TECHNOLOGY-MEDIATED SHARING ECONOMY: UNDERSTANDING USER PARTICIPATION IN COLLABORATIVE CONSUMPTION THROUGH THE BENEFITCOST PERSPECTIVE

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Abstract

Fueled by the widespread deployment of information communication technologies, the notion of collaborative consumption has become popular in recent years. Traditionally, individuals have viewed ownership as the most desirable way to access products. In recent years, individuals have shown a robust appetite for collaborative consumption. While the prevalence of collaborative consumption activities has significantly affected the industry and the individual, scientific understanding of this emerging phenomenon remains scant. A review of the extant literature suggested that little is known about the motivating and inhibiting factors for participation in collaborative consumption. Building on the benefit-cost framework, this research-in-progress paper proposes an integrated model to explain the influence of perceived benefits (enjoyment and economic reward), perceived costs (privacy risk and security risk), and perceived platform quality on collaborative consumption. The research model will be tested with 300 active users who have participated in car-sharing activity with Uber. This study is expected to contribute to the research on, and practice of, the sharing economy by revealing the factors affecting participation in collaborative consumption.

Keywords: Sharing economy, Collaborative consumption, Benefits and costs, Car sharing
1 INTRODUCTION

The sharing economy, powered by advanced technologies and social media, forms a significant economic and innovative force. Numerous outstanding start-up companies have utilized social media and advanced technologies to build platforms and applications for collaborative consumption (CC). The central objective of CC is simple: to unleash the value from under-utilized personal commodities (Dillahunt & Malone, 2015). Companies adopting the innovative CC business model do not themselves own any commodity, but create platforms to connect providers and users of on-demand services. Fast-growing international corporates such as Uber and Airbnb have proved successful in adopting such innovative business models (PwC, 2015).

While CC has started to permeate every aspect of our personal lives, from transportation and accommodation to entertainment, the reasons for user participation in CC have not been systematically examined. In particular, studies on participation in CC are new and evolving and most have focused on the motivators and benefits of such activities, whereas the inhibitors and risks have not received commensurate scholarly attention. The influence of technological factors is also underexplored. Studying the influence of inhibitors and technological factors on participation in CC is important for two reasons: (1) there are potential privacy and security risks for users involved in CC that may dilute the motivational forces behind it; and (2) user participation in CC relies heavily on platform quality, given that contemporary sharing economy activities are mediated by such technologies. Accordingly, this study endeavors to answer the following research question.

What are the motivating, inhibiting, and technological factors affecting user participation in collaborative consumption?

Drawing on the benefit-cost framework (Shen et al., 2010), an integrative theoretical framework is proposed to examine the influence of perceived benefits, perceived costs, and perceived platform quality on participation in CC. This study is expected to provide significant research and practical implications. On the research front, it contributes to the growing body of knowledge on CC by revealing the relative effect of three types of distinctive force. On the practical front, this study offers practitioners insights into promoting participation in CC.

2 LITERATURE REVIEW

In this section, we review the concept of, and studies on, CC. Furthermore, to highlight the motivations of our research, we discuss the research gaps identified from the review of the prior literature.

2.1 Defining Collaborative Consumption

The sharing economy describes the CC that stems from the sharing, exchanging, and renting of goods or services without owning them (Choi et al., 2014). The concept of CC was coined by Felson and Spaeth (1978) and refers to the circumstances in which individuals consume economic goods or services jointly. Although not a fundamentally new concept, collaborative consumption has only become prevalent recently with the help of information technology (Henten & Windekindle, 2016). Specifically, contemporary CC platforms, such as Airbnb and Uber, have facilitated the emergence of sharing-economy activities by overcoming barriers that once restricted CC, namely connecting users, lowering transaction costs, and reducing risks (Schor & Fitzmaurice, 2015; Stokes et al., 2014). However, controversies about the terms and definitions of the sharing economy and CC have also accompanied their emergence (Botsman & Rogers, 2011). While this study aims to investigate the motivating, inhibiting, and technological factors influencing user participation in CC, clarification on such controversies is out of the scope of the study. Thus, following the extant literature, the terms sharing economy and collaborative consumption are used interchangeably and refer to the technology-
mediated and monetized sharing, swapping, trading, or renting of goods or services that involve a fee or other forms of monetary compensation (Botsman, 2013). This definition, however, specifically excludes non-monetized sharing activities such as those of CouchSurfing.com and BookCrossing.com (Belk, 2014).

2.2 Research on Collaborative Consumption

To consolidate the extant knowledge on CC, we conducted a systematic review of the CC literature. We identified 19 articles related to CC published between 2012 and 2016. The scope of investigation was broad and the phenomenon was examined on different levels. Studies on CC can loosely be classified into two levels: market-level analysis and individual-level analysis, with the majority of studies being at the market level. Twelve articles (63%) focus on market-level analysis, while seven (37%) focus on individual-level analysis. In the following paragraphs we provide an overview of the studies on CC and discuss the observed research patterns in the literature.

2.2.1 Market-level Studies on Collaborative Consumption

Market-level studies on CC have two foci. A group of researchers proposed business models of CC and discussed their application to different industrial sectors (e.g., Binninger et al., 2015; Choi et al., 2014). For instance, Choi et al. (2014) proposed a business model and established operation guidelines for small and medium enterprises wishing to participate in sharing-economy activities. Another group of researchers investigated the drivers and barriers for adopting the CC business model in addition to its potential effects on traditional business (e.g., Denning, 2014; Nica & Potcovaru, 2015; Pedersen & Netter, 2015). For example, Henten and Windekiilde (2016) suggested that transaction costs have been drastically reduced due to the facilitation of Internet-based CC platforms, and such a reduction is an imperative driver of the proliferation of sharing-economy activities. Zervas et al. (2016) compared hotel revenues in the Texas market before and after the entry of Airbnb using historical data. They estimated that each 10% increase in Airbnb supply resulted in a 0.35% decrease in monthly hotel room revenue.

2.2.2 Individual-level Studies on Collaborative Consumption

Individual-level studies on CC remain scant. Among the few existing studies, the majority have explored the motivational factors that predict user participation in CC. Extrinsic and intrinsic motivations were found to be important in influencing user participation in CC. For instance, Hamari et al. (2015) found that economic benefits and enjoyment were significant antecedents of user intention to participate in CC. Ballus-Armet et al. (2014) conducted a survey regarding public perception of peer-to-peer car sharing in America, and found that convenience and availability, monetary savings, and expanded mobility options were essential motivators for participating in car-sharing activities.

To conclude, the study of CC is still in its infancy and two research patterns can be observed. First, most studies are primarily conceptual and qualitative in nature. Consequently, there is a lack of empirical validation of the relationships between CC and its potential antecedents, with a few notable exceptions (e.g., Hamari et al., 2015; Möhlmann, 2015). Second, past studies have tended to overlook the influence of inhibiting and technological factors on user participation in CC. Specifically, similar to other forms of e-commerce transactions, participating in CC often requires inputting detailed personal information such as contact information, credit card details, and location data, which evokes particular concerns about the risk to privacy. In addition, participating in CC often requires users to enter into such transactions with strangers, which poses a greater threat to their personal security. Furthermore, the contemporary sharing economy is the outcome of information technology innovation in which CC platforms connect service providers and users, match underutilized commodities and on-demand services, and facilitate such transactions. The quality of CC platforms and applications thus assumes a critical role in influencing user participation; it is imperative, therefore, to examine the
influence of risks and technological factors on user participation in CC, in addition to the motivating factors.

3 RESEARCH MODEL AND HYPOTHESES

3.1 Theoretical Foundation

The benefit-cost framework is widely adopted for studying the use of information systems that involve potential risks such as privacy and security risks (e.g., Krasnova et al., 2010; Zhou et al., 2010). The potential benefits of participating in CC, namely economic reward, enjoyment, sustainability, and reputation, have been well documented in previous studies (Hamari et al., 2015; McArthur, 2015). However, growing concerns have been raised about the potential risks of participating in CC, which previous studies have tended to overlook. In response, this study draws on the benefit-cost framework and proposes a research model to systematically examine the influence of perceived benefits and perceived costs on the intention of users to participate in CC. As advanced CC platforms enable and support contemporary sharing-economy activities, the research model also examines platform quality. Figure 1 depicts the research model.

![Research Model Diagram](image)

**Figure 1. Research model**

3.2 Perceived Benefits of Participating in Collaborative Consumption

Two major types of perceived benefits have been identified as being associated with participation in CC: intrinsic benefits (i.e., enjoyment and reputation) and extrinsic benefits (e.g., economic reward and sustainability) (Hamari et al., 2015). While this study examines the factors that influence participation in CC at the individual level and from the user perspective, antecedent variables at the organizational or societal level and those associated with the provider, namely reputation and sustainability, are beyond the scope of this study.

3.2.1 Intrinsic Benefit: Enjoyment

Enjoyment here refers to the extent to which participating in CC is perceived to be enjoyable in its own right, apart from any performance consequences that may be anticipated (Davis et al., 1992). Specifically, enjoyment has been well-regarded as an important intrinsic benefit for online sharing behavior across technological contexts (Hamari et al., 2015). For instance, Nov (2007) found that
enjoyment was the most salient factor for participating in Wikipedia, surpassing other forms of intrinsic motivation. Further, Roberts et al. (2006) suggested that software developers enjoy participating in open source software platforms.

Specifically, McArthur (2015) suggested that participating in accommodation sharing websites (e.g., Airbnb) appeals to users by providing them with a sense of novelty and authentic experience. In the same vein, enjoyment is expected to assume a key role in influencing participation in CC. Thus, it is hypothesized that:

\[ H1: \text{Users’ perceived enjoyment is positively related to their intention to participate in collaborative consumption.} \]

3.2.2 Extrinsic Benefit: Economic Reward

While intrinsically motivated users are driven by benefits (e.g., enjoyment) derived from the interaction with IS/IT, extrinsically motivated users are driven by the expectation of external benefits or rewards (e.g., economic reward) (van der Heijden, 2004). Economic reward is an important extrinsic benefit of participating in CC. The sharing economy has become an appealing alternative to many consumers due to its economic benefits (i.e., cost saving) (Henten & Windekkilde, 2016). In particular, the basis of CC lies in sharing assets between individuals instead of owning them (Ballus-Armet et al., 2014). Thus, CC is generally regarded as a utility-maximizing behavior wherein users replace ownership of goods and services with their lower-cost counterparts (Hamari et al., 2015).

Utility maximization practices are enacted by providing short-term and non-ownership access to personally owned goods or services that stand idle (Nica & Potcovaru, 2015). Furthermore, sophisticated electronic platforms connect providers and users of such goods, enabling CC on a more significant scale (Nica & Potcovaru, 2015). Consequently, goods and services available at contemporary CC platforms are served at lower prices, encouraging user participation. The relationships between economic rewards and user intention to participate in CC have already been corroborated (e.g., Hamari et al., 2015; Hars & Ou, 2002). Thus, it is hypothesized that:

\[ H2: \text{Users’ perceived economic reward is positively related to their intention to participate in collaborative consumption.} \]

3.3 Perceived Costs of Participating in Collaborative Consumption

Participation in CC is associated with a number of benefits, such as enjoyment, economic reward, enhanced business sustainability, and reduced environmental pollution (Hamari et al., 2015; Möhlmann, 2015), although it is not without risks. Growing concerns have been raised about the potential risks of participating in CC (Gobble, 2015), the most important of which are privacy and security risks (Dillahunty & Malone, 2015).

3.3.1 Privacy Risk

Privacy risk in this study refers to the potential malicious collection and use of users’ personal information by CC platform providers (Gao et al., 2015). Participating in CC requires the input of detailed personal information, which is a major concern among users (Ballus-Armet et al., 2014), discouraging them from participating in CC (Dillahunty & Malone, 2015).

Some Internet-based companies behave opportunistically with the personal information of users to realize additional economic gains, which poses a great threat to user privacy (Son & Kim, 2008). Specifically, privacy risks have been confirmed as a salient inhibitor in a wide array of online behavior. For instance, users perform benefit-risk analysis when they are requested to provide personal information to organizations (Awad & Krishnan, 2006). Personalized and location-based online services require more detailed private information, including user demographics, usage records, and location data, which discourages users from such activities (Xu et al., 2015). The negative
relationships between privacy risk and online activities have been confirmed by previous studies (e.g., Hajli & Lin, 2014; Pavlou et al., 2007). Similarly, participation in CC requires the input of detailed user personal information, such as demographics, social connections, online behavior records, and location data, which negatively influence users’ willingness to participate in CC (Dillahunt & Malone, 2015). Thus, it is hypothesized that:

\[ H3: \text{Users’ perceived privacy risk is negatively related to their intention to participate in collaborative consumption.} \]

3.3.2 Security Risk

Security risk in this study refers to the potential harm that a circumstance, condition, or event might cause to personnel or network resources (Kalakota & Whinston, 1997). In the context of CC transactions, security risk is manifested either through damages to personal commodities and assets or physical injury to users themselves. Security risk has been verified as a salient inhibitor of various online services, namely online shopping (Lin & Lu, 2015), social networking sites (Powell, 2009) and mobile financial services (Tai & Ku, 2013).

Security threats are not uncommon in contemporary CC activities. For instance, there have been notable cases of rape, vandalism, and theft as a result of participation in accommodation-sharing services through a popular CC platform, Airbnb (Bleier, 2015). Furthermore, users of NeighborGoods, an online community for sharing personal goods and stuffs among neighbours, indicated that they would be more willing to participate in such CC activities if the platforms offered a secure location for exchanges and sharing, such as local police and fire stations (Dillahunt & Malone, 2015). Renters of peer-to-peer car-sharing services have also voiced their concerns about the liability of participating in CC, because their rides might not be protected by insurance (Ballus-Armet et al., 2014). Participation in CC such as via Airbnb and Uber often requires personal involvement in the transactions. Consequently, security risk serves as another concern that might deter users from participating in CC. Thus, it is hypothesized that:

\[ H4: \text{Users’ perceived security risk is negatively related to their intention to participate in collaborative consumption.} \]

3.4 Platform Quality

Platform quality here refers to users’ assessment of the features of the CC platforms that meet their needs and reflect the overall excellence of such platforms (Aladwani & Palvia, 2002). Platform quality can be assessed in terms of three dimensions, namely information quality, system quality, and service quality (Delone & McLean, 2003). Specifically, quality platforms need to provide users with accurate and timely information, a consistent and easy-to-navigate interface, and a responsive and interactive experience during the transactions (Kuan et al., 2008). Contemporary sharing-economy activities are enabled by different advanced CC platforms, such as the Airbnb and Uber websites and applications. When users perceive that the CC platforms offer complete information, facilitate smooth transactions, and allow responsive interactions, their overall evaluation of such platforms tends to be positive, encouraging them to participate CC activities. The positive relationships between platform quality and various e-commerce activities have been confirmed previously (e.g., Chen et al., 2015; Cheng & Huang, 2013; Kuan et al., 2008). Thus, it is hypothesized that:

\[ H5: \text{Users’ perceived platform quality is positively related to their intention to participate in collaborative consumption.} \]
4 RESEARCH METHOD

4.1 Research Sample and Context

We will test the proposed research model using 500 users participating in Uber, a popular car-sharing service and platform. According to a recent survey conducted by PwC, car sharing is one of the five key sectors of the sharing economy. For instance, Uber, a five-year-old car-sharing company, has already expanded its operations to more than 250 countries and cities worldwide, including North America, Europe, Asia, and Australia (PwC, 2015). Car sharing ranked top among all CC activities. Characterized by its popularity and prevalence, car sharing represents an appropriate sharing-economy activity for testing the research model of participation in CC.

4.2 Measures

We derived the measures from prior studies with minor modifications to fit the current context of CC. The constructs are measured with multiple items on a 7-point Likert scale, from “1 = Strongly Disagree” to “7 = Strongly Agree”. Table 1 summarizes the measurement items.

<table>
<thead>
<tr>
<th>Construct</th>
<th>Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enjoyment (Venkatesh &amp; Morris, 2000)</td>
<td>I find participating in Uber enjoyable. Participating in Uber is pleasant. I have fun in participating in Uber.</td>
</tr>
<tr>
<td>Economic reward (Kim et al., 2007)</td>
<td>Participating in Uber is cheaper than other options available in the market. I save more money because of participating in Uber. It is possible to get a better discount from the participation in Uber.</td>
</tr>
<tr>
<td>Privacy risk (Malhotra et al., 2004)</td>
<td>There are privacy risks to participate in Uber. There is a potential privacy loss participating in Uber. There are a lot of privacy related uncertainties that could not have been foreseen while participating in Uber.</td>
</tr>
<tr>
<td>Security risk (Grewal et al., 2003)</td>
<td>Engaging in Uber would be insecure. Participating in Uber is not safe. Participating in Uber is insecure.</td>
</tr>
<tr>
<td>Platform Quality (Wixom &amp; Todd, 2005)</td>
<td>The Uber platform is prompt in responding to my queries. The Uber platform performs reliably. The Uber platform provides me with all the information I need.</td>
</tr>
<tr>
<td>Intention to participate in collaborative consumption (Ajzen, 1991)</td>
<td>Participating in Uber is something I would do in the future. I intend to participate in Uber for my future needs. I would see myself participating in Uber in the future.</td>
</tr>
</tbody>
</table>

Table 1. Measures

4.3 Pre-test

We conducted a pre-test with 50 users who had previously used Uber to solicit feedback on the questionnaire. Respondents were asked to give comments on the clarity and flow of the survey instructions, and on the wording of the statements. Aside from minor modification to the survey format, no major problems surfaced in the pre-test.
4.4 Data collection and analysis

In the main field study, we will use an online survey to collect the data to test our research model because respondents who have experience of using Uber are likely to be Internet-savvy. In the questionnaire, respondents will be presented with a screening question to determine whether they have any experience with Uber. The questionnaire will then begin with a statement giving the purpose of the study with a consent form. Respondents who agree to participate in the survey will be directed to the main survey questionnaire, which asks them to recall a recent participation in Uber. Questions will be asked regarding their perceptions toward participating in Uber, and on the motivating, inhibiting, and technological factors involved with their decision. Demographic characteristics such as gender, age, income, education, and Internet usage will also be collected. To capture a representative snapshot of the CC population, we will recruit respondents via a market research firm.

We will use the structural equation modeling (SEM) technique to test the research model. SEM offers a robust yet flexible estimation of relationships among multiple items and criterion variables. It also estimates a model uncontaminated with measurement errors (Chin, 1998), which is believed to be an appropriate analytical technique for this study.

5 EXPECTED CONTRIBUTIONS

In this research-in-progress paper, we build upon the benefit-cost framework and develop a theoretical model to explain the motivating, inhibiting and technological factors that influence user participation in CC. We will validate the research model using the survey design and structural equation modeling approach. This study is expected to yield remarkable theoretical and practical implications for CC. On the theoretical side, it will advance the IS literature by addressing an underexplored research area, namely technology-enabled CC. Apart from validating the motivating factors reported in previous studies, this study will also investigate the inhibiting and technological factors influencing CC. The validated research model is expected to provide a solid foundation for future studies of technology-enabled CC and the sharing economy. On the practical side, this study will inform practitioners about the factors affecting CC at the individual level. Specifically, it will provide important insights to inform the future design and delivery of CC platforms.

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