What We Know and What We Need to Know about Peer Platforms - Airbnb and Uber

Completed Research

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Abstract

Peer-to-peer collaborative consumption platforms posit a new way of organizing economic activity that has disrupted the traditional business models predominantly in the hospitality and travel spaces. In this study, we synthesize the mainstream academic research conducted in the domain of accommodation and ride sharing services by conducting a systematic literature review. We identified six themes- trust, reputation, optimization, participation, design and social aspects and we present the significant works in each theme. The relevant studies identified were also mapped based on the type of the shared service and the targeted stakeholders, namely providers, consumers and IS artifact, addressed in each study. The review and mapping provides a significant understanding of the focal areas investigated so far and uncovers potential research areas.

Keywords
Airbnb, uber, peer-to-peer markets, sharing economy, literature review, accommodation sharing, ride sharing, P2PCC.

Introduction

Sharing plays a significant role in modern economic peer-to-peer transactions of swapping, trading, bartering and exchange (Bardhi and Eckhardt 2012; Belk 2014). Due to the advancements in information and communication technologies (ICT) like online communities, smartphones, ubiquitous networks and location services, consumers nowadays prefer to use alternative mechanisms for consuming resources collaboratively (Botsman and Rogers 2010; Sundarajan 2013). Airbnb and Uber are the largest and ever-growing peer-to-peer collaborative consumption (P2PCC) platforms which have disrupted the traditional markets of accommodation and transportation services substantially (Zervas 2015). The factors differentiating a P2PCC platform from the first-generation two-sided market platforms like Amazon and Ebay are, first P2PCC platforms impart a reasonable level of social interaction for completing a transaction successfully. Secondly, the ownership of the resource that is exchanged in a P2PCC transaction is temporal, thus there is a lack of a complete transfer of the ownership. Lastly, the resources exchanged are underutilized for example, a spare seat in a car or a spare bed at a home (Mohlmann 2016). Uber and Lyft made it possible to ride to a destination at a low cost anytime across the globe, while platforms like Airbnb and Couchsurfing transformed the hospitality industry fundamentally by providing the unique experience of a stay at a host’s personal place. In addition to the obvious economic incentives, the communal, environmental and sustainable benefits of these platforms make it appealing for users to participate in P2PCC platforms (Tussyadiah 2016; Hamari et al. 2015). On the other hand, the decentralized nature of P2PCC platforms raises concerns like platform governance, work management and social issues like racial bias (Chasin and Scholta 2015; Pahuja and Tan 2017). While sharing is intrinsic to human beings and is a conventional behavior, the interpretation of “true sharing” changes when economic incentives become the sole motive for transactions in the peer-to-peer sharing process. The market has capitalized on this opportunity presented by the P2PCC phenomenon and this has resulted in the rise of a multitude of platforms similar to Airbnb and Uber all over the world. These new platforms not only share tangible resources like homes, cars, tools, etc. but they also facilitate the sharing of intangible ones like skills, tasks and work, altering the consumption behavior of individuals significantly and creating ripple effects for the
Literature Review of Accommodation and Ride Sharing Research

Economy. A synthesis of the scholarship on P2PCC platforms seems necessary and timely at this stage to understand the academic research advancements in the area and highlight the unanswered questions identified through a systematic literature review process. The role of an information system (IS), the IS artifact is imperative for the P2PCC phenomenon as it manages the demand and supply of the exchanged resources. The interplays of the IS artifact (platform) and the focal users, providers and consumers, are also targeted in this literature review and they are mapped to the type of sharing service. Our work broadly answers the research questions: What are the key concepts explored in the context of P2PCC platforms for providers, consumers and IS artifacts? How do they vary for accommodation and ride sharing services?

To answer our research questions, we systematically reviewed the literature and identified six key themes from past academic studies. This process also led to the identification of some gaps in the literature for the different stakeholders of the P2PCC domain. In the next section, we briefly state the related research in this area followed by an in-depth explanation of the literature review process and our data analysis. In the following sections, we describe the six broad themes encompassing majority of the previous studies. Lastly, we identify some specific gaps in the literature, propose future research directions and follow it with a discussion of the study.

Related Work

The research topic of P2PCC is relatively recent, yet some articles have presented a literature review on P2PCC platform studies. The first review study focused on the positive and negative impacts of the sharing economy platforms and included 26 articles for the literature review, but the focus was on IS research only (Plenter 2017). The second article evaluated 58 studies on mobility services based on the IS success framework (DeLone and McLean 2003), but the authors restricted the scope of the study to ride sharing applications only (Brendel and Mandrella 2016). Another study proposed a framework based on service system modularization by analyzing 59 digital mobility applications and summarized the implications for digital innovation (Schreieck et al. 2016).

Our study differs in three ways: first, we expand the breadth of the research domain to include most recent works in IS and supplement it with additional articles from supporting and related fields like Marketing, Tourism and Consumer Behavior to understand the overall state of academic research conducted on P2PCC platforms. Secondly, we increase the depth of the research domain by specifically focusing on accommodation and ride sharing services as they together represent the most successful collaborative consumption platforms. Third, to understand the salient concepts investigated in the P2PCC mechanism (Figure 1), we specifically investigate and map the literature based on the three entities: consumer, provider and the IS artifact, which are considered fundamental elements of the P2PCC mechanism. A provider of the shared service owns the resource (home, car) and is responsible for providing the promised service as represented on the platform. A consumer is the user actually consuming the shared resource and is expected to return the resource in original condition. In this study, we refer to an IS artifact as the digital platform that mediates the transactions between the provider and a consumer, matches demand and supply and also manages their interactions to facilitate the transactions.

Literature Review Process

A literature review is a scholarly task of summarizing a subject area of research interest for the identification of specific research questions (Vom et al. 2009). We followed the structured process outlined by Webster and Watson (2002) to guide our literature review process. First, we targeted all recent and relevant works...
published in major IS journals and conferences. We used the databases of AIS electronic library, Web of Science, Google Scholar and Science Direct to conduct the article search. We used the following terms and their different combinations for our initial search of relevant articles: “sharing economy”, “peer economy” “collaborative consumption”, “airbnb”, “uber”. We followed the same process to include studies from other relevant non-IS fields. All throughout we also conducted forward and backward searches iteratively to identify relevant articles. Our initial search process resulted in 106 articles (Figure 2). Further, for each article we conducted an initial screening, where we analyzed the content of the title, keywords, and abstract and only included the relevant articles for further review. This process narrowed down the number of articles to a total of 71 excluding the articles out of the research scope of our study. For example, articles on peer-to-peer lending in the finance sector or studies having an organizational perspective were excluded. Following this step, we studied the entire content of each article to determine if the study focused on at least one of the following perspectives: provider, consumer or the IS artifact explained in the earlier section. This process resulted in further refinement and the resulting final set in our literature review includes 48 articles.

### Table 1. Distribution of all the articles in literature

<table>
<thead>
<tr>
<th>IS (40)</th>
<th>Conference (33)</th>
<th>NON-IS (8)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Journal (7)</td>
<td></td>
<td>Conference (0)</td>
</tr>
<tr>
<td>MISQ</td>
<td>MISISECHJAIMSTFRSCACIS</td>
<td>JOMTMSSRNCICT</td>
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<td>1</td>
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<tr>
<td>MISISECHJAIMST</td>
<td>MISISECHJAIMST</td>
<td>CIS</td>
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<tr>
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<tr>
<td>MISISECHJAIMST</td>
<td>MISISECHJAIMST</td>
<td>ACIS</td>
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<td>MISISECHJAIMST</td>
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<td>MISISECHJAIMST</td>
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<td>1</td>
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<td>1</td>
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</tbody>
</table>


### Data Processing and Summary

The main objective of this literature review is to synthesize the semantic information contained within the content of the articles rather than providing descriptive statistics of key methodologies and other objective aspects of the studies. We adopt the definition of a theme as an expression of an idea that can be coded by a text chunk of any size, as long as that chunk represents a single theme (Minichiello et al. 1990). In this study, we restrict our focus to the key concepts explored in P2PCC studies and we adopt an inductive iterative approach and used qualitative content analysis to identify six distinct themes (Weber 1990; Krippendorf 2012). We used the research question (RQ) or goal, described explicitly or implicitly by the authors in the article, to recognize two distinct factors, the theme and the focal stakeholder addressed in the study. First, we condensed the RQ representing the basic idea of the study into a code. We also analyzed
the complete content of the article to justify the appropriateness of the code. According to Krippendorf (2012), the two main reasons to use content analysis with research question (RQ) is efficiency and empirical grounding. Following the initial steps of coding the RQ, we grouped related codes together into a set to form a theme and continued the process until we identified six themes that are consistent and well defined individually. Some studies could be clearly identified as belonging to a single theme while few others spanned across multiple distinct themes. Secondly, the focal stakeholders, providers, consumers or the IS artifact in each study were recognized simultaneously to the coding process. We repeated this process several times to justify the identification of each theme and the associated focal stakeholder for each article.

For example, RQ - “What factors determine participation in the sharing economy by hosts of short-term shared accommodations?” (Koohikamali 2017). This study focuses on one theme - ‘participation’ and it investigates only one focal stakeholder the ‘providers’. While 26 studies had a straightforward research question like the stated example, for the remaining 22 we interpreted the theme and stakeholder based on the research goal implied. For example, in a study Fagerstrom et al. (2017) state that “The aim of this study is, therefore, to investigate the impact of the seller’s personal profile image and their facial expression on buying behavior within the context of peer-to-peer accommodation rental service”. Thus, this study inspects participation of providers and understands implications of the design component of the IS artifact (profile image) on consumer buying behavior. This study focuses on all the three stakeholders’ perspective and studies the participation and design themes.

**Key Methods and Theories**

Majority of the studies used quantitative methods (39) while only 4 used qualitative methods. We also found some studies using mixed method (5). The most commonly used quantitative methods were surveys and experiments. Also, machine learning techniques like data mining and DID (Difference-In-Difference) analysis were used in six studies. For qualitative studies, case studies and interviews were the research methods of choice. We also found at least three studies that used publically available open source data to understand the diverse aspects of Airbnb (Inside Airbnb 2017). Moreover, majority of the studies focused on accommodation sharing platforms (34) and only a few on ride sharing platforms (12) while only two of them focused on both. Also, Airbnb is the most widely studied platform followed by Couchsurfing in the accommodation sharing space. On the other hand, Uber is the frontrunner for research on ride sharing services while Zipcar and Car2Go are studied as well. The studies used a diverse range of theories to describe and test the proposed research models like Signaling Theory, Social Exchange Theory, Theory of Planned Behavior, Theory of Reasoned Action, Similarity Attraction Theory and Gamification Theory. The literature on digital nudges and trust were also used. We present a brief description of each theme identified and list the relevant studies for each in Table 2.

**What We Know**

**Participation**

A majority of the past studies have focused on understanding the underlying motives of both providers and consumers for participating in the P2PCC phenomenon. Previous work examines sharing intentions from both the providers and consumers perspective for both Uber and Airbnb (Matzner et al. 2015). A study classified the consumers using Airbnb based on their travel goals and labelled them as outgoing, pragmatic, experience seeker, and friend (Festila and Muller 2017). The most common factors recognized by researchers for participation in the phenomenon are perceived economic benefits, social benefits, sense of belonging to community, altruism and environmental benefits (Uber only). A recent study enquires the motivations for sustainable participation by exploring the intentions of users to use the sharing service again in the future (Mohlmann 2015). Studies in this theme have also assessed the influence of the location of the offered services on the intentions to participate (Koohikamali et al. 2017).

**Trust**

Trust is a major theme that unfolds in the review. Trust research in the IS community is well established and it has been explored in diverse areas of computer mediated environments (Gefen et al. 2003). Trust in P2PCC platforms is an acute issue due to the nature of the transactions and lack of regulatory institutions.
Majority of the trust studies explored attitudes and behavioral intentions towards sharing services and the common constructs used are disposition to trust, familiarity, perceived risks, social motives and trust propensity. Notably, some studies on trust distinguish between trusting intentions for providers, renters and platforms (Hawlitschek et al. 2016b). For the accommodation sharing platforms, research also inspected the monetary (Airbnb) and non-monetary platforms (Couchsurfing) to understand the intricacies of trust and the sharing phenomenon (Mittendorf 2017b). Another study identified types of consumer, business or private, and scrutinized its effects on trust (Mittendorf 2017a). Abramova et.al (2017) inspected trust from consumers’ perspective based on informational cues provided by the platform. For ridesharing services, researchers have investigated consumers’ concerns for using ridesharing applications including factors like risk and uncertainty. Platform bypassing behavior is a risky activity that has been recently identified in another study (Wang et al. 2017b).

**Reputation**

This theme fundamentally uncovers and signifies the importance of the signals and informational cues provided by the reputation and rating systems on the P2PCC platforms. Studies in P2PCC have pointed out the discrepancies in ratings and identified inflated ratings on Airbnb by comparing the ratings on Airbnb with the traditional services of the hospitality industry (Zervas 2015). The studies related to this theme examined an array of topics like response strategy of hosts on Airbnb to negative reviews, economic value of reputation, hosts’ attributes conveying reputational information, review volume and review valence. A recent study also investigated the effect of a superhost badge, which describes an outstanding host on Airbnb, and studied its impact on the review rating, volume and valence (Liang et al. 2017).

<table>
<thead>
<tr>
<th>Theme</th>
<th>Notable Articles</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participation</td>
<td>Lamberton and Rose 2012; Matzner et al. 2015; Mohlmann 2015; Bucher et al. 2016; Kim et al. 2015; Tussyadiah 2016; Hawlitschek et al. 2016a; Koohikamali et al. 2017; Festila and Muller 2017</td>
<td>12</td>
</tr>
<tr>
<td>Trust</td>
<td>Abramova et al. 2015; Hong 2017; Lee et al. 2017; Mittendorf 2016; Mohlmann 2016; Teubner et al. 2016; Ye et al. 2017; Wang and Heng 2017</td>
<td>14</td>
</tr>
<tr>
<td>Reputation</td>
<td>Abramova et al. 2015; Gutt and Herrmann 2015; Ert et al. 2016; Liang et al. 2017; Zervas 2015; Neumann and Gutt 2017</td>
<td>10</td>
</tr>
<tr>
<td>Social Aspects</td>
<td>Trang et al. 2015; Alsudais 2017; Pahuja and Tan 2017; Wang et al. 2017a; Ye et al. 2017; Zhang et al. 2017</td>
<td>6</td>
</tr>
<tr>
<td>Optimization</td>
<td>Weber 2014; Mohlmann 2016; Barnes and Mattsson 2017; Wang and Nicolau 2017; Greenwood and Wattal 2017; Schneider et al. 2017; Wessel et al. 2017</td>
<td>14</td>
</tr>
</tbody>
</table>

**Table 2. Selected articles in each theme and count**

**Design**

The design theme primarily includes work investigating the effectiveness of website features for P2PCC phenomenon. Some studies have proposed novel designs to convey behavioral aspects like pro-sociality and altruism and also investigated their influence on peer behavior on P2PCC platforms. Researchers have also used advanced data analytics techniques to analyze host’s profile images to detect the facial expressions and analyzed the quality of pictures to assess different aspects of listings on Airbnb (Deng and Ravichandran 2017; Fagerstrom et al. 2017). This theme also covers studies focusing on different modes of representing trust via designs of platform feature like visual trust conveyed by images and textual trust by comments and reviews. A recent work addresses the problem of social bias by using digital nudges (Pahuja and Tan 2017).
**Social Aspect**

This theme’s underlying objective is to focus on social issues and explore the role of social interaction in P2P transactions. Social interaction is a key differentiator of a peer-to-peer transaction. The role of social interaction and its effect on emotional attachment with the host was explored by Zhang et al. (2017). Social benefits of using ride sharing applications and its impact on reduction of drunk driving was another significant finding (Wang et al. 2017a). Previous research has attempted to address the prevalent social issue of racial bias by using digital nudges (Ye et al. 2017). Another study focused on the importance of human interaction for service acceptance and the researchers showcased the negative effect of replacing human interaction with IS or advanced IS (Trang et al. 2015).

**Optimization**

Studies in this theme have explored how and when the platform is used to match the ever-growing complexity of P2P transactions. These studies focused on enabling an efficient sharing process. To meet the increasing demands on these platforms many studies explored the determinants of price of the offered services. Klemmer et al. (2016) studied the optimum usage of Uber by using spatio-temporal evidences. Majority of the studies categorized in this theme present a model for pricing of the listing or a ride. A study also identified a car-sharing problem and suggested the implementation of multi-hop ride sharing solution in cities where traffic situation is chaotic (Teubner and Flath 2015). Another study states improving the ride sharing services by adding an intermediary to reduce information asymmetry (Weber 2014). Optimization is also a dominant theme and we anticipate future work in this area, especially studies exploring sustainable platform usage.

**What We Need to Know**

In the literature review, we found that studies focusing on the IS artifact alone or its implications on the providers, consumers or both were the least in number as compared to those on providers or consumers only. While the difference in the counts is not significant, the trend to understand the behavioral implications of trust, reputation, participation and social aspects on either providers or consumers seems to be predominant. Moreover, there are considerably more studies exploring the accommodation sharing services as compared to the ride sharing ones although the latter holds a bigger market capitalization and considerably larger user base. Table 3 presents these statistics. It should be noted that the counts for the provider and consumer also contains the studies which focused on them together.

<table>
<thead>
<tr>
<th>Perspective</th>
<th>Count</th>
<th>Accommodation Sharing Study</th>
<th>Ride Sharing Study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provider</td>
<td>15</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>Consumer</td>
<td>14</td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>IS Artifact</td>
<td>4</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>IS Artifact + Provider/Consumer</td>
<td>11</td>
<td></td>
<td>2</td>
</tr>
</tbody>
</table>

**Table 3. Distribution of articles based on focus and type of service**

We also investigated this count distribution considering the IS and non-IS fields, but found no significant difference in the distribution. Thus, due to the limited number of studies focusing on the IS artifact and its implications on either provider or consumer or both, we propose that future IS research must focus more on the IS artifact and move beyond investigating the behavioral intentions only. Also future work can focus more on ride sharing services.

**Implications for Providers, Consumers and IS Artifact**

The literature review highlighted the scarcity of studies that address the problem of information asymmetry between providers and consumers via the IS artifact. Addressing the information asymmetry problem is critical for ensuring trust in P2PCC transactions and to mitigate the risk of possible disputes between providers and consumers. Previous studies have inspected the role of reputational information and informational cues like verified signs and signals to reduce the information asymmetry problem.
Additionally, the true feedback of the host or guest visible on the platform can be influenced by their direct and personal communications and previous research supports this fact as the ratings were found to be largely inflated on Airbnb (Zervas 2015). Thus reviews on these platforms can be biased, reducing their usefulness for future consumers. Given the increasing number of P2PCC transactions worldwide we propose some means to address the information asymmetry problem. First, we hypothesize that familiarity between the providers and consumers can be improved through online and offline social connections and it can have a direct effect on the transaction likelihood on P2PCC platforms. For example, in Airbnb, both providers and consumers can link their social media profiles to their profiles on the platform. Doing so, the participants can leverage the information on the existing social networks to find common connections and enhance their familiarity. While familiarity is an established antecedent of trust, the level of familiarity and its implication on P2PCC transactions is largely unexplored. The design of appropriate profiles, recognizing the information privacy concerns can also address information asymmetry. Secondly, another alternative can be to investigate the role of self-disclosure, that is the information disclosed by users on P2PCC platforms. Effective design of the platforms can encourage more detailed and accurate information disclosure by the providers and consumers equally thereby enhancing familiarity and permitting recommendations for future users. We propose that familiarity of the providers and consumers and the self-disclosure of information on the platforms needs further investigation.

As we experience the growth of platforms similar to Airbnb and Uber, the competition in the accommodation and ride sharing services space is bound to increase. Therefore continued platform usage is essential for the sustenance of a business. But we found only a handful of studies have investigated this topic. To understand the factors for continued platform usage, we recommend future researchers to segregate the sharing process on P2PCC platforms into three stages namely pre-transaction, during transaction and post-transaction and identify the salient aspects for each stage. Such a perspective might lead to a richer understanding of the dynamics of the sharing process and the role of the IS artifact in it.

The contextual factors like the role of human interaction in different sharing contexts play a significant role. The negative effects of integrating advanced technology in the place of human interaction in car sharing service has been explored. But research has minimally explored the consequences of replacing the physical provider with a technology or the absence of the provider completely in a P2PCC accommodation sharing transaction and its implications on the notions of security and safety.

Discussion

P2PCC posits a new way of organizing economic activity and has disrupted traditional business models predominantly in the hospitality and travel spaces. In this study, we present a collective understanding of the significant works conducted in IS and related business fields in the P2PCC context. Specifically, we synthesized the literature in six themes by qualitatively analyzing the content of 48 articles which were selected through a systematic literature review process. We outlined and explained each theme in brief and further mapped each study across four different perspectives for accommodation and ride sharing services separately. This process revealed certain gaps in research and provided a clear understanding of studies conducted in accommodation and ride sharing services. At this stage, academic research on P2PCC platforms has progressed from understanding why users use these platforms (participation) to when, how and where they use these platforms (optimization). Specifically from a theoretical perspective, future work can explore the role of familiarity and self-disclosure of information in P2PCC. The themes identified in this study can also be refined and presented in the form of an overarching framework. The development of the themes over time could also be another interesting study. From a practical perspective, we suggested developers and designers to improve the design of the profile representation and some aspects of the platform. By adopting the principle of “One Size does not fit all”, we suggest that developers must identify unique requirements for providers and consumers and tailor the design of the IS artifact, the platform uniquely for each entity.

We do acknowledge the limitations of the study. Our focus was mainly on the areas of research concerning providers, consumers and their interplay with IS in P2PCC platforms. We restricted this study to understand the key concepts explored in the literature and we did not elaborate much on the specific theories and methodologies used in those studies due to space limitations. In addition, our study excluded implications of external factors like rules, regulations and monitoring policies that we deem are significant for P2PCC and thus needs separate introspection. The identification of the six themes in the study was
accomplished by the authors and can portray certain degree of subjectivity. However, the authors followed the qualitative content analysis strictly. The large number of conference papers in our literature review is an issue, however it signifies the recency of the domain.

To conclude, this study attempts to understand the scholarship of P2PCC platforms research and identifies the major areas investigated so far for accommodation and ride sharing services. We identified six distinct themes: trust, optimization, participation, social aspects, design and reputation. Also the mapping of accommodation and ride sharing studies to four perspectives clearly demonstrates the need for future research on the IS artifact and its impact on either providers or consumers. We believe the themes outlined in this study will guide both academic researchers and practitioners to explore this thriving domain.

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