "Manipulating perceived social presence through the web interface and its impact on attitude towards online shopping," *Int. Journal of Human-Computer Studies* (65:8), pp. 689-708.
- Hendriks, P. (1999). Why share knowledge? The influence of ICT on the motivation for knowledge sharing. *Knowledge and Process Management*, 6 (2), 91-100.
- Hess, T. J., Fuller, M., and Campbell, D. E. 2009. "Designing interfaces with social presence: Using vividness and extraversion to create social recommendation agents," *Journal of the Association for Information Systems* (10:12), pp. 889-919.
- Ipe, M. (2003). Knowledge Sharing in Organizations: A Conceptual Framework. *Human Resource Development Review*, 2 (4), 337-359.
- Ito A., and Kearns, J. 2013. "The ride-sharing, handbag-borrowing productivity revival," *Bloomberg*, Retrieved 06 August, 2014, from <http://goo.gl/EZm99B>
- Jarvenpaa, S. L., Knoll, K., and Leidner, D. E. 1998. "Is Anybody Out There? Antecedents of Trust in Global Virtual Teams," *Journal Of Management Information Systems*, (4:4), pp. 29-64.
- Jarvenpaa, S. L., Tractinsky, N., and Saarinen, L. 1999, "Consumer trust in an internet store: a cross-cultural validation," *Journal of Computer-Mediated Communication*, 5(2).
- John, N. A. 2013a. "Sharing and Web 2.0: The emergence of a keyword," *New Media & Society*, pp. 167-182.
- John, N. A. 2013b. "The social logics of sharing," *The Communication Review* (16:3), pp. 113-131.
- Joinson, A. N., Reips, U.-D., Buchanan, T., and Schofield, C. B. P. 2010. "Privacy, trust, and self-disclosure online," *Human-Computer Interaction* (25:1), pp. 1-24.
- Jones, K., and Leonard, L. N. K. 2008. "Trust in consumer-to-consumer electronic commerce," *Information & Management* (45:2), pp. 88-95.
- Kankanhalli, A., Tan, B. C., and Wei, K. K. 2005. "Contributing knowledge to electronic knowledge repositories: an empirical investigation," *MIS Quarterly* (29:1), pp. 113-143.
- Krasnova, H., and Veltri, N. F. 2010, "Privacy calculus on social networking sites: Explorative evidence from Germany and USA," in *43th Hawaii International Conference on System Sciences*, pp. 1-10.
- Laufer, R. S., and Wolfe, M. 1977, "Privacy as a concept and a social issue: A multidimensional developmental theory," *Journal of Social Issues* (33:3), pp. 22-42.
- Leismann, K., Schmitt, M., Rohn, H., and Baedeker, C. 2013. "Collaborative Consumption: Towards a Resource-Saving Consumption Culture," *Resources*, (2:3), pp. 184-203.
- Ma, M., and Agarwal, R. (2007). Through a Glass Darkly: Information Technology Design, Identity Verification, and Knowledge Contribution in Online Communities. *Information Systems Research*, 42-67.
- Malhotra, D., Ku, G., and Murnighan, J. K. 2008. "When winning is everything," *Harvard Business Review* (86:5), pp. 78-86.
- Mayer, R. C., and Davis, J. H. 1999. "The effect of the performance appraisal system on trust for management: A field quasi-experiment," *Journal of Applied Psychology* (84:1), pp. 123-136.
- Munar, A. M., and Jacobsen, J. S. (2014). Motivations for sharing tourism experiences through social media. *Tourism Management*, 43, 46-54.
- Nowak, K. L., and Biocca, F. 2003. "The effect of the agency and anthropomorphism on users' sense of telepresence, copresence, and social presence in virtual environments," *Presence: Teleoperators and Virtual Environments* (12:5), pp. 481-494.

- Nunnally, J. C., and Bernstein, I. J. (1994). *Psychometric Theory*. New York: McGraw-Hill.
- Park, J. H., Gu, B., Leung, A. C., and Konana, P. (2014). An investigation of information sharing and seeking behaviors in online investment communities. *Computers in Human Behavior*, 31, 1-12.
- Pavlou, P. A., and Gefen D. 2004. "Building effective online marketplaces with institution-based trust," *Information Systems Research* (15:1), pp. 37-59.
- Qiu, L., and Benbasat, I. 2010. "A study of demographic embodiments of product recommendation agents in electronic commerce," *International Journal of Human-Computer Studies* (68:10), pp. 669-688.
- Ranjbar, A., and Maheswaran, M. (2014). Using community structure to control information sharing in online social networks. *Computer Communications*, 41, 11-21.
- Riegelsberger, J., Sasse, M. A., and McCarthy, J. D. 2003, "Shiny happy people building trust?: photos on e-commerce websites and consumer trust," in *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, pp. 121-128.
- Ringle, C. M., Wende, S., and Will, A. (2005). *SmartPLS - Release 2.0M3*.
- Shin, S. K., Ishman, M., and Sanders, G. L. 2007. "An empirical investigation of socio-cultural factors of information sharing in China," *Information & Management*, (44:2), pp. 165-174.
- Sosik, J. J., Avolio, B. J., Kahai, S. S., and Jung, D. I. 1998. "Computer-supported work group potency and effectiveness: the role of transformational leadership, anonymity, and task interdependence," *Computers in Human Behavior* (14:3), pp. 491-511.
- Steinbrück, U., Schaumburg, H., Duda, S., and Krüger, T. 2002. "A picture says more than a thousand words: photographs as trust builders in e-commerce websites," In *CHI'02 extended abstracts on Human factors in computing systems*, pp. 748-749.
- Tamjidyamcholo, A., Baba, M. S., Tamjid, H., and Gholipour, R. (2013). Information security – Professional perceptions of knowledge-sharing intention under self-efficacy, trust, reciprocity, and shared-language. *Computers & Education*, 68, 223-232.
- Teubner, T., Hawlitschek, F., Adam, M. T. P., and Weinhardt, C. 2013. "Social Identity and Reciprocity in Online Gift Giving Networks," In *46th Hawaii International Conference on System Sciences*, pp. 708-717.
- Wang, H. Y., and Wang, S. H. 2010. "Predicting mobile hotel reservation adoption: insight from a perceived value standpoint," *International Journal of Hospitality Management* (29:4), pp. 598-608.
- Wasko, M. M., and Faraj, S. (2005). Why should I share? Examining social capital and knowledge contribution in electronic networks of practice. *MIS Quarterly*, 29(1), 35-57.
- Yoon, C., and Rolland, E. 2012. "Knowledge-sharing in virtual communities: familiarity, anonymity and self-determination theory," *Behaviour & Information Technology* (31:11), pp. 1133-1143.
- Zajonc, R. B., and Sales, S. M. 1966. "Social facilitation of dominant and subordinate responses," *Journal of Experimental Social Psychology* (2:2), pp. 160-168.
- Zheng, J., Veinott, E., Bos, N., Olson, J. S., and Olson, G. M. 2002, "Trust without touch: jumpstarting long-distance trust with initial social activities," In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*. pp. 141-146.

ACKNOWLEDGEMENTS

We would like to thank our student assistants Christoph Buring, David Schlund, and Maren Rieger for their untiring efforts while conducting the experiment.

COPYRIGHT

Timm Teubner, Marc T. P. Adam, Sonia Camacho, and Khaled Hassanein © 2014. The authors assign to ACIS and educational and non-profit institutions a non-exclusive licence to use this document for personal use and in courses of instruction provided that the article is used in full and this copyright statement is reproduced. The authors also grant a non-exclusive licence to ACIS to publish this document in full in the Conference Papers and Proceedings. Those documents may be published on the World Wide Web, CD-ROM, in printed form, and on mirror sites on the World Wide Web. Any other usage is prohibited without the express permission of the authors.