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# Internet Research

## The Sharing Economy: Promises and Challenges

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Eric T.K. Lim and Chee-Wee Tan

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# Guest editorial





## The sharing economy: promises and challenges

Sharing is ingrained in the fabric of society. Efficient access to goods and services constitutes a major force driving much of the economic activity today. The greater connectivity brought about by the proliferation of internetworking technologies allows individuals to circumvent spatial and temporal barriers during interactions, giving rise to a novel sharing economy that is structured around the disintermediation of conventional channels of commerce in the exchange of both tangible and intangible resources. The sharing economy (named alternatively as access economy) has gained notable attention within mainstream media as a new economic paradigm that harnesses peer-to-peer technological platforms to facilitate the exchange of resources among individuals who are joined via fluid relational networks. Almost overnight, numerous peer-to-peer platforms – in the likes of crowdfunding (e.g. Indiegogo and Kickstarter), crowd ideation (e.g. Mindmixer, Quirky and Social Innovator), crowdsearching (e.g. Crowdfynd and CrowdSearching), crowd voting (e.g. California Report Card and Threadless) and crowd working (e.g. Amazon Mechanic Turk, DiDi, Freelancer and Uber) – have sprung up to facilitate resource pooling by individuals and organizations alike.

Although the sharing economy has been proclaimed by many to be a game changer for how organizations and society function, there are also a number of detractors who questioned the potentially disruptive and uncertain future brought about by such peer-to-peer exchanges. Critics have painted a dismal picture of the sharing economy, seeing it as a means for individuals and/or firms to dodge proper regulations or live beyond their means, which may, in turn, contribute to massive job displacements and detrimental spending habits. In light of the opportunities and challenges posed by the sharing economy, there is a clear urgency for a systematic and thorough scrutiny of how value creation and appropriation can take place within such economic environments while minimizing its negative impact.

The aim of this special issue of *Internet Research* is to sensitize both academics and practitioners to the latest trends and developments in the sharing economy. It offers a venue for scholars to present research that identifies and addresses knowledge gaps in how emergent technologies are shaping the access and sharing of resources within online peer-to-peer communities. In this special issue, we present ten articles that not only cover diverse topics related to the sharing economy, but also examine the phenomenon across multiple contexts, through distinct theoretical lenses, and from a myriad of methodological approaches. Together, these ten articles paint a diversified but vibrant research landscape of sharing economy.

The first article entitled "Sharing economy: seeing through the fog" gives an overview of the current state of research into the sharing economy and advances a framework for differentiating sharing economy businesses. A review of 114 published articles reveals three focal themes emerging from contemporary research into the sharing economy, namely, consumers' motivations, socio-economic impact and revenue models. The article concludes with a framework for distinguishing sharing economy businesses based on whether assets are new or re-used and whether transactions are permanent or temporary. The article also uncovers gaps between academic research and business practices that could direct future research efforts.

The second article entitled "Collaborative innovation in the sharing economy" attempts to develop a classification model to profile social actors based on their motivations to participate in co-innovation activities within the sharing economy. A mixed methods

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research design, comprising a combination of case study and survey, was employed to identify and classify the motivations of social actors. Results point to three classes of social actors based on motivational differences: ideators (who are motivated to share new ideas), collaborators (who are motivated to share experience and/or knowledge) and networkers (who are motivated to share connections and network).

The third article entitled "Building customers' trust in the ridesharing platform with institutional mechanisms" explores how legally binding (e.g. driver certification and payment security) and market-driven (e.g. customer feedback and price surge signals) institutional mechanisms affect consumers' trust in ridesharing platforms. The authors administered an online survey on 307 consumers of DiDi, China's largest ridesharing platform, to empirically validate their research model. They discovered that both legally binding and market-driven institutional mechanisms are deterministic of consumers' trust toward the platform as well as their subsequent intention to continue utilizing it.

The fourth article entitled "Antecedents and role of individual sociability on participation in mobile collaborative consumption" endeavors to elucidate the effects of individual psychological and sociability factors – including altruism, embarrassment, enjoyment, reputation, social connection and trust on individuals' intention to participate in mobile collaborative consumption. An online survey was administered on individuals who had experienced a mobile collaborative consumption campaign conducted by the researchers. Empirical findings demonstrate that hedonic and social factors exert significant impact on individuals' participation in mobile collaborative consumption.

The fifth article entitled "The conditioning function of rating mechanisms for consumers in the sharing economy" sheds light on how bilateral rating mechanisms on sharing platforms shape emotional labor norms among sharing economy consumers. A mixed methods research design, comprising a combination of survey and focus group, was employed to comprehend interdependencies between rating mechanisms and consumers' emotional labor. Empirical findings allude to the instrumental role of bilateral ratings as a mechanism for encouraging expressive emotional labor on the part of sharing economy consumers while acknowledging the potential negative outcomes of such a rating mechanism (e.g. annoyance, coercion and frustration).

The sixth article entitled "The sharing economy ideal" illustrates how the implementation of organization-sponsored sharing platforms comes to be interpreted as a corporate social responsibility (CSR) program for their stakeholders. The authors conducted semi-structured interviews with participants of Zimride by Enterprise, an interorganizational ridesharing platform. Through analyzing the interview data, the authors were able to unearth the two organizational sensemaking processes of sensegiving and sensebreaking as micro-mechanisms underlying how Zimride come to be deemed as a CSR program.

The seventh article entitled "Policy compliance and deterrence mechanism in the sharing economy" illuminates the rationale behind why service providers of sharing platforms indulge in policy non-compliance. The authors first conducted interviews with 21 service providers on an accommodation sharing platform, Airbnb Korea, to elicit the reasons for policy non-compliance before administering an online survey on 251 service providers from Airbnb Korea to validate their proposed research model that incorporates the reasons influencing policy non-compliance as derived from the interviews. The authors found that policy non-compliance for most service providers are driven by their belief of a low risk of detection.

The eighth article entitled "Does more crowd participation bring more value to crowdfunding projects? The perspective of crowd capital" scrutinizes the effects of fundraisers' crowd capability and the level of crowd participation, in the form of funding pledges and on-site communication, on crowdfunding success. To empirically validate their proposed research model, the authors analyzed data extracted directly from Kickstarter on

all crowdfunding projects from June 2012 to April 2013. The authors found that funding pledges have an inverse U-shaped relationship with the level of project success while project updates, reward levels and on-site communication positively affect the degree of project success with the exception of funding goal, which exerts a negative impact instead.

The ninth article entitled "Analyzing campaign's outcome in reward-based crowdfunding" investigates the effects of social capital dimensions on goal accomplishment in crowdfunding campaigns. Analyzing data retrieved from Fondeadora.mx, one of the largest crowdfunding platforms in Mexico, the authors show how social interactions through a wide social network (structural dimension), shared vision and values among entrepreneurs and their potential funders (cognitive dimension), as well as the development of trustworthiness within the campaign (relational dimension) boost the probability of achieving crowdfunding goals. Empirical findings proffer practitioners with insights into how to appraise social capital and attain desired objectives.

The tenth and final article entitled "Dealing with initial success versus failure in crowdfunding market" dissects the role played by entrepreneurs' previous crowdfunding experience in shaping subsequent crowdfunding performance, especially with respect to the effects of initial success vs failure on serial crowdfunders' explorative vs exploitative behavior. Analyzing data retrieved from the Indiegogo crowdfunding platform, the authors observe that even though serial crowdfunders with initial success are more likely to target a new market or a new crowdfunding category, those with initial success tend to engage in more exploitative decision making (e.g. by lowering the target capital for the subsequent crowdfunding in the same category).

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# Sharing economy: seeing through the fog

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## Abstract

**Purpose** – The purpose of this paper is to delineate the current state of the art of sharing economy (SE) research and practice. It provides a new framework to help managers and academics to consider this field with the right managerial and theoretical lenses.
**Design/methodology/approach** – A systematic literature on the SE was conducted, resulting in the analysis of 114 articles in the management literature. This was completed by the empirical investigations of business model and industry of 32 members of three national associations promoting SE: SE UK, Ireland and Denmark.
**Findings** – Papers dealing with SE themes focus on consumers' motivations, impact on the society, market and policy, as well as the revenue model. SE businesses can be differentiated depending on whether their assets are new or re-used and the transaction is permanent or temporary. Based on this matrix, the study reveals four archetypes of SE businesses: "on-demand renters," "lifecycle extenders," "seller aggregators" and "ephemeral matchmakers."
**Research limitations/implications** – The paper outlines a significant gap between what is current focus of the academic literature and the reality of SE purposes and businesses. This provides goals for future research.
**Practical implications** – The framework and clustering of business model archetypes may help managers and entrepreneurs dealing with SE to better understand the underlying value drivers behind those business models.
**Originality/value** – There are some discrepancies between the SE themes emerging from the management literature and the business model diversity of SE companies. This research aims at helping scholars and managers to position themselves in the field.

**Keywords** Business model, Systematic literature review, Two-sided markets, Sharing economy, Digital platforms, Marketplaces

**Paper type** Research paper

## 1. Introduction

The sharing economy (SE) has significantly challenged well-established industries, such as the transport and hotel industry, by providing low-cost convenience without the responsibility of ownership (Eckhardt and Bardhi, 2015). The phenomenon seems to be worldwide and growing rapidly. In Europe, the total value of transactions undertaken by SE companies is estimated at €28bn for 2015 and is expected to reach €335bn by 2025 (PwC, 2016). The growth rate of these businesses significantly outperforms their traditional counterparts. The Compound Annual Growth Rate for car rental is, for example, estimated at 2 percent through 2025, while for car sharing, estimation rose to 34.8 percent from 2016 to 2024 (PwC, 2014). It is expected that the US adults using SE should move from 44.8m in 2016 to more than 86.5m in 2021 (Statista, 2017a) or from 7.7m in 2014 to 19.3m when considering only the lodging platforms (Statista, 2017b).

Those differences in the growth estimation can be attributed to uncertainties about what exactly is to be included in the SE. The term is mainly used to describe an economic and social activity for which, as a core process, we find transactions related to sharing and/or reusing assets. However, several definitions focus on different elements of the phenomenon

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(e.g. Habibi *et al.*, 2017; Kathan *et al.*, 2016). Sometimes stressing the need of a digital platform (e.g. Mair and Reischauer, 2017; Acquier *et al.*, 2017); sometimes emphasizing on the reciprocity of the phenomenon in others: "The act and process of distributing what is ours to others for their use and/or the act and process of receiving or taking something from others for our use" (Belk, 2017, p. 126). Other definitions focus on the impact regarding sustainability (Botsman and Rogers, 2011) and/or social value (Belk, 2009; Benkler, 2017).

Recent works show how four SE models can be identified depending on the level of rivalry amongst participants and the level of control exerted by the platform owns (Constantiou *et al.*, 2017). The same authors also contend that SE platforms possess three key attributes that distinguishes them from other businesses: they provide access rather than ownership, they facilitate peer-to-peer interactions, they allocate idle resources (Constantiou *et al.*, 2017). This only partially corroborates the views of Munoz and Cohen (2017) who showed the diversity of SE purposes: peer-to-peer interaction, better use of under-used resources or leverage the crowd to find alternative funding sources. Furthermore, the role of business model design is often considered a critical variable for the economic sustainability of these models, independently from the motivations that bring the customers on board (Piscicelli *et al.*, 2018). Similarly, other research classifies SE initiative through nine different sharing practices, stressing the interdisciplinary nature of the topic (Trenz *et al.*, 2018). At the same time, other authors are taking a different perspective, paying attention to the individual level of the SE, studying the motivations behind the participation (Lee *et al.*, 2018).

This brief overview shows a complex environment. Different definitions, with different focuses, coming from the academic world and the real world where a bunch of companies claims themselves part of the SE phenomenon, often without matching (many) of those definitions. This illustrates that there is some confusion about the scope of SE and key characteristics of the businesses involved in it. A fog is blanketing the SE concept.

We aim to delineate the theoretical boundaries of this new research topic, and observe the key characteristics of SE companies; their business model configuration and their key attributes. The aim is not necessary to provide another definition of the concept but rather to provide academics and practitioners with a map and a compass that will help them to, respectively, shape their research agenda and their business agenda.

To delineate the scope of this new research topic, we propose a dual approach based on a systematic literature review and an empirical investigation of members of three SE industry associations. This dual approach enables us to identify gaps in the literature and cluster the different kinds of SE companies, pointing out related opportunities and challenges for managers, entrepreneurs, and start-uppers dealing with this growing phenomenon. The paper is organized as such. First, we explain our systematic literature review approach and the methodology used for the empirical investigation. We then present a thematic analysis of the literature and cluster the various business models used by SE companies claiming. Implications for both researchers and managers are exposed toward the end of the paper.

## 2. Methodology

The present study is based on a dual systematic approach based on mixed methods. The first part of the research is based on a systematic literature review with a specific focus on research related to SE. Systematic literature review uses an explicit algorithm to perform a search and critical appraisal of the literature (Tranfield *et al.*, 2003; Crossan and Apaydin, 2010). The second part of the research is based on exploratory qualitative research of SE companies, using an open coding approach (Jansen, 2010).

### *2.1 Defining the samples*

*2.1.1 The sample for the systematic literature review.* Systematic literature review benefits from a long tradition in management fields (Tranfield *et al.*, 2003; Pittaway *et al.*, 2004;

Liñán and Fayolle, 2015; Qazi *et al.*, 2017). The ambition of a systematic literature review is "to provide practitioners and policy-makers with a reliable basis to formulate decisions and take actions by enhancing the legitimacy and authority of the resultant evidence" (Tranfield *et al.*, 2003, p. 208).

In opposition to descriptive and narrative reviews, systematic literature reviews "uses an explicit algorithm, as opposed to a heuristic, to perform a search and critical appraisal of the literature. Systematic reviews improve the quality of the review process and outcome by employing a transparent and reproducible procedure" (Tranfield *et al.*, 2003; Crossan and Apaydin, 2010).

To understand what the academic world considers under the term "Sharing Economy," our search strategy exclusively focuses on the keyword "Sharing Economy." The search was performed in the field "Article, Abstract and Keywords" of the Scopus database, the largest citation database of peer-reviewed literature. This aimed to keep the initial sample as wide as possible but also to include only results of good quality, as ensured by this kind of database (e.g. Randhawa *et al.*, 2016). The search was performed on all the papers published till the end of 2017. This first step brought to 671 documents. To ensure the coherence between the documents and the aim of this paper, the search has been then limited to the subject area "Business, management and accounting," reducing the data set to 230 papers. The next selection criteria were based on the document's type which only included "Articles" and "Articles in press" excluding a further 75 documents (such as conference proceedings). The last exclusion criterion was the language, keeping only documents in English (resulting in 146 documents). Finally, the abstracts were screened to ensure consistency with the aim of this research, resulting in a final sample of 114 documents. The steps of the literature search are summarized in Figure 1.

*2.1.2 The sample for the empirical analysis*. To analyze SE from an empirical perspective, we searched for associations that bring together companies involved in this growing phenomenon just as for the systematic literature review, we focused exclusively on associations that had the term "sharing economy" in their title. SE Ireland, Denmark and the UK are three non-profit industry associations, which bring together key players of the SE in their respective industry. There was no other European association that contained the word "SE." The search of associations stopped to Europe, as we reached a sample which was big enough for the aim of our research and a number of players (including US based companies such as Uber, Airbnb) were re-occurring in the different

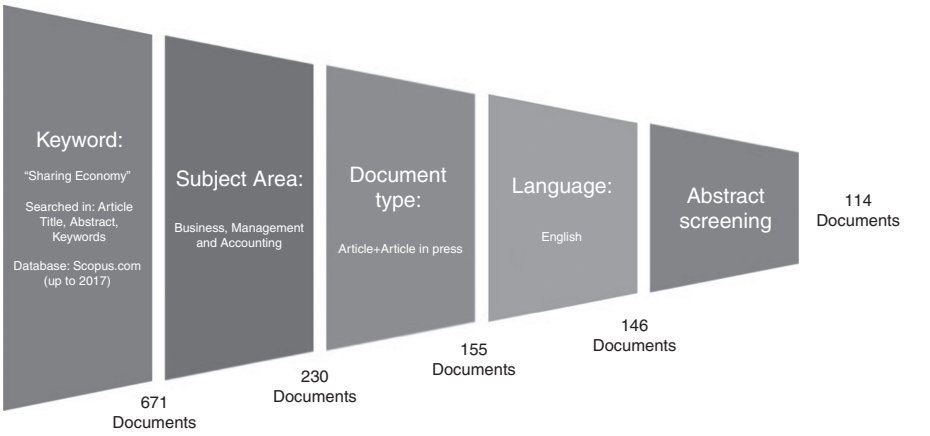


**Figure 1.**
Creation of the final sample of papers

associations, albeit it is worth noting that many companies have initially originated from the USA. The three industry associations have similar objectives. For example, SE Ireland aims to "bring together diverse technology-enabled businesses offering unique ways of generating economic, social and environmental value across a range of peer to peer, business to business, and business to consumer models operating throughout Ireland." The original sample of the three industry associations included 45 companies. Members providing additional services for SE businesses (e.g. law consultancy, payment management), which cannot be considered as part of the SE phenomenon were excluded from the sample leaving a final data set of 32 companies.

### *2.2 Data analysis*

The 114 articles, constituting the research data set, have been analyzed according to the suggestions of systematic literature reviews (Tranfield *et al.*, 2003; Crossan and Apaydin, 2010). The data set is first described in details (time of publication, key authors and key journals) then an overview of the emerging theme of the literature are presented.

Regarding the empirical analyses, the 32 companies have been studied through secondary sources (e.g. websites, description of their mobile apps on the app stores, industry magazine, newspaper articles), aiming to have an overall view on the companies and the entire sample. All the gathered data have later been analyzed, following an open coding approach (Corbin and Strauss, 2008).

Based on insights derived through both the analyses, directions for future research and implications for managers and entrepreneurs are presented.

## 3. Results

### *3.1 Systematic literature review*

The data set 114 articles were first analyzed through some descriptive statistics, as it is common in systematic literature reviews (e.g. Qazi *et al.*, 2017; Alcaide-Muñoz and Rodríguez Bolívar, 2015). Thematic analysis of the papers follows it.

*3.1.1 Sharing economy: an emerging and growing academic field.* Our analysis of the database confirms the incredible growth of the field over the last few years. The oldest paper on the SE was published in 2012. The academic interest for the topic is new but is now growing at exponential rates with seven papers published in 2015, 29 papers in 2016 and 76 in 2017 (Figure 2).

Those papers were written by a great variety of authors showing that no authors are setting a school of thoughts. Only ten authors in total had published more than one paper

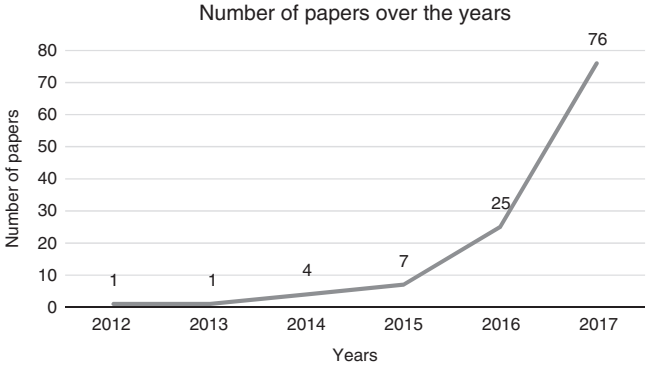


**Figure 2.**
Number of papers per year

on the topic: seven of them had published two papers while the three most prolific authors (Xie, Cohen and Tussyadiah) had published, respectively, five and three papers.

The journal landscape analysis also reveals a great heterogeneity (Figure 3). A total of 13 academic journals featured at least 3 articles on the SE. Two of those journals had recently published more than ten papers: *International Journal of Contemporary Hospitality Management* and *Technological Forecasting and Social Change*; in these cases, it is important to highlight that both journals published a special issue on the topic.

*3.1.2 Thematic analysis: what are the scholars talking about?.* To analyze the content of the SE academic papers, we first perform a network-based analysis on the co-occurrence of both authors' keywords and the index keywords via VOS Viewer, a bibliometric analysis software.

This resulted in a co-occurrence map (Van Eck and Waltman, 2014). To increase the readability of the results, links are showed only for a minimum strength higher than 6.

Based on a smart local moving algorithm (for further information, see Waltman and Van Eck, 2013), Figure 4 shows the results of a cluster analysis of related keywords (Waltman *et al.*, 2010), representing each cluster with a different color.

A few insights derived from the co-occurrence analysis. First of all, the relative importance to the tourism sector emerged through its leading case (Airbnb) showed by the red cluster. The blue and yellow keywords are mainly related to behavioral economics and a sustainability dimensions, through keywords like sustainability, access-based consumption, sustainable development or collaborative economy. The third type of related keywords (in orange and green) are management oriented, through terms like business model, innovation, economics, commerce and the trust issue. These dimensions also emerged from the qualitative analyses of the papers.

Our qualitative clustering analysis reveals themes, which can be classified in three groups: consumers' motivation for joining the SE, impact on the society, market and policy, and finally revenue model of the SE (Figure 5), one last group is composed of papers that try to define the SE (as mentioned in the Introduction).

The greatest number of papers on SE focuses on the drivers, that motivate customers in using the services provided by these companies, taking a user-centric perspective (e.g. Wilhelms *et al.*, 2017). The literature outlines three motivations: financial benefits (e.g. Milanova and Maas, 2017), hedonic considerations (e.g. Yang *et al.*, 2017) and finally environmental consciousness or sustainability orientation (Parguel *et al.*, 2017). Research

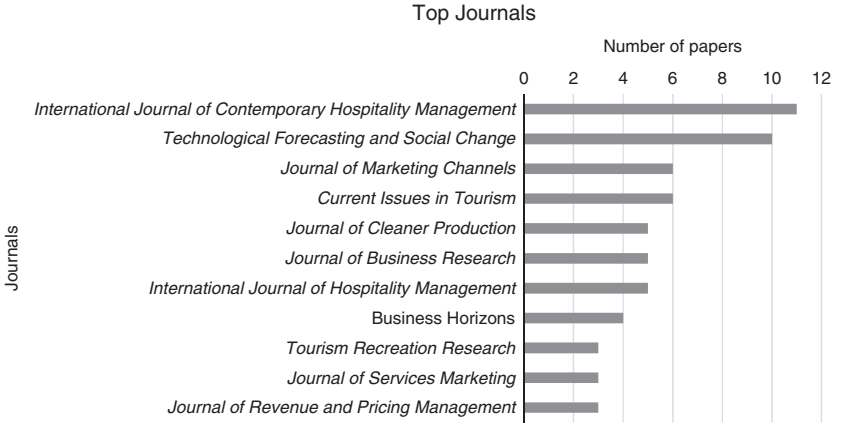


**Figure 3.**
Top journals represented in the sample

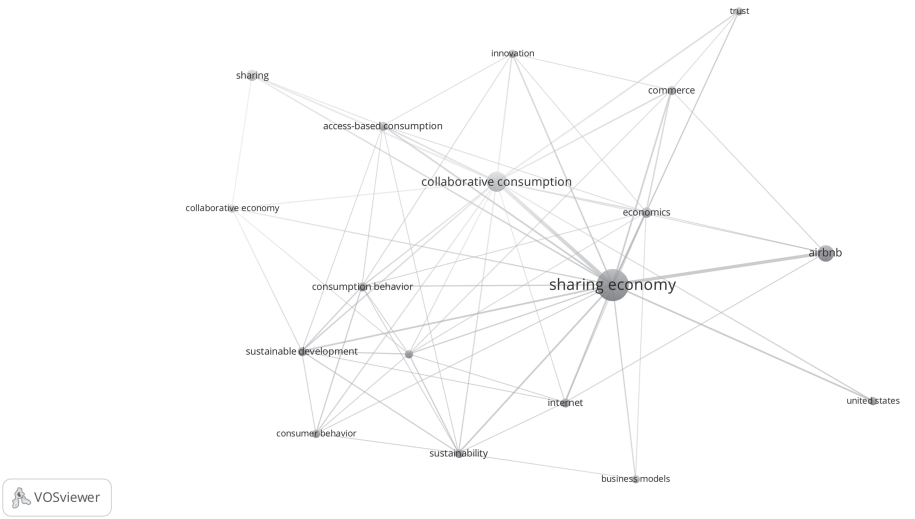


**Figure 4.**
Cluster analysis on co-occurrence of keyword

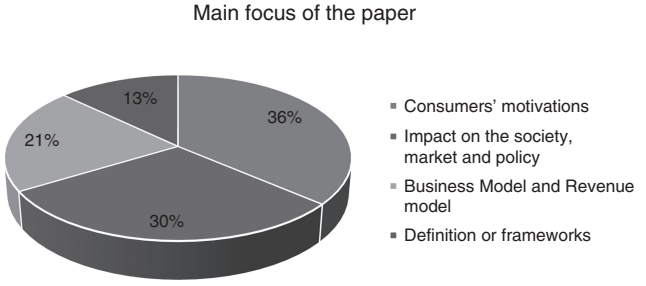


**Figure 5.**
Main focus of the papers in the sample

also shows that those behavioral motivations may be industry specific or culturally dependent (Davidson *et al.*, 2018). For example, the sustainability orientation argument is more prevalent for peer-to-peer based businesses (Parguel *et al.*, 2017).

The second type of topics emerging from the literature relates to the potential impact of the SE, which can be seen from three dimensions: environment, market and policy. The environmental dimension embraces the notion of sustainability. SE is described as a way to reduce unused products, and waste (Barnes and Mattsson, 2016; Retamal, 2017). Researchers further suggest exploring the potential impact of new technologies to improve even more the sustainability role of SE practices (Heylighen, 2017). Beyond the sustainability benefit and impact of the SE on society, researchers also highlight the market impact of the emerging share economy business. Here, research shows how an increase in the offer of share goods may lead to an increase in the overall demand (Guttentag and Smith, 2017) and how existing, traditional companies may search for new ways to leverage their brands, instead of simply competing with SE (Richard and Cleveland, 2016).

Several papers also outline the unsolved policy issues (e.g. taxation, regulation, human resources policies) posed by SE firms (Laurell and Sandström, 2017). SE challenges the traditional forms of public regulations (Gregory and Halff, 2017). The need to control and

define new and improved metrics in the field is often highlighted (e.g. Williams and Horodnic, 2017).

The final theme has a managerial focus and relates to revenue model and pricing mechanisms. In SE, price discrimination can be related to the owners' characteristics (Wang and Nicolau, 2017) and SE companies have different revenue streams (Richard *et al.*, 2018). Most interestingly, Laurell and Sandström (2017) highlighted how the SE field embraces market and non-market logic, since not all the SE businesses can be considered for profit organization.

The diversity of topics uncovered in academic papers contrasts with the limited number of industries under investigation (Figure 6). Most papers focus on the accommodation industry (34 percent) and use Airbnb as a prime example. The second biggest category includes papers covering multiple industries (approximately 25 percent). In all, 10 percent of the papers are not based on an empirical investigation and are purely conceptual.

Albeit insightful, the systematic literature review conducted above only offers a very partial view of what SE truly is. Specifically, the limited number of cases and industries under investigation by academics may not be representative of the vast array of businesses and industries of SE. Therefore, to provide a more definitive overview of the SE phenomenon, it is useful to look at companies involved in SE and analyze more their industry and business models.

### *3.2 Who is taking part in the sharing economy*

Our empirical investigation shows that the members of SE Ireland, UK and Denmark operate mainly in the mobility sector (28 percent), accommodation industry (22 percent), retail (16 percent); while other sectors (e.g. food, fashion, energy) are only represented in small proportion. The sample of 32 companies is further analyzed along three dimensions: the object of the sharing process, the kind of transaction enabled by the company and the business model adopted by the company.

*3.2.1 What do SE companies actually share?*. The first level of analysis is related to the "shared object": What are SE companies actually sharing? The results of a high-level analysis are quite surprising; the vast majority of companies are intermediating physical goods (cars, clothes, homes), while the others are sharing workforce (Figure 7).

The first category comprises peer-to-peer platforms like Airbnb, which enable on a shared consumption model where "access trumps ownership" such as Ofo or GoCar that, respectively, share bikes and cars. The second category is made up of job matching companies, such as Staff Heroes, which allow businesses to search for extra staff or the Danish Meploy that "match-makes" companies and people searching for flexible jobs. In the middle, hybrid companies can be found, leveraging a flexible workforce to trade a physical good. Deliveroo, which links customers and restaurants through their drivers, is a prime example of this hybrid position.

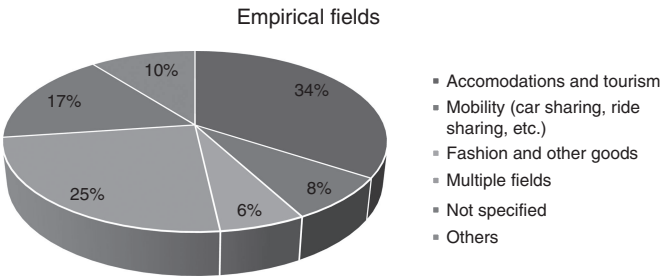


**Figure 6.**
Empirical fields covered in the papers

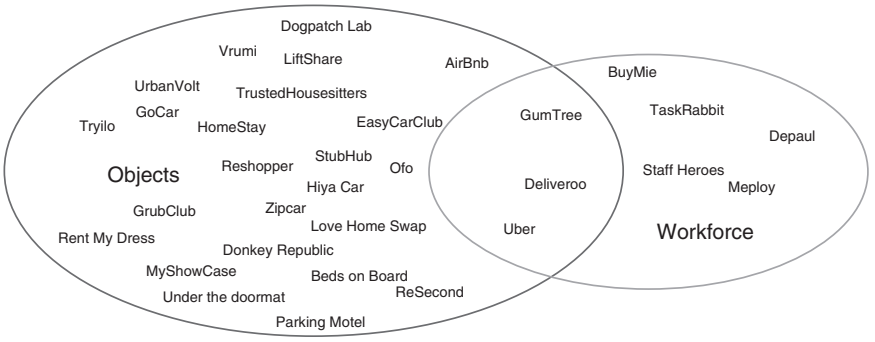


**Figure 7.**
Sharing economy companies: the object of the sharing

This initial analysis shows the great variety of sharing objects, which can be referred to SE. Indeed, the so-called "gig economy" – defined as "a labor market characterized by the prevalence of short-term contracts or freelance work, as opposed to permanent jobs" (Wilson, 2017) – is represented in the sample. The gig economy emerges as a subset of businesses, considering a spread workforce and the chance to provide flexible jobs. As there is a huge level of heterogeneity among the shared objects for this initial level of analysis, it is necessary to refine our analysis with the next level of analysis focusing on the kind of transaction enabled by the company to get further insights.

*3.2.2 What kind of transactions is enabled?*. Concentrating on physical goods, the second level of analysis focuses on the temporality of the transaction and the newness of the asset, used in this transaction.

Some companies such as Vrumi, Airbnb or Love Home Swap embody the SE concept as they leverage on an existing asset – an empty room, a vacant apartment and so on – to engage users in a temporary transaction.

Other companies incarnate the concept of sharing within their industry such as car sharing, but are often based on a completely different model. In this case, the company owns the shared product, which has been bought ad hoc for the sharing purposes.

Still, another set of companies perform on a model where they extend the lifecycle and economic value of used goods. Reshopper, for example, is a platform where people can sell and buy used children's items.

Accordingly, our analysis reveals a 2 by 2 matrix based on two main dimensions: the kind of asset involved in the sharing and the kind of transaction enabled by the company (Figure 8).

This classification brings to the emergence of four main clusters of SE companies labeled as seller aggregators, on-demand renters, lifecycle extenders and ephemeral matchmakers.

Lifecycle extenders and seller aggregators involve a change of ownership. Those businesses are in fact marketplaces, which enable a sale of new or used products. MyShowCase is an online beauty store, which sells new brands not widely available on high street shops through community-based events organized by a network of independent stylists. BuyMie is a retail grocery application, which allows users to have home deliveries (within an hour) from close brick and mortar groceries using an independent workforce known as "pickers." Reshopper allows users to re-sell used clothes, while StubHub helps users to re-sell exceeding tickets for events.

Temporary transactions comprise on-demand renters and ephemeral matchmakers. Ephemeral matchmakers facilitate an exchange between two types of users with symmetric needs, i.e., providing an object and consuming an object. Airbnb exemplifies this category.

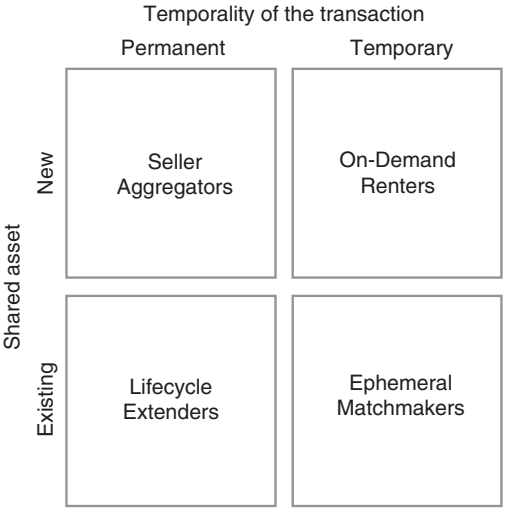


**Figure 8.**
A framework to read SE

Similarly, Tryilo is an Irish start-up, which allows people to rent out rarely used objects – such as a kayak or a professional camera – to other users in the same city. They, however, focus on experience rather than ownership, hence, the name "Ephemeral matchmakers." On-demand renters allow users to have access to a good, which has been intentionally purchased for this purpose. Ofo allows users "rent" bikes on-demand rent around the city, or GoCar, rents out shared cars.

*3.2.3 Who owns what?*. Accounting for the (initial) owner of the shared object reveals some interesting considerations. On the one hand, several companies act as intermediaries bringing together prospective customers searching for specific products and on the other, owners of the desired good.

This mechanism has been widely studied in the last decade through the concept of two-sided markets. Scholars defined them as markets where two or more groups of customers are brought together through a platform, which internalizes the indirect network externalities governing the relationship between the two groups (e.g. Rochet and Tirole, 2003; Muzellec *et al.*, 2015). Successful companies such as Uber and Airbnb rely on this kind of market structure by linking end-users with a peer-supplier (i.e. drivers or hosts in these examples). Multi-sided platform is also the business model for hybrid companies like Deliveroo (previously classified as an overlapping case between objects and workforce), that brings together three different sides: the end-users, restaurants and riders (e.g. Hagiu and Wright, 2015). Our analysis reveals that seller aggregators, lifecycle extenders, ephemeral matchmakers are based on this market arrangement.

Finally, if we consider the last cluster – on-demand renters – we find a different mechanism. Companies like Ofo or GoCar are the actual owners of the shared good. Their business model is based on an innovative version of the traditional renting business model. Indeed, they leverage a digital gate (usually a mobile app) to manage the multiple and on-demand rents offering a direct access to the shared goods, without a human intermediary.

This final difference leads to a critical aspect in the definition (and the management implications) of SE companies. If, in several cases, the concept of platform is used as a core element for the definition of what is SE (e.g. Mair and Reischauer, 2017; Acquier *et al.*, 2017), it is also true that not all the companies, which leverage the peculiarities of these sociological phenomena are actually based on this kind of business model (Figure 9).

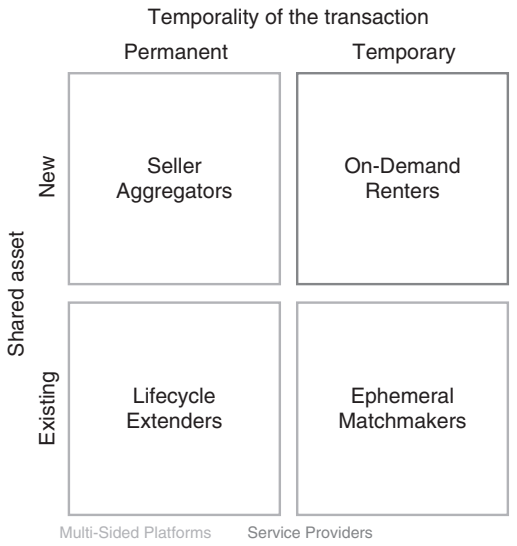


**Figure 9.**
Sharing economy companies: a typology of platforms

In the next section, the focus is going to be moved to the business model and the strategic implication of these differences, aiming to unveil the opportunities and challenges, which underpin these different business models.

## 4. Discussion

The present framework helps companies to position themselves on the spectrum. It helps SE players to analyze the extent to which it is the changing of ownership features or their use of existing resources, which classifies them as a participant in the SE. More interestingly, it can be used as the basis for a more in-depth discussion to see what drives the success of Business Model archetypes behind SE.

### *4.1 Ephemeral matchmakers*

Ephemeral matchmakers, defined as companies, which enable a temporary transaction of existing assets, represent the majority of the sample (approximately 66 percent) and their modus operandi is probably the closest to what is commonly understood as SE.

Companies like Airbnb and HomeStay, along with platforms that assist in finding a flexible job, like Staff Heroes are part of this group. Indeed, these multi-sided platforms often leverage idle capacities, valuing existing – but under-used – assets. These companies are satisfying a need, which may already be partially satisfied by incumbents.

The companies of this cluster may be labeled as two-sided markets or two-sided platforms (Hagiu and Wright, 2015), which refers to a specific kind of platform that aims to link two different groups of customers (Rochet and Tirole, 2003; Gawer, 2014) relying on cross-side network externalities (Katz and Shapiro, 1985; Shapiro and Varian, 1999). Hence, entrepreneurs should pay attention to the design of two specific value propositions, which touch the right motivation drivers for each side. SE matchmaking platforms present the same challenges as other multi-sided platforms. In particular, attention should be given to the chicken and egg paradox (Caillaud and Jullien, 2003), and the opportunities of managing platforms throughout the lifecycle (Eisenmann, 2007). The question, hence, is why should end-users and providers participate in these platforms instead of using a traditional service? Also, how matchmakers' value propositions differ from what traditional firms offer?

As outlined by the systematic literature review, end-users' motivation may be related to the potential financial benefit (e.g. a lower price), but also the hedonic experiences (e.g. Verganti, 2017). The analysis of the value proposition of SE corroborates this perspective. On the end-users' (consumers') side, SE companies tend to put forward the notion of experience (rather than ownership) and authenticity (rather than professionalism). For example, Airbnb's value proposition emphasizes the authenticity of an experience: "book unique homes and experience a city like a local." The idle-capacity dimensions of those platforms can also be related to sustainability motivation argument, albeit the emphasis for the provider side (suppliers–owners working with Airbnb, Vrumi) is leaning toward potential financial gains ("Vrumi allows householders in the UK to make extra money from renting out their unused space to busy professionals during the day").

The success of those matchmaking platforms will depend on their ability to build trust. Since the platform itself acts as a warranty toward the other side, trust-enabling mechanisms are essential to entice both sides to join the platforms. Our analysis reveals that this is achieved through three key mechanisms: identity verification, user reviews and secure payment.

Identity verification is the initial trust-building mechanism used by Airbnb, BlaBlaCar and other SE companies, requiring end-users to initially sign up through one and very often two social media platforms (such as Facebook, Google + or LinkedIn).

Once users are signed into the platform, a mechanism must ensure the quality of the service. One-sided rating mechanism (the rating of Uber drivers by taxi users) or more often reciprocal reviewing (i.e. hosts and travelers reviewing each other on Airbnb, HomeStay, Love Home Swap etc.,) is essential to building trust on both sides of the market.

Finally, trust is also built through a secure payment system, which collects money from the end user's side and delays the payment to the provider's side until the transaction is completed and all parties satisfied.

### *4.2 Lifecycle extenders*

Lifecycle extenders are companies (e.g. Reshopper or ReSecond), which leverage existing assets to create a sale-based transaction; they represent approximately 11 percent of the overall sample. Here, the concept of sharing is somehow missing, since the "supplier" group sells something to the "customer" group. However, this cluster partially overlaps with the so-called "circular-economy," in which participants also aim to increase the lifecycle of products (Urbinati *et al.*, 2017). Sustainability can be considered as the main motivational driver for buyers. Sellers are motivated by utilitarian reason (gaining an economic incentive) along with the willingness to promote a more sustainable lifestyle. Hence, managers could put forward the notion of sustainability in their value propositions for both sides of the platform. This is clearly what ReSecond in Denmark is doing with the slogan: "Give before you take it: What have you done to save the planet today?" However, focusing solely on the sustainability element may restrict market size; hence, convenience, proximity or safety may constitute better arguments to entice consumers to join the platforms. In the UK, Reshopper put forward the following value proposition: "Buy and sell used children's items, easily and safely in your own city." Like other multi-sided platforms, success is partially conditioned by the platforms' ability to build trust amongst participants. Secure payment mechanism and truthful ratings system of participants are designed to guarantee a minimum acceptable quality of service.

A similar approach has been previously defined in the literature through the work of Botsman and Rogers (2011), regarding the chance to increase the usage of idle resources and somehow extend the lifecycle of a product. Their view is mainly linked with the chance to increase the usage of products without changing the ownership (i.e. car-pooling) or to the chance to design ex-ante an extended product-service system lifecycle.

Nevertheless, in our view "Lifecycle extenders" are companies that extend the life of a product by connecting the products' original owners and future consumers of a now used asset.

*4.3 Seller aggregators*

Seller aggregators are one of the two smallest clusters in the sample, accounting for approximately 11 percent of the sample. These companies are based on a permanent sale transaction for new assets or products; hence, their membership in the SE industry network is surprising. They share with the previous clusters the fact that they are platforms connecting two-sided markets. In the context of SE, those platforms often offer a new way for small firms on the supply side (such as the restaurants in Deliveroo) to reach an extended customer base, while offering the users a unique point of entry to search and order from a variety of small suppliers. These companies may find difficult to define a sustainable pricing mechanism (since they are usually based on transaction fees) and they often need to search for innovative ways to capture the value they created. In this perspective, companies may capture value exploiting the value of the huge amount of data, which they collect on buyers, sellers and the data generated through their interactions (Trabucchi *et al.*, 2017; Trabucchi and Buganza, 2019). The literature on marketplaces (e.g. Viswanathan *et al.*, 2010; Täuscher and Laudien, 2018) may help to understand companies belonging to this cluster.

*4.4 On-demand renters*

The last cluster represents 17 percent of the sample and shows the greatest heterogeneity. On-demand renters are companies, which enable a temporary transaction on new assets. Almost all cars and bikes sharing companies belong to this cluster. Car sharing has been considered for example a resistant innovation (Ram, 1989; Claudy *et al.*, 2015), trying to change the rooted behavior of the customers while offering new opportunities. For this reason, the motivation drivers need once again to be highly related to the design of the value proposition: Why people should want to participate in these kinds of businesses? In these cases, the sustainability perspective on the SE may play a key role. Indeed, even if the shared assets have been created *ad hoc*, they are going to be used by multiple user, and eventually they aim to reduce the overall consumption reducing the time where those assets are not used. However, the value propositions, which seem to resonate the most with consumers are focused on convenience, e.g. "Donkey Republic: 24/7 Bike Rental, find a bike near you and unlock with your phone" and user experience, e.g., Zip Car: "Own the trip, not the car: a smarter way to get around the city."

The competitive advantage and key factors of success for those services reside in their ability to master on-demand technology linked to mobile applications including the app's extreme user-friendliness, inventory management, and asset/user geo-localization. On-demand renters are not two-sided platforms; they only have one type of customers, whom they need to convince just like any traditional single-side market. However, their business model has implications for the amount of capital needed to set up such businesses. In the previous categories, the platform could be launched with no capital invested in the shared asset as it was provided by a third party (Rifkin, 2014). On the other hand, on-demand renters need a huge amount of capital not only to set up the platforms and attract potential users, but also to buy the assets, which are going to be shared. These companies need to pay attention to very different dynamics, for example, the reasons why people may decide to rent instead of to buy (e.g. Knox and Eliashberg, 2009) or different models of governance in non-ownership-based services (e.g. Ndubisi *et al.*, 2016).

## 5. Managerial takeaways: lifting the fog

In summary, this research aims to help managers and academics to approach the SE phenomenon with a slightly different perspective. It does so in the following manner. First, the study shows that SE models are not constraints to the accommodation sector, but also concern the automotive/transportation industry, a host of emerging sectors such as job platforms, retailing, restaurants and energy. Our research also shows that SE companies are for the most part digital platforms, which connect two types of users where a provider shares/rents/exchanges a specific asset with a user. We labeled those types of companies' ephemeral matchmakers as they enable the temporary exchange of an asset between two sides of a market. This type of businesses is already well-described in the literature and is typical of the accommodation industry. Our research has helped to extend the boundaries of SE to industries and business types previously ignored by the academic and managerial literature. This study shows that sharing economies also include on-demand rent platforms, which commonly mutualized the use of an asset (e.g. car) so that individual ownership is not necessary. It also extends to companies (lifecycle extenders), which allow individuals to buy or re-sell used items. Not all the companies in SE aim to share; in some cases, they sell, but do not use existing products such as the seller aggregator's category. Therefore, each category requires a different managerial focus.

Ephemeral matchmakers are often two-sided digital platforms which require a careful design of two value propositions matching the needs of each side. Managers of lifecycle extenders Businesses may still rely on that model, but also put forward the sustainable element of their businesses. Entrepreneurs entering the seller aggregators category should try to emulate successful marketplace (e.g. Amazon). Here the focal point should be the platform usability, to achieve customer centricity and data harvesting. On-Demand renters may focus their attention on service design and the successful mechanisms of business model based on renting and subscriptions.

Finally, some takeaways also for incumbents and "traditional" companies may be provided.

If companies are the providers of a service/product where the change of ownership is not a sine qua non-condition for the customers' experience, then they can be severely exposed to the threat of SE entrants. Considering this, it is hardly surprising that the rental industry is the industry, which has been the most disrupted. Airbnb is renting rooms and apartments just like any other hotels. Here the pain for those incumbent players has been aggravated by the fact that not only a change of ownership is not necessary in the rented accommodation industry, but the customers' experience very often surpasses the experience of renting a hotel room (see Airbnb motto: "Belongs anywhere"). If a company finds itself in a sector where the current set of resources can be leveraged by a third party (SE players), it should also consider itself in danger. For example, one member of SE Ireland is revolutionizing the grocery retail market. BuyMie is an app, which allows consumers to order their groceries from a supermarket chain of their choice and be delivered within an hour. Contrary to most e-commerce websites, the start-up has not invested in expensive delivery system and warehousing solutions; it just focuses on the app usability and references existing products of the incumbent brick and mortar retail chain. Buymie leverages the retail network of incumbent players, seeing each retail outlet as a warehouse/delivery hub. Once the user has done his shopping list on his/her mobile phone, a "picker" can go shopping on the buyer's behalf in the most conveniently located shop and deliver it within an hour. In the process, Buymie collects a huge amount of data on the shopping habits of hundreds of consumers across several shops. However, traditional retailers could react and leverage their current proximity with consumers by building a platform, which would connect people who cannot and do not want to go shopping with consumers shopping in their shops, so that through the mediation of an app, some shoppers would deliver groceries to sedentary clients.

## 6. Limitations and future research

### 6.1 Limitations

This paper started with a simple observation: there are a number of definitions highlighting different attributes of SE businesses (e.g. Habibi *et al.*, 2017; Kathan *et al.*, 2016; Mair and Reischauer, 2017; Acquier *et al.*, 2017; Belk, 2007; Botsman and Rogers, 2011; Constantiou *et al.*, 2017; Munoz and Cohen, 2017; Piscicelli *et al.*, 2018) and at the same time there are some companies claiming to be part of SE, that do not necessarily possess those attributes. It is a qualitative research with some limitations regarding the sample size and the lack of primary resources. Our paper does aim to provide statistically significant results regarding the analyzed categories but instead it simply aims to clear the fog surrounding this new phenomenon. To do so, we do not provide a new definition, that may end up being too wide or too narrow. We simply provided lenses to scholars and managers to help them see through the fog.

### 6.2 Future research avenues

This research shows a misalignment between the ongoing literature streams regarding the SE phenomenon and the diversity of companies taking part in it.

For example, we showed how most previous research works in the field are focused on the accommodation industry, which represents a key pillar of the entire SE, but it is not the only one. The academic community also needs to look at the SE potentials and implications for retailers, restaurants, car manufacturers, office provider and so on.

Regarding the topics studied so far, the landscape is wider, but still quite polarized. Indeed, almost three papers out of four considered in our review consider the customers' standpoints (i.e. through motivations and behaviors) or the incumbents' perspective (i.e. Impact on the market, policy implications). A relatively small number of papers have just started to focus on the business models behind the SE companies, mainly studying the pricing dynamics. Yet, SE companies are redefining markets and industries to an extent rarely seen before. It is essential to understand the drivers of SE companies' success.

Our study suggests that more research needs to be undertaken from the company standpoint. What does it mean to design the value proposition of a SE company? How can entrepreneurs develop such businesses? What are the critical success factors that differentiate those companies? How do SE companies reach the critical mass? How do they overcome the chicken and egg paradox? What are the diffusion of innovations patterns of SE company? Do they differ from their traditional counterparts?

Academic research in the field has grown at a fast rate in recent years. A significant percentage of those papers try to define what is and what is not part of the phenomenon. At the same time, the empirical world is moving at a different pace and the next step should be moving on, from the definition of the phenomenon to the study of these companies. Our framework is a small initial step in this direction. Academics should consider the four different types of SE companies across multiple sectors. Our study reveals that the two or multi-sided platform literature constitutes very appropriate lenses to focus on ephemeral match makers and life-cycle extenders SE companies.

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# Collaborative innovation in the sharing economy

## Profiling social product development actors through classification modeling

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### Abstract

**Purpose** – With the emergence of the sharing economy paradigm, the process of innovation is no longer unidirectional, but cyclical. This paradigm shift requires a better understanding of social actors to fully leverage the promise of co-innovation in the sharing economy. To this end, the purpose of this paper is to develop a classification model to profile social actors based on their motivation to participate in different co-innovation activities.

**Design/methodology/approach** – A preliminary case study was first conducted to identify actors' motivations to continuously participate in co-innovation activities. Next, a survey was administrated to validate the measurement model and then a discriminant analysis was run on a sample of 244 actors to classify actors based on their willingness to participate in three forms of co-innovation activities. Lastly, the resultant classifiers were cross-validated.

**Findings** – The results indicate that financial gains, entrepreneurship and learning are significant predictors of ideation (sharing new ideas). Enjoyment and learning are strong indicators of collaboration (sharing knowledge or experience), whereas networking, enjoyment, and altruism are most strongly related to socialization (sharing network and connections). These findings highlight three classes of social actors – ideators, collaborators and networkers – based on motivational differences.

**Originality/value** – Co-innovation among individual inventors is an understudied aspect of the sharing economy. This study provides a theoretically parsimonious classification model to profile social actors, predict the sharing activities in co-innovation networks, and highlight the importance of platform design to appeal to different classes of potential contributors in collaborative innovation.

**Keywords** Motivation, Profiling, Co-innovation, Sharing economy, Social product development, Social actor

**Paper type** Research paper

### 1. Introduction and motivation

The rise of the sharing economy has attracted widespread attention among practitioners and researchers as developments with information and communications technologies have significantly lowered the barriers of sharing at a larger scale (Davidson *et al.*, 2018). The sharing economy programs allow individuals to make their idle or underutilized assets available to those who need them (Täuscher and Kietzmann, 2017). However, the sharing economy is not limited to peer-to-peer based sharing of physical assets or other operand resources (Huarng, 2018). The sharing economy paradigm also entails organizationally independent and personally motivated individuals to co-create value by sharing their own operant resources such as knowledge and skills. For example, this paradigm by its very nature has democratized innovation processes by enabling individual actors to share and invest their resources, such as creativity and technical skills, in different phases of new product development, and to share the risks and rewards of doing so. Compared to the research attention given to sharing economy programs involving physical resources

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(e.g. automobiles, housing) or financial resources (e.g. crowdfunding), the sharing of resources needed for innovation – knowledge, creativity, skills and so on – has as yet received little attention in this literature. Whether and how these operants, but also highly personal, resources can be mobilized to the degree seen with sharing of operand resources are theoretically and practically interesting questions.

The sharing economy has disrupted traditional innovation logic by moving away from "ownership" and "governance" of innovation (Cusumano, 2014; Kim *et al.*, 2015). In traditional economic arrangements, innovation is a two-step, linear and one-directional process that involves research and development (Un and Asakawa, 2015). Companies first research and ideate either independently or in the collaboration with their customers (e.g. using inputs from virtual customer communities). Then, they out carry the product development phase, which could be insourced, outsourced, or crowd-sourced. Either way, the company fully owns and governs ideation processes as well as the development activities. External entities participating in the innovation processes, such as customers or crowd-workers, are not responsible for the innovation failure. In contrast, the innovation roles in the sharing economy are defined based on access to operand resources beyond organizational boundaries (Camilleri and Neuhofer, 2017). These differences have challenged traditional user-innovation models (e.g. von Hippel, 2010) by including external actors in all phases of innovation and as a result, sharing the ownership of the innovation and the governance of the innovation process (Martin *et al.*, 2015). These transitions present a new horizon for the sharing economy paradigm in which innovation processes and outcomes are democratized.

Social product development (SPD) is an example of the co-innovation model enabled by the sharing economy paradigm. SPD involves the application of social technologies, which in turn extend opportunities to a large pool of socially engaged contributors to participate in collaboration across the spectrum of innovation activities from ideation to social marketing to (Wu *et al.*, 2016). SPD networks meet all the defining characteristics of the sharing economy programs, for instance, access to innovation activities over ownership, peer-to-peer engagement, and allocation of idle resources such as time, skills and creativity (Constantiou *et al.*, 2017).

The first characteristic of sharing economy services is the allocation of idle resources (Constantiou *et al.*, 2017; Trenz *et al.*, 2018). The SPD platform sponsor provides incentives to mobilize a community of inventors to share their creative assets and resources that are not available to the sponsor. Peer-to-peer collaboration or exchange is the second characteristic of sharing economy platforms (Constantiou *et al.*, 2017; Lee *et al.*, 2018). The SPD lifecycle consists of a series of peer-to-peer exchange in new product ideation, development, and commercialization. Participants contribute their knowledge, skills and creativity to innovative projects that interest them, exchanging ideas and support with other participants and earning a portion of future profits. The third characteristic of the sharing economy is "access over ownership" (Constantiou *et al.*, 2017; Trenz *et al.*, 2018). The SPD model – built on earlier models of open innovation – emphasizes shared access to innovation recourses without claiming ownership of these resources. This presents a distinctive value proposition for innovation sponsors by placing actors at the heart of the new product development process and governance (Franke and Schreier, 2002; Kahnert *et al.*, 2012; Piller *et al.*, 2012). However, unlike other crowd-sourced innovation models, the SPD motivation system emphasizes co-creation and long-term relationship rather than short-term contracting.

Social actors (actors, henceforth) provide the main capital for all sharing economy programs including SPD. The SPD model engages actors with different resources in a wide range of innovation activities afforded by social technology, thereby redefining actor roles and responsibilities in innovation process (Han *et al.*, 2012; Nambisan and Baron, 2009). SPD

networks need to provide long-term, scalable and sustainable incentives in order to benefit from a continuous supply of new product ideas and expand the company's shared product portfolio. Furthermore, SPD, like other business models in the sharing economy, depends on a high level of actor agency and involvement in the innovation process, which in turn requires an in-depth understanding of actors' behaviors and expectations. A lack of scholarly attention to co-innovation behavior in general, and motivations behind actors' participation in particular, limits the development of appropriate systems to govern the embryonic stage of new product development.

Understanding why actors engage in SPD is a critical first step to investigate the viability of this sharing economy business model and to inform the design of business rules, structures, and social technology platforms that enhance innovation outcomes (Bechmann and Lomborg, 2012; Henkel *et al.*, 2014; Sorensen and Torfing, 2011). Research that examines motivations allows for a clearer understanding of the classes of actors who participate in SPD, and therefore how SPD platforms might be designed to satisfy a range of contributors. To this end, this study examines how to profile social actors based on their motivations in order to predict how they participate in different co-innovation activities in SPD. We first identify the motivational differences underlying three types of co-innovation activities in SPD – ideation, collaboration and socialization (Abhari *et al.*, 2017; Gloor, 2006). We then employ a discriminant function analysis to develop a motivation-based classification model that discriminates between high and low participation in different SPD activities. Afterward, we test our model in predicting ideation, collaboration, and socialization activities in SPD networks. This process allows us to profile actors in three classes of participants – ideators, collaborators and networkers.

## 2. Theoretical background

The sharing economy, also known as collaborative consumption, collaborative economy and peer-to-peer consumption, refers to a shift from ownership towards temporary access to underutilized resources (Dredge and Gyimóthy, 2015; Frenken and Schor, 2017). The sharing economy programs are enabled by social mechanisms that connect people who want to share goods, services and information as well as technology platforms that enable transactions and exchange between the peers (Täuscher and Kietzmann, 2017). While the sharing economy is not a new concept, the advent of new social technologies redefines the scope, meaning, and possibility of "sharing" (Botsman and Rogers, 2010; Cheng, 2016; Matzler and Kathan, 2015; Puschmann and Alt, 2016). Therefore, we define the sharing economy program as technology-enabled services offering sharing mechanisms to unlock the value of idle or underutilized resources (Frenken and Schor, 2017; Ranchordás, 2015).

While research on the sharing economy is expanding, previous studies focused on a limited number of programs such as ridesharing, home sharing, tool sharing and crowdfunding. There is a much wider range of services that can benefit from the sharing mechanisms, as many programs offer access to other types of resources beyond material ones (Chang, 2013; Trenz *et al.*, 2018). As a result, these studies say relatively little about sharing operant resources, since they are largely based on a few well-known cases of sharing operand resources such as Uber (automobiles) and Airbnb (housing) (Frenken and Schor, 2017). Moreover, the majority of these studies limited the sharing economy concept to programs offering non-ownership modes of consumption (Davidson *et al.*, 2018) rather than "prosumption" (Rayna and Striukova, 2016; Ritzer and Jurgenson, 2010). From this perspective, the sharing economy encourages shared access to products and services over proprietorship. However, sharing is not only about shared consumption but also collaborative value creation (Frey *et al.*, 2017; Reuschl *et al.*, 2017; Trenz *et al.*, 2018). These limitations lead to oversimplification of sharing mechanism to peer-to-peer "renting" or "exchange" rather than sustainable value co-creation – the overarching goal of sharing economy.

### 2.1 Sharing operant resources

Vargo and Lusch (2008) distinguish between operand resources, which are tangible assets such as automobiles, housing, tools and operant resources, such as skills, knowledge and information technologies that create value. Operant resources are important in the sharing economy since they are not only drive value co-creation but also increase the value of operand resources. For instance, operant resources such as information technology platforms increase the value of operand resources by lowering barriers and expanding opportunities for resource sharing across time and distance. Although recent developments in the sharing economy has mainly focused on sharing operand resources (Camilleri and Neuhofer, 2017), the sharing economy paradigm has also transformed how individuals and businesses can connect and share operant resources such as creativity and skills. A well-known example of sharing operant resources is co-innovation networks. Co-innovation networks fall under the sharing economy umbrella since it provides access to new ideas without the need to own the underlying assets; facilitates the reallocation or exchange of intangible assets (operant resources); and mediates the interactions and transactions among peers through online collaboration, online sharing and social commerce (Constantiou *et al.*, 2017; Hamari *et al.*, 2016; Schor and Fitzmaurice, 2015). Co-innovation networks provide access to resources such as knowledge and skills as compared to other forms of sharing that provides access to tangible assets such as cars or buildings. Co-innovation models are also more experiential than typical form of sharing because of the high degree of actors' socialization and freedom. While there are studies that discuss the socio-economic significance and impact of the sharing operand resources (e.g. Bardhi and Eckhardt, 2012), the understanding of actor motivation and value co-creation processes in the context of operant resources has received limited scholarly attention (Camilleri and Neuhofer, 2017; Davidson *et al.*, 2018; Hamari *et al.*, 2016).

### 2.2 Social product development

Recent development in the sharing economy has led to the establishment of new innovation networks, such as Quirky and Edison Nation, where actors with common interests come together to co-innovate through sharing operant resources such as time, knowledge, experiences and skills (Chesbrough, 2012). The popularity and diffusion of emerging social technologies have also helped businesses take co-innovation to the next level beyond the customer base (Chu and Chan, 2009; Martini *et al.*, 2012; Tien and Cheng, 2017). The SPD business model is an example of such a development. SPD models heavily rely on social technologies and social mechanisms to democratize the entire innovation process (Peterson and Schaefer, 2014), which involves sharing the roles and responsibilities as well as cost and benefits of new product development with external actors (Abhari *et al.*, 2016). Similar to other forms of sharing economy services, SPD platforms enable actors to share and optimize the use of resources in order to maximize the value of the resources for the actors involved (Fielt *et al.*, 2014; Matzler and Kathan, 2015; Puschmann and Alt, 2016; Sundararajan, 2016).

While the SPD model bears some resemblance to virtual customer networks sponsored by a firm (Wu *et al.*, 2016), the owner of an SPD platform acts primarily as an innovation intermediary facilitating the sharing process rather than as a corporation seeking to improve its own product portfolio. Using actors' shared resources, the platform owner brings new products to market and shares profits with contributors. SPD also differs from innovation networks such as open source communities, crowdsourcing firms or innovation brokers in terms of business models and the variety and prominence of activities open to community members (Leenders and Dolfsma, 2016; Piller *et al.*, 2012; Wu *et al.*, 2016). SPD networks approach value co-creation by fully developing and

utilizing external actors' capabilities, which leads to diminished boundaries between internal and external actors (Battistella and Nonino, 2012). Thus, SPD participants have a higher level of direct resource sharing in new product development than in other innovative business models due to the variety of tasks and activities performed by actors. Such high levels of participation and ownership in the SPD process may attract actors with different goals and interests, and therefore a different mix of actor motivations. Hence, a spectrum of motivations for participating in SPD may be relevant to understanding this sharing economy model.

### *2.3 Actor motivations*

Collaborative innovation can be motivated and encouraged in different ways. However engaging actors is a fundamental challenge for innovation communities because co-innovation tends to simultaneously involve more than one type of motivation. Drawing on self-determination theory (Bechmann and Lomborg, 2012), prior research has suggested that intrinsic and extrinsic motivations should be considered together in analyzing actor innovation behaviors (Boudreau and Lakhani, 2009; Füller, 2010). Previous studies in the sharing economy also highlighted the importance of both extrinsic and intrinsic motivations (Davidson *et al.*, 2018; Hamari *et al.*, 2016; Lee *et al.*, 2018).

Extrinsic motivation is mainly associated with extrinsic rewards (e.g. financial gain) that arise from sources outside of the actor (Deci and Ryan, 2000; Oreg and Nov, 2008). Extrinsic motivation is not limited to economic benefits but can also include the prospect of reputation, recognition, status and image (Hamari *et al.*, 2016; Lee *et al.*, 2016; Martin, 2016; Seltzer and Mahmoudi, 2012). Intrinsic motivation is related to the needs and desires within the actor (Seltzer and Mahmoudi, 2012) and is mainly associated with enjoyment in the sharing economy context (Hamari *et al.*, 2016; Lee *et al.*, 2016; Martin, 2016). Prior research shows that individuals engage in co-creation activities such as sharing knowledge, submitting new product ideas, finding solutions to problems in collaboration with like-minded people, and commercializing new products for their own sake because they perceive such activities to be enjoyable (Antikainen and Vaataja, 2010; Battistella and Nonino, 2013). Altruism is another key dimension of intrinsic motivation. Actors may participate in the sharing economy services because of their desire to support others in problem-solving activities (Füller, 2010; Martin *et al.*, 2015; Nov, 2007) or because they believe in the community's goals (e.g. sustainability) or the mission of the network (Hamari *et al.*, 2016; Hoyer *et al.*, 2010; Krogh *et al.*, 2012).

Some motivations are neither purely intrinsic nor purely extrinsic. According to Ryan and Deci (2000), external motivations can be internalized when individuals transform external incentives (i.e. external regulation) into their own motives (i.e. self-regulation) through the processes of introjection (i.e. enhancement of self-esteem and feelings of worth), identification (i.e. acceptance as personally important or relevant) or integration (i.e. endorsement of values or beliefs). Prior research identified learning and development, self-efficacy, entrepreneurial mindset and social motivations as four important dimensions of internalized extrinsic motivations driving actors' participation (Fernandes and Remelhe, 2016; Füller, 2010; Krogh *et al.*, 2012; Lakhani and Wolf, 2006; Salehan *et al.*, 2017). Despite their importance, internalized extrinsic motivations have received less attention in the sharing economy literature.

Table I summarizes eight major categories of actor motivations frequently observed in innovation communities: financial gain, recognition, learning, self-efficacy, entrepreneurship, networking, enjoyment and altruism. Extant research suggests that these motivations all play roles in attracting and engaging participants in co-innovation activities. However, findings are inconsistent regarding the relative influences of different actor motivations on different innovation activities (Füller, 2010; Kahnert *et al.*, 2012). Hence, this study aimed at developing a

| Motivation | Prior research |
|---|---|
| Financial gain | Economic benefits (Frey *et al.*, 2011; Hamari *et al.*, 2016; Lee *et al.*, 2018); compensation (Füller, 2010); Reward or free product (Battistella and Nonino, 2013) |
| Recognition | Recognition (Davidson *et al.*, 2018); reputation (Battistella and Nonino, 2013; Hamari *et al.*, 2016; Oreg and Nov, 2008; Wasko and Faraj, 2005); firm recognition (Jeppesen *et al.*, 2006) |
| Learning | Self-development (Füller, 2010; Oreg and Nov, 2008); learning (Battistella and Nonino, 2013; Bretschneider *et al.*, 2012); information seeking (Füller, 2010; Ridings and Gefen, 2004) |
| Self-efficacy | Self-efficacy (Davidson *et al.*, 2018; Füller, 2010); sense of influencing (Antikainen *et al.*, 2010); psychological gain (Battistella and Nonino, 2013) |
| Entrepreneurship | Entrepreneurial mindset (Battistella and Nonino, 2012, 2013); product improvement (Bretschneider *et al.*, 2012); new viewpoints and synergy (Antikainen *et al.*, 2010) |
| Networking | Relationship (Davidson *et al.*, 2018); friendships (Ridings and Gefen, 2004); social capital (Antikainen *et al.*, 2010; Battistella and Nonino, 2013); social networking (Oishi *et al.*, 2013) |
| Enjoyment | Entertainment and fun (Battistella and Nonino, 2013; Bretschneider *et al.*, 2012; Davidson *et al.*, 2018); enjoyment (Frey *et al.*, 2011; Hamari *et al.*, 2016; Lee *et al.*, 2018; Li *et al.*, 2012) |
| Altruism | Altruism (Bretschneider *et al.*, 2012; Oreg and Nov, 2008); community support (Füller, 2010); social responsibility (Battistella and Nonino, 2013; Nov, 2007) |

**Table I.**
Prior research on co-innovation motivation

classification model to understand the importance of these motivation factors and profile actors accordingly. The motivation factors listed in Table I served as the foundation for our empirical investigation.

### *2.4 Intention to share in SPD networks*

The systematic examination of actors' behavioral intention to participate in sharing economy activities is an important topic that warrants further investigation (Lee *et al.*, 2018; Ye and Kankanhalli, 2013; Zhu *et al.*, 2017). Previous studies mostly modeled behavioral intention as a single construct (e.g. Lee *et al.*, 2018). However, we posit that behavioral intention can have more than one dimension and its dimensionality depends on the variety of action possibilities afforded by a platform. In this study, drawing on Gloor's (2006) co-innovation model, we identified three main sharing activities in SPD networks. We conceptualize intention to share in the SPD context as an actor's continuous intention to engage in the three interrelated activities of ideation, collaboration, and socialization. These three forms of sharing are the backbone of co-innovation (Brown and Wyatt, 2010; Cullen, 2007; Kahnert *et al.*, 2012; Piller *et al.*, 2012) and are applicable to a variety of co-innovation settings including SPD (e.g. Abhari *et al.*, 2017; Brown and Wyatt, 2010; Füller *et al.*, 2014).

Ideation is evident in socially enabled platforms such as innovation marketplace where actors openly share operant resources such as new idea or solution (Mathiesen *et al.*, 2013; Olapiriyakul and Widmeyer, 2009; Tan *et al.*, 2016). In SPD networks, ideation is often referred to the sharing of new product concepts, which is an initial and critical component of the co-innovation process (Romero *et al.*, 2011). Resources shared during ideation are typically focused on a new product, product feature or product category.

Collaboration is associated with support functions, such as knowledge sharing (Olapiriyakul and Widmeyer, 2009) and commentary and validation to help other actors (Mansour *et al.*, 2013). Collaboration supports the possibility of identifying and integrating operant resources. In SPD networks, collaboration involves interactions among internal and external actors on a specific project to address problems and find or improve solutions (Piller *et al.*, 2012). Collaboration relates to a range of interdependent activities, from sharing technical solutions to improve other actors' ideas to participating in commercialization activities (Mesgari and Faraj, 2012).

Socialization refers to communicating operant resources such as social capital. Sharing personal profiles and social networking in complex innovation community networks are examples of socialization (Mathiesen *et al.*, 2013; Mesgari and Faraj, 2012; Olapiriyakul and Widmeyer, 2009). Because of the distributed nature of sharing economy programs, socialization between actors is an inherent aspect throughout the SPD process (Paulini *et al.*, 2013). Socialization also supports other sharing activates through establishing a socio-professional community, enriching ideation and facilitating collaboration.

*2.5 Relationship between motivation and intention to share*

Recent studies in the sharing economy indicated while both intrinsic and extrinsic motivations are determinants of continuous intention, their effects are varied (e.g. Hamari *et al.*, 2016; Lee *et al.*, 2018). Therefore, we expected actors' participation pattern in ideation, collaboration, and socialization may change with different combinations of motivations. First, extrinsic motivations such as monetary gains, peer recognition and professional reputation increase the actor's intention to share their ideas (Hamari *et al.*, 2016; Hertel *et al.*, 2003). Ideation, collaboration and socialization are interrelated activities in SPD that may individually and jointly provide opportunities for monetary rewards and professional recognition (Krogh *et al.*, 2012; Nambisan and Baron, 2009). Thus, we posit extrinsic motivations to be positively related to an actor's continuous intention to ideate, collaborate and socialize in SPD platforms.

Second, sharing mechanisms offer actors ample learning and development opportunities (Füller *et al.*, 2014; Weber, 2004). Therefore, actors may engage in exchanging operant resources to develop innovation capacity and achieve shared entrepreneurial goals. Prior research has validated the relationship between internalized extrinsic motivations such as desire for learning new skills and intention to contribute (Lakhani and Wolf, 2006), for example, by sharing information about potential solutions, participating in problem-solving, or facilitating commercialization (Battistella and Nonino, 2012; Füller, 2006). Social motivations also help maintain actor participation in the sharing economy (Davidson *et al.*, 2018). Actors may engage in the sharing economy to socialize with other like-minded individuals and to expand their network (Salehan *et al.*, 2017). They can realize social motivations by using the sharing economy platforms to establish collaborations on common fields of interest and to develop professional friendships and relationships (De Maggio *et al.*, 2009; Salehan *et al.*, 2017). These social motivations could be fulfilled not only through existing socialization activities but also through ideation and collaboration.

Third, intrinsic motivations may be fulfilled in sharing activities due to the inherent enjoyment associated with sharing process (Hamari *et al.*, 2016). Earlier studies on knowledge network and open source communities support the relationship between enjoyment and participation in sharing resources (Füller, 2006; Lakhani and Wolf, 2006; Zhao *et al.*, 2016). Altruism is another facet of hedonic motivation evident in the sharing economy (Ruvio *et al.*, 2016). Sharing operant resources like new ideas and knowledge is sometimes altruistic, as actor cannot expect explicit individual utility from their contributions (Salehan *et al.*, 2017).

In summary, three forms of motivations should be considered in sharing operant resources. First, successful ideation or collaboration may individually and jointly provide opportunities for economic benefits and professional recognition. Second, actors who are motivated by enjoyment or altruistic goals may actively participate in some innovation activities even without expecting external rewards. Third, hybrid rewards (internalized extrinsic) such as learning and networking can also be important drives for actor participation. While literature suggests that these motivations can predict participation in SPD, it does not specify their relative importance and their effects on different form of

participation. In this study, we propose that actors' motivations may distinguish between actors participating in different SPD activities (ideation, collaboration and socialization) and therefore, help with classifying and profiling social actors in SPD.

## 3. Methods

This study aimed at developing and validating a motivation-based classification model to shed some lights on actor sharing behavior in SPD networks. We first used a contextually situated qualitative research followed by quantitative processes to develop and validate our model. The classification model helped differentiate between motivation factors in driving ideation. collaboration and socialization. The classification models were developed in six phases: case studies, model specification and item development, items and questionnaire pre-test, pilot study, discriminant analysis and classification model validation (Figure 1). Model specification and item development were based on an exploratory case study. Following the model specification, the measurement items were pre-tested for face validity and content validity. We had a panel of judges sort the items into separate motivation categories based on the similarities and differences among items. Then, based on their placement, the items were re-examined, and ambiguous items were modified or eliminated. The subscales were then combined into an overall instrument for a second pre-test using two independent expert panels. The pre-tests helped ensure that the motivation items of the new measures were valid in the context. In the fourth phase, the instrument was pilot tested to obtain an assessment of the scales' reliability. Items that did not contribute to the reliability were culled. Then, we conducted a full-scale survey to develop discriminant functions. Finally, the results were cross-validated using leave-one-out classification method. More details are provided under analytical procedure section.

## 4. Preliminary case study

Identifying actor motivations in relation to actor behavior is critical for developing, differentiating, and evaluating the sharing economy platforms. Since the constructs identified in the literature review (Table I) was not tested in the SPD context to our knowledge, a preliminary case study was conducted to understand the different patterns and outcomes of actor motivation in SPD networks. The case study also provided insights into how motivations affect actors' intention to participate in ideation, collaboration and socialization.

### *4.1 Case study process and setting*

Data were collected from Quirky.com. Quirky is one of the first companies to implement a comprehensive model of SPD (Piller *et al.*, 2012). Quirk works based on two main functions of sharing and integrating operant resources. Quirky requires actor first to share their new ideas, knowledge, experience, and other operant resources while the platform integrates and mobilizes these resources toward new product development. Quirky depends on shared access to creative resources rather than their ownership. These mechanisms make Quirky an appropriate research case for studying a sharing economy program, since it provides opportunities to exchange resources and services within an online community for reciprocal value creation. Furthermore, the Quirky platform offers diverse tools as well as a wide range of incentives to respectively enable and encourage the sharing of operant resources, making

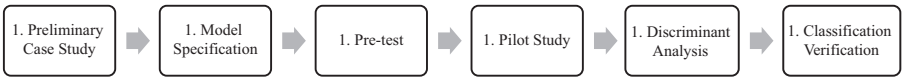


**Figure 1.**
Research process

it an appropriate setting for studying actors' motivation and behavior in this context (cf. Constantiou *et al.*, 2017).

Quirky's business model is based on soliciting new product ideas for broad categories of consumer products and sharing a portion of the sales revenue with the community of innovators who contribute to product ideation, development and commercialization. Prospective inventors can submit their ideas for community evaluation as a part of the ideation process. The submitted ideas, if selected by the community, are collaboratively designed, developed and commercialized by interested network members. The refined product ideas are then put into production, and finally distributed via the Quirky website and its partners. Quirky currently compensates the individual contributors involved in the product's innovation process by paying the community 50 percent of royalty revenue for each product. As of February 2018, more than one million members had collaboratively developed 150 consumer products and collectively received about $11m in royalties.

Studying motivation attributes in rich natural settings supports measurement development by providing supplementary sources of evidence (Yin, 2009). The following steps were taken to collect and analyze our preliminary case study data (Gagnon, 2010; Yin, 2009): examine the platform documentation to identify major innovation activities; extract data points relevant to extrinsic, intrinsic and internalized extrinsic motivations from the Quirky forum; code data for each co-innovation motivation with possible associations with co-innovation activities; compare codes and apply hierarchies to the codes to identify the key motivation categories and their sub-categories; cross-validate and verify the emerged categories and sub-categories by referencing the interview data and prior studies; and identify and label each motivation category as a component based on empirical instances.

### *4.2 Case study results*

As expected, financial gain was a main reason for joining and contributing to the network. The result also confirmed earlier research that the actors' economic benefits are related to the intention to participate (Hamari *et al.*, 2016). However, participants frequently mentioned that monetary reward is not the only or the main reason they participate in the process. Moreover, extrinsic motivations could not guarantee actors' continuous participation and contribution since only a few actors have the chance to receive significant financial gain or recognition as a successful co-inventor. Our case study revealed that natural entrepreneurial propensity of an individual could be also an important motivation since it directly affected the actors' attitude toward co-innovation. Quirky connects individuals with entrepreneurial goals to a creative community to explore innovative opportunities and innovation resources, which are not easily available otherwise. Moreover, many Quirky members found the SPD process entertaining, pleasurable, fun and enjoyable. They collaborated and shared their resources when they perceived a project compelling or an activity entertaining. For example, some participants found the platform a captivating environment that is more entertaining than social media networks and video games. These emotional drives constituted an important motivational group that was well supported by the literature (Battistella and Nonino, 2013; Davidson *et al.*, 2018; Hamari *et al.*, 2016; Lee *et al.*, 2016; Puschmann and Alt, 2016).

Social motivations were the next important group of drivers identified by the case study and supported by the literature (Davidson *et al.*, 2018; Puschmann and Alt, 2016). Quirky members used sharing mechanisms to socialize with other actors. They were interested in professional networking and establishing interpersonal relationships to achieve their personal goals such as knowledge-sharing or finding collaborators. Quirky, like other typical other sharing economy platforms, offers tools such as public profile and content sharing to facilitate the networking process. Related to social motivations, we found some evidence of altruistic behavior when actors' efforts had been already compensated, or they were mainly intrinsically motivated. Quirky established a socio-professional community, in

which members could share their resources in solving each other's problems and developing emotional bonds. This emotional bond was interpreted in the literature as a sense of connectedness, companionship, and responsibilities towards other members (Battistella and Nonino, 2013; Stewart and Gosain, 2006). While Quirky' mission was not based on philanthropy *per se*, such emotions sometimes inspired actors with altruistic motivations to join and contribute to the network. As observed by earlier studies (e.g. Ranchordás, 2015; Ruvio *et al.*, 2016), some participants mentioned that they had only an altruistic aim to solve consumer problems by sharing their own ideas and experience.

The case study also found that actor participation was sometimes motivated by the personal development and learning opportunities. Participation in the SPD helped the actors acquire competencies related to new product development and commercialization. This motivation has been largely overlooked in the sharing economy research (e.g. Hamari *et al.*, 2016) though open innovation literature has identified this motivation in different forms such as self-development, information seeking and skills development (Battistella and Nonino, 2013; Bretschneider *et al.*, 2012; Füller, 2010).

Desire for recognition was also confirmed as an important motivation. In the Quirky community, actors also gained respect, recognition, reputation and credibility – the values that could improve the actors' status inside the community to get more community support and outside the community to enhance their professional status. In addition to the recognition that comes with co-innovation success, gaining reputation as a resourceful member of the network with willingness to share was another determining factor of participation. Lastly, the Quirky platform engaged the members by providing opportunities not only to express their talent but also to enhance their self-efficacy. Our case confirmed that some actors may look for the opportunity to express their creativity, which is usually limited by routine jobs and work environments and thus creates slack (unused) operant resources (i.e. creativity). In agreement with the literature (Davidson *et al.*, 2018; Nardi *et al.*, 2004), our case study showed that such behavior could lead to the enhanced self-competence and self-efficacy in carrying out future actions, especially when a product is well received by the community and market.

Quirky members were not homogeneous in terms of motivation and behavior. For example, emotional and social motivations within Quirky's rich socio-professional community were mainly associated with actor activities such as socialization, networking and knowledge-sharing. New product ideation was mainly driven by financial motivations. Motivations such as learning, reputation, and career benefits complemented the extrinsic calculations of the costs and benefits of participation in SPD. These motivations were more imperative than intrinsic motivations such as altruism in engaging the community in long-term collaboration. Overall, our preliminary case study suggested that the identification of motivations to participate in specific co-innovation activities in SPD could enhance our understanding of sharing behaviors in innovation activities and, as a result, could improve SPD design, implementation and coordination. In the next section, we discuss how a model was developed to further investigate actor profiling in SPD.

## 5. Model specification and measurement items

The case study helped verify and refine the actor motivation constructs identified in prior literature. Discriminant analysis was then conducted to determine which motivation factors were the best to profile actors. The motivation scale items derived from the literature (except for entrepreneurship) were adapted and modified in the SPD context for this study (Table II). The reflective measurement items for the three types of continuous intention including continuous intention to ideate, collaborate and socialize, were adapted from previous studies on continuous behavioral intention in virtual collaborative communities (Bhattacherjee and Premkumar, 2001; Chen, 2007; Zhang *et al.*, 2010). A pilot study of the survey was then

| Themes | Categories | Sub-categories |
|---|---|---|
| Extrinsic motivations | Financial gain | Financial compensation, reward, profit sharing, free product, shared investment |
| | Reputation and recognition | Success recognition, reputation, career benefits, enhancement of professional status, portfolio/profile development, peer recognition, community recognition |
| Intrinsic motivations | Altruism | Altruism, meeting morals/values, sustainability, community service/development, community support, ideology (e.g. social responsibility) |
| | Enjoyment | Enjoyment, play, recreation/entertainment, psychological compensation, fulfillments |
| Internalized extrinsic motivations | Entrepreneurship | Product improvement, Developing new business, Entrepreneurship obligation, Entrepreneurial development (intellectual stimulations), Curiosity, share business mindset, sense of efficacy as an entrepreneur |
| | Learning and development | Self-development, learning, professional growth, information seeking, skills development, testing capabilities |
| | Socialization | Expanded social network, share connections, visibility, reciprocity, social capital gain, friendships, relationships for social support |
| | Self-efficacy | Self of influencing, sense of efficacy, psychological compensation, self-worth, confidence, self-esteem |

**Table II.**
Summary of case study data

carried out to assess the proper functioning of the survey instrument. The pilot study collected data from 72 randomly selected Quirky members and helped establish the initial instrument quality.

A seven-point Likert-type scale was used for measuring co-innovation motivations as well as for the intention constructs. The intention data points were later discretized into two groups. We used supervised discretization (average as the cutting point) to improve classification performance (Ho, 2013). In each round, respondents were divided into two groups, high and low continuous intention to ideate, collaborate or socialize (with intention constructs being re-coded to dummy variables). High continuous intention indicates above average intention and low continuous intention denotes below average intention.

## 6. Analysis procedure

After establishing dimensionality, reliability and validity, we employed discriminant function analysis to determine which motivation constructs discriminate between co-innovation actors' different behavioral intentions. Discriminant analysis is a recommended approach for maximally separating groups, determining the most parsimonious way to separate groups, and discarding variables that are less related to group distinctions (Tabachnick and Fidell, 2013). Data were collected via an online survey from a random sample of contributors to the Quirky.com. In our analysis, the motivation constructs were discriminating variables and the continuous intention to ideate, collaborate, and socialize were the group variables. We followed the procedure proposed by Ho (2013) using IBM SPSS 24 as described below.

After testing for normality, homogeneity (eigenvalue), equality of group mean and within-group covariance (Box's M), the discriminant function (centroids) was calculated. Centroids are the mean discriminant score for each group. Wilks lambda was used to test for the significant difference between groups on the individual motivation constructs. We used this statistic to differentiate the groups. We also used $\chi^2$ to obtain a significance level. The canonical discriminant function coefficients were then used to indicate the unstandardized scores concerning the motivation constructs.

The relative importance of motivation constructs in predicting actors' continuous intention was calculated using the standardized discriminant function coefficients

(i.e. coefficients with large absolute values correspond to variables with greater discriminating ability). The discriminant functions (structure matrices) were used to identify the motivation constructs that could be removed from the model (loading $< 0.3$). Three *post hoc* analyses using the stepwise method were also utilized to nominate motivation constructs for removal. Lastly, the leave-one-out classification method was used for cross-validation (Meyers *et al.*, 2012).

## 7. Results

From 5,000 randomly invited Quirky members, a sample of 320 Quirky members participated in the online survey asking for their motivations, behavioral intentions, and demographics as well as answers to screening questions to determine if they had participated in ideation, collaboration, and socialization activities in the past six months. We also asked the participants to self-report the number of participation in ideation, collaboration and socialization in the last month. A total of 76 responses were removed due to the respondents' lack of experience, leaving a final sample of 244 usable responses for analysis. A large majority of respondents had participated at least once in ideation (82 percent), collaboration (100 percent), and socialization (85 percent) on Quirky. More women (59 percent) participated in the survey compared to men (41 percent). Most of the respondents were between 26 and 65 years old (84 percent), and over 70 percent had at least some college education. Nearly 60 percent of the respondents were employed outside of their participation in the network, an indication of the degree of sharing operant resources not fully consumed by regular employment. The comparison of the sample's average co-innovation experience and contributions with the population's average, reported by Quirky, indicated no nonresponse bias on these demographics.

### *7.1 Dimensionality and reliability*

We ran an exploratory factor analysis to check the dimensionality of the selected motivation constructs. We used maximum likelihood with oblique rotation (direct oblimin) to investigate the relative importance of each item. Oblique rotation was used to preserve the unique variance of each measure, achieve more generalizable results, and render a more optimum solution (Costello and Osborne, 2005; Petter *et al.*, 2007). The Kaiser–Meyer–Olkin measure of sampling adequacy is 0.88, above the recommended threshold value of 0.6 (Hair and Anderson, 2010) and Bartlett's test of Sphericity is significant, indicating that correlations between items are sufficiently large ($\chi^2 = 4{,}936, p < 0.00$). Given these results, factor analysis is deemed to be suitable for the eight factors.

Reliability tests were used to identify whether the previous scales were reliable to use in the study. All items demonstrate good reliability to use for further analysis as Cronbach's $\alpha$ for each of constructs exceed the recommended level of 0.70 (0.80–0.94) (Hair and Anderson, 2010). The convergent validity and discriminant validity of the constructs were tested. All average variance extracted (AVE) are higher than 0.50 (0.62–0.86) (Hair *et al.*, 2013). The square root of the AVE of each construct (see, Table III, where the diagonal elements are the square root of the shared variance between the constructs and their measures) is larger than the correlations of this construct with the other constructs (Fornell and Larcker, 1981), and the inter-construct correlations are all well below the 0.90 threshold (Hair *et al.*, 2013). The results suggest adequate convergent and discriminant validity. We also tested for common method bias using full collinearity assessment (Kock, 2015). All the pathological VIFs resulting from a full collinearity test were lower than the 3.3 threshold, suggesting the absence of common method bias (Kock and Lynn, 2012).

| Construct | Definition | Adapted from |
|---|---|---|
| Financial gain | The desire to obtain financial incentives associated with performance | Frey *et al.* (2011), Li *et al.* (2012) |
| Recognition | The desire to acquire professional status accorded to qualifications | Li *et al.* (2012) |
| Learning | The desire to acquire skills and knowledge for personal development | Oreg and Nov (2008) |
| Self-efficacy | The desire to prove own ability in reaching innovation goals | Li *et al.* (2012) |
| Entrepreneurship | The desire to orientate conduct towards entrepreneurial tasks and outcomes | (new) |
| Networking | The desire to expend effort to interact, socialize and network with other actors | Oishi *et al.* (2013) |
| Enjoyment | The desire to receive the gratification of action | Frey *et al.* (2011), Li *et al.* (2012) |
| Altruism | The desire to selfless actions that benefit the welfare of innovation community | Bretschneider *et al.* (2012), Wu *et al.* (2007) |

**Table III.**
Measurement items

*7.2 Discriminant function analysis*

Discriminant analysis was employed to distinguish between high and low propensity to ideate, collaborate and socialize influenced by different motivational factors. This process help examine the relative importance of co-innovation motivations and their ability to predict actor co-innovation behavioral intention. The tests of equality of group means show that the groups differed significantly on every motivation construct for continuous intention to ideate (Wilks' Λ: 0.83–0.95, $p < 0.00$), collaborate (Wilks' Λ: 0.84–0.97, $p < 0.01$), and socialize (Wilks' Λ: 0.74–0.99, $p < 0.00$; except for financial motivations). The test of homogeneity of variances is significant; however, the discriminant function analyses can still be robust due to the lack of outliers, adequate sample size and relatively equal log determinants (Tabachnick and Fidell, 2013).

The eigenvalue on discriminant functions (the quantity maximized by the discriminant function coefficients obtained) is 0.410 for ideation, 0.504 for collaboration and 0.617 for socialization, indicating reasonable proportion of variance explained for each activity. The large eigenvalues are associated with strong functions. The canonical correlations on the discriminant functions are 0.54 for ideation, 0.58 for collaboration, and 0.62 for socialization, explaining 30, 34 and 38 percent of variances in the dependent variables, respectively.

The results of the discriminant analysis (see Tables IV–VI) indicate that the discriminant function was significant for ideation (Wilks' Λ: 0.71 at $p < 0.00$ and $\chi^2(8)$: 90.30), collaboration (Wilks' Λ: 0.66 at $p < 0.00$ and $\chi^2(8)$: 107.56), and socialization (Wilks' Λ: 0.62 at $p < 0.00$ and $\chi^2(8)$: 126.47). The standardized coefficients reflect the contribution of one motivation construct in the context of the other motivation constructs in the model. Since we tested for redundancy and multicollinearity, the low standardized coefficients mean that the groups did not differ much on the motivation constructs with the low coefficients.

| Factors | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| 1. Altruism | *0.88* | | | | | | | |
| 2. Enjoyment | 0.58 | *0.93* | | | | | | |
| 3. Entrepreneurship | 0.35 | 0.53 | *0.79* | | | | | |
| 4. Learning | 0.42 | 0.43 | 0.57 | *0.83* | | | | |
| 5. Networking | 0.57 | 0.45 | 0.16 | 0.33 | *0.89* | | | |
| 6. Self-efficacy | 0.39 | 0.24 | 0.38 | 0.47 | 0.39 | *0.86* | | |
| 7. Financial Gain | 0.19 | 0.27 | 0.3 | 0.22 | 0.23 | 0.18 | *0.87* | |
| 8. Recognition | 0.33 | 0.22 | 0.33 | 0.49 | 0.50 | 0.53 | 0.42 | *0.89* |

**Table IV.**
Correlation matrix

*7.2.1 Intention to ideate*. For ideation (Table IV), the canonical discriminant function coefficients and the discriminant function loadings suggest that learning, financial gain, and entrepreneurship were the most important motivations for discriminating between ideators and non-ideators. Since loadings are more valid than canonical coefficients in prediction (Ho, 2013), the relative importance of the motivations in driving ideation was in this order: learning, financial gain, entrepreneurship, recognition, enjoyment, self-efficacy, altruism and networking. *Post hoc* analysis using the stepwise method also suggests that ideators are individual participants who are highly motivated with learning, financial gain and entrepreneurship opportunities.

*7.2.2 Intention to collaborate*. For collaboration (Table V), the canonical discriminant function coefficients and the discriminant function loadings followed by stepwise *post hoc* analysis indicate that learning, and enjoyment are most important for discriminating between collaborators and non-collaborators. According to the loadings, the relative importance of the motivations in driving collaboration is in this order: learning, enjoyment, entrepreneurship, altruism, financial gain and self-efficacy. Networking and recognition had loadings less than the cut-off value of 0.30 (Hair and Anderson, 2010). Thus, these motivations are considered less important predictors of continuous intention to collaboration.

*7.2.3 Intention to socialize*. For socialization (Table VI), the canonical discriminant function coefficients and *post hoc* analysis indicate that altruism, networking and enjoyment are most important for discriminating between actors willing to socialize and those with low intention to socialize. Recognition, Entrepreneurship, and Financial Gain have loadings less than the cut-off value of 0.30 and are considered less important predictors of continuous intention to socialize.

| Factors | Canonical coefficient[a] | Discriminant loading |
|---|---|---|
| Learning | 0.345 | 0.701 |
| Financial gain | 0.524 | 0.686 |
| Entrepreneurship | 0.301 | 0.677 |
| Recognition | 0.160 | 0.541 |
| Enjoyment | 0.052 | 0.480 |
| Self-efficacy | 0.136 | 0.470 |
| Altruism | 0.079 | 0.450 |
| Networking | −0.045 | 0.358 |

**Note:** [a]Standardized

**Table V.** Discriminant analysis results for ideation

| Factors | Canonical coefficient[a] | Discriminant loading |
|---|---|---|
| Learning | *0.804* | *0.887* |
| Enjoyment | *0.273* | *0.607* |
| Entrepreneurship | 0.023 | 0.582 |
| Altruism | 0.224 | 0.545 |
| Financial Gain | 0.197 | 0.338 |
| Self-efficacy | −0.010 | 0.301 |
| Networking | −0.126 | 0.267 |
| Recognition | −0.193 | 0.229 |

**Note:** [a]Standardized

**Table VI.** Discriminant analysis results for collaboration

*7.3 Classification and actor profiling*

Classification tables were used to assess how well the discriminant function profiles actors for each group of intention constructs. The first group of actors, highly motivated to ideate, are classified as ideators. The discriminant function for Ideators correctly classify 87 percent of cases with the high intention to ideate (sensitivity) and 63 percent of cases with the low intention (specificity). The classification results are satisfactory (Japkowicz and Shah, 2011) as 76 and 74 percent of original grouped cases and of cross-validated grouped cases are correctly classified respectively (Table VII).

The second group of actors, mainly interested in collaboration, are classified as collaborators. Collaborators are actors who pursue SPD as a fun social learning experience. The discriminant function for collaborators correctly classifies 85 percent of cases with high intention and 69 percent of cases with low intention. The classification results are satisfactory as 78 and 75 percent of originally grouped cases and of cross-validated grouped cases are correctly classified respectively (Tables VIII and IX).

The third group of actors is classified as networkers, who join SPD networks mainly to socialize with other actors, have fun and help others. Therefore, they are more engaged in communication, networking and socialization than in directly contributing to new product development processes. The discriminant function for networkers correctly classifies 82 percent of cases with high intention to socialize and 77 percent of cases with low intention. The classification results are satisfactory, as 80 percent of the original grouped cases and 79 percent of the cross-validated grouped cases are correctly classified (Table X).

**Table VII.** Discriminant analysis results for socialization

| Factors | Canonical coefficient[a] | Discriminant loading |
|---|---|---|
| Altruism | *0.351* | *0.747* |
| Networking | *0.501* | *0.708* |
| Enjoyment | *0.479* | *0.678* |
| Learning | 0.126 | 0.421 |
| Self-efficacy | 0.227 | 0.402 |
| Recognition | −0.093 | 0.286 |
| Entrepreneurship | −0.139 | 0.271 |
| Financial Gain | −0.271 | 0.084 |

**Note:** [a]Standardized

**Table VIII.** Classification results for ideation

| | | Low (%) | High (%) |
|---|---|---|---|
| Original | Low | 63.4 | 36.6 |
| | High | 13.0 | 87.0 |
| Cross-validated | Low | 62.6 | 37.4 |
| | High | 16.4 | 83.6 |

**Table IX.** Classification results for collaboration

| | | Low (%) | High (%) |
|---|---|---|---|
| Original | Low | *69.2* | 30.8 |
| | High | 15.4 | *84.6* |
| Cross-validated | Low | *64.2* | 35.8 |
| | High | 16.1 | *83.9* |

## 8. Discussion

Understanding why and how actors engage in co-innovation activities is critical to investigate the viability of SPD business models. To this end, this study first developed a multi-dimensional SPD motivation scale consisting of financial gain, recognition, learning, self-efficacy, entrepreneurship, networking, enjoyment and altruism based on the literature and a case study. After validating the motivation constructs, we showed that these constructs were significant determinants in explaining why actors contribute to SPD networks. We identified the relationships between motivational factors and actor behavior as criteria for actor classification. We then defined three discriminant functions to identify three groups of actors who have higher than average intention to ideate, collaborate and socialize (Figure 2). Based on our analysis, we generated profiles for the following groups of social actors: ideators motivated by extrinsic motivations, mainly including financial gain, learning, and entrepreneurship; collaborators motivated by a mix of intrinsic and extrinsic motivations, mainly including Learning and Enjoyment; and networkers who are motivated by intrinsic motivations, mainly including altruism, networking and enjoyment. This classification is in line with previous studies mainly Gloor's (2006) original classification of co-innovation activities in creation, collaboration and communication. While earlier research in both co-innovation and sharing economy contexts conceptually discussed different roles such as ideators, designer, creator, collaborator, moderator and provider, they did not defined these roles in terms of relationship with motivational factors. Moreover, the existing classification models are only relevant to operand resources. For example, Pesonen and Tussyadiah (2017) identified two user groups of convenience-seekers and socializer in P2P accommodation services.

| | | Low (%) | High (%) |
|---|---|---|---|
| Original | Low | *77.5* | 22.5 |
| | High | 18.3 | *81.7* |
| Cross-validated | Low | *77.5* | 22.5 |
| | High | 19.1 | *80.9* |

**Table X.**
Classification results for socialization

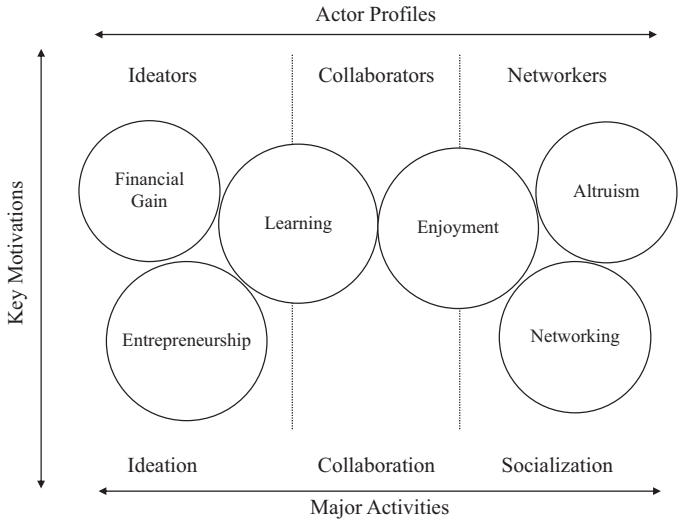


**Figure 2.**
Summary of findings on classifications

While all motivations affect the continuous intention to ideate, the findings show that self-efficacy, networking and recognition do not discriminate collaborators from ideators or networkers. On the other hand, recognition, entrepreneurship, and financial gain do not separate networkers from ideators and collaborators. Regarding motivations driving continuous intention to ideate, actors in SPD networks share new product ideas, expect feedback from the community and SDP coordinator and receive financial rewards if their ideas are selected by the community for further development. The main assets shared by the ideators in SPD are new product ideas. Ideators can use the platform not only to compete with other actors for economic benefits but also as a test bed for their own entrepreneurial ideas. SPD networks offer several learning opportunities through feedback from the SPD coordinator and community. These opportunities enable Ideators to gain first-hand innovation knowledge through active learning opportunities and satisfy their entrepreneurial mindset.

Our findings suggest that actors continuously participate in collaboration if they find the process both enjoyable and educational. Collaboration can satisfy these motivations because of cognitive compensation and interpersonal enjoyment (Balijepally *et al.*, 2006). While Learning is a motivation shared by both collaborators and ideators, enjoyment plays a greater role in motivating collaboration, since the ideation process is more intense in terms of workload, risk, and competition (Abhari *et al.*, 2018). The main assets shared by collaborators are technical solutions for product development. While ideators compete in sharing better product ideas for their own financial or entrepreneurial gains, collaborators can freely collaborate on different SPD projects based on their preferences and interests.

Networkers, the third group of actors, may limit their contribution to networking and helping other actors without directly or formally participating in any projects. These actors contribute to the network by strengthening the social aspect of SPD network. They consider the SPD network a professional community where they can get in touch with like-minded individuals and help community members expand their socio-professional network. Additionally, some actors motivated by social aspects of the SPD network are likely to participate in social activities, which may keep them interested and entertained throughout the co-innovation process. Therefore, SPD networks provide a different environment from traditional open innovation communities where participation is limited to highly skilled actors. The main assets shared by the Networkers are their connections in terms of access to other operand and operant resources.

Finally, we should note that the classification models are not mutually exclusive but may be collectively exhaustive due to the nature of the discriminant functions. This means that actors can exhibit a collection of motivations and be interested in more than one SPD activity. For example, an actor who is interested in educational, social and entertaining aspects of the SPD would contribute to both collaboration and socialization. Thus, all motivations together could lead to participation in all key activities but to different behavioral levels.

### *8.1 Theoretical contribution*

This study extends understanding of the sharing economy beyond non-ownership consumption activities by emphasizing the role of sharing operant resources in value co-creation. We expanded the definition in two ways. First, we shift the emphasis from temporary access to tangible assets to shared access to both tangible and intangible resources. Second, we consider sharing within production processes, instead of only shared consumption of underutilized resources. We utilized the collaborative innovation context to exemplify this new perspective.

We also provide fresh insight into actor motivation and participation in this emerging form of sharing economy activity. The empirical study revealed that motivations to

continuously participate in the sharing economy are more complex than what previously suggested (e.g. Botsman and Rogers, 2010; Davidson *et al.*, 2018; Hamari *et al.*, 2016). Moreover, the study provided more insights into actor behavior in sharing operant resources. The case of SPD demonstrated the complexity of actor behavior and its drivers in contrast to oversimplification of motivational studies in other settings. In particular, this study offers new insights on motivations for sharing by profiling social actors in the SPD context. The study confirmed the recent findings on motivational factors such as recognition, networking, enjoyment, financial gain and self-efficacy (e.g. Davidson *et al.*, 2018; Hamari *et al.*, 2016; Lee *et al.*, 2018) while introducing new factors (learning, entrepreneurship, and altruism) and determining their relative importance. Understanding why individual actors join and contribute to these co-innovation platforms has important implications for developing more sustainable SPD platforms. While prior studies only identified enjoyment and economic benefits as the main motivations among a unitary group of actors, we identified eight major motivations and generated profiles for three groups of social actors based on these motivations.

Specifically, actors who are financially and practically motivated are active ideators, who share new product ideas in order to take advantage of the SPD platform for financial gains as well as first-hand innovation learning experience. Collaborators are professional hobbyists contributing to new product development by sharing technical knowledge and solutions. They utilize the platform as a learning platform while enjoying exploring the innovative process. Networkers are more interested in sharing the connection and socializing with other actors; rather than engaging directly in any project, they help SPD platforms establish and maintain the professional community. Identifying these three groups of actors enhances our understanding of actor behavior on SPD and the implications for sharing operant resources. The findings also help the systematic investigation of SPD reward mechanisms in relation to the network business models.

### *8.2 Practical implications*

Sharing economy services need to be designed, positioned and governed with respect to various actor motivations so as to attract and maintain a viable population of willing participants. The proposed classification model can guide innovation services coordinators in their efforts to improve their systems to engage actors to continuously contribute to new product development processes. This study also suggests that a more personalized incentive system based on business goals and requirements may be effective in motivating different types of resource sharing and contribution. When actors receive desired befits, they are more likely to participate in the activities that the network is looking for. Therefore, platforms designed to accommodate these motivations are better positioned to gain popularity among potential participants and sustain their participation and contribution. For example, if an SPD network's goal is to generate concepts for new products, the SPD model could promote ideation by offering more economic benefits and assisting actors in finding the right learning experience based on their entrepreneurial goals. Ideation motivation could be encouraged if the platform communicates these values and shares best practices and other actors' success stories. Platforms can also provide feedback on actors' new ideas to enhance their learning process.

A new generation of SPD platforms increasingly adds collaborative features and encourage teamwork. These networks should not only reward actors with learning opportunities (e.g. feedback) but also satisfy motivations such as entertainment and pleasure. For example, gamification of collaborative activities may engage more actors. Additionally, co-innovation features that help collaborative actors find the right projects to join might better maintain the participation of actors looking for specific learning or entertainment opportunities.

Some SPD networks are designed as socio-professional communities, creating value through social exchange and knowledge sharing. When an SPD business model requires a high level of socialization (e.g. for social validation of new product), SPD coordinators could invest in more social media features and highlight the altruistic features of the network. Networking motivation can be satisfied when the platform offers communication and social interaction independent from project involvement. As a result, more actors might join the network, participate in the conversations, and as a result, may participate in ideation or collaboration in the future.

## 9. Further research

Because the proposed classification models are based on data from one SPD network, additional research is necessary to cross-validate the findings in different SPD networks. Future research can also examine our classification models in relation to the outcomes of SPD networks, such as actors' actual contribution, success of new products or quality and quantity of contributions. Extensions of our classification approach to different sharing economy services will also provide additional insights on the actor classification. A deeper understanding of actors' motivational differences would be beneficial in expanding the constructs for practical application as well. For example, future research can categorize sharing economy platform features in relation to actor profile in order to meet individual actors' preferences and goals. Finally, longitudinal studies focusing on the network sustainability would further our understanding of how actor profile evolve over time.

## 10. Conclusion

Research has yet to fully explore and explain the role of operant resources in the sharing economy. Sharing of operant resources is an important aspect of this new paradigm, because these resources are essential to innovation processes and also increase the value of operand resources in shared activities. To contribute to the sharing economy literature in this manner, this study focuses on SPD as a novel co-innovation business model and further explains why actors would participate in various form of sharing operant resources, namely ideation (e.g. sharing new idea), collaboration (e.g. sharing knowledge and experience) and socialization (e.g. sharing socio-professional capital). The study reveals the complex nature of actors' motivations towards three main forms of participation in this sharing economy model and proposes a model to profile actors based on their motivations.

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## Appendix

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|---|---|
| *Motivation* | |
| Altruism | |
| Desire to selfless actions that benefit the welfare of innovation community | Help others to success |
| | Help the community |
| | Contribute to NPD for free |
| | Make my idea available for free |
| Enjoyment | Fun |
| Desire to receive the gratification of action | Entertaining |
| | Enjoyable |
| | Fulfilling |
| Entrepreneurship | Curiosity |
| Desire to orientate conduct towards entrepreneurial tasks and outcomes (newly developed) | Dissatisfaction with existing products |
| | Desire to promote my creative idea |
| | Desire to solve problems |
| Learning | Develop skills |
| Desire to acquire skills and knowledge for personal development | Learn about inventions |
| | Advance in NPD |
| | Test creativity |
| Networking | Make friends |
| Desire to expend effort to interact, socialize and network with other actors | Get in contact with like-minded people |
| | Expand social network |
| | Meet new people |
| Self-efficacy | Find opportunities to prove creativity |
| Desire to prove own ability in reaching innovation goals | Prove that I have ability to succeed in NPD |
| | Prove that I am capable of inventing |
| | Feel influential |
| Financial gain | Money for contribution |
| Desire to obtain financial incentives associated with performance | Purchase credit |
| | Money for collaboration |
| | Money for ideation |
| Recognition | Earn recognition as a creative person |
| Desire to acquire professional status accorded to qualifications | Establish professional status |
| | Improve my chance of being hired |
| | Earn recognition as an inventor |
| *Intention* | |
| Continuous intention to ideate | Continue inventing |
| Actor's intention to continue submitting new product idea or concepts | Continue inventing even when better alternative |
| | Discontinue ideation[a] |
| | Submit more ideas |
| Continuous intention to collaborate | Continue influencing |
| Actor's intention to continue collaborating with other network members in SPD | Influencing even when better alternative |
| | Discontinue influencing[a] |
| | Influence on more projects |
| Continuous Intention to Socialize | Continue socializing |
| Actor's intention to continue socializing with other network members during the process of SPD | Socializing even when better alternative |
| | Discontinue networking[a] |
| | Socialize more |

**Note:** [a]Reverse-coded question

**Table AI.**
Measurement items

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# Building customers' trust in the ridesharing platform with institutional mechanisms

## An empirical study in China

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### Abstract

**Purpose** – Drawing upon institution-based trust theory, the purpose of this paper is twofold: firstly, to examine the joint influences of legally binding and market-driven institutional mechanisms in promoting customers' trust and continuance intention in the ridesharing platform; and secondly, to examine if there exists a trust transfer mechanism between institution-based trust and inter personal trust.

**Design/methodology/approach** – An online survey was conducted in China and data were collected from 307 customers in DiDi, which is one of the largest ridesharing platforms in China. Structural equation modeling statistical method was used to test the theoretical model and research hypotheses.

**Findings** – The empirical results suggest that market-driven institutional mechanisms, regarding feedback and surge pricing, have strong influences on customers' trust in the ridesharing platform. In addition, legally binding institutional mechanisms, regarding payment security and driver certification, are also beneficial to promote customers' trust. Furthermore, there is a trust transfer between customers' trust in the platform and trust in the driver.

**Practical implications** – This study provides guidelines to the administrators of the ridesharing platform to establish effective institutional mechanisms. In particular, the platform can appropriately adopt and implement the legally binding mechanisms combined with market-driven mechanisms on the platform, in order to enhance customers' trust and promote their subsequent transaction behaviors.

**Originality/value** – This study enriches and extends the extant literature of institution-based trust from e-commerce to the sharing economy by identifying four significant institutional mechanisms. Furthermore, this study presents a new perspective of customer trust (one-to-many) in the context of ridesharing and uncovers the transfer mechanism between institution-based trust and interpersonal trust.

**Keywords** Sharing economy, Continuance intention, Ridesharing, Trust transfer, Institution-based trust

**Paper type** Research paper

### 1. Introduction

With the development of information and mobile communication technology, a new term of "sharing economy" has emerged as people increasingly choose to make their possessions, such as their houses, cars, bikes and other items of daily life, accessible to others on various online platforms (Botsman and Rogers, 2010; Böckmann, 2013; Trenz *et al.*, 2018). The popularity of mobile devices has promoted the convenience of resource acquirement (Zekanovic-Korona and Grzunov, 2014), and numerous digital sharing platforms such as Airbnb and Uber have emerged to facilitate an efficient access to goods and services in the fields of accommodation and transportation. DiDi, which is recognized as one of the leading ridesharing platforms in China, has attracted more than 450 million users all over the world. PwC (2015) predicted that the global revenue generated by sharing economy will exceed $300 billion within the next 10 years.

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Although the sharing economy has bloomed rapidly, there exist potential risks in the transactions because of the unclear and underdeveloped legal environment, and how to facilitate trust among strangers has become a key challenge for the third-party sharing platforms (Horton and Zeckhauser, 2016; Huurne *et al.*, 2017). Take DiDi as an example, despite the ridesharing platform has gained rapid development in the past few years, there are still various reports regarding financial loss and physical harm accidents that happened on the platform, which decrease customers' trust and increase their perceived risks in the ridesharing platform. PwC (2015) reported that 89 percent of respondents attributed the success of their sharing transactions to trust, and participation in the sharing economy is promoted when trust is guaranteed. iResearch (2017) conducted an official investigation in China and found that trust is a significant factor when people consider participating in the sharing economy. Given the incomplete laws and imperfect regulations in the emerging service of ridesharing in China, it is essential for the third-party platform (such as DiDi) to establish effective institutional mechanisms, in order to facilitate a trustworthy environment for the sharing transactions (Mittendorf, 2017a, b; iResearch, 2017).

Previous literature in e-commerce has examined the critical antecedents of trust from an institutional theoretical perspective (Pavlou and Gefen, 2004; Gefen and Pavlou, 2012; Fang *et al.*, 2014). For example, Pavlou and Gefen (2004) applied institution-based trust in the online marketplace to examine the effects of institutional mechanisms on trust and customer purchase intention. Empirical results suggested that three IT-enabled institutional mechanisms – specifically feedback mechanisms, third-party escrow services and credit card guarantees – engendered customers' trust in the community of online vendors (Pavlou and Gefen, 2004). Furthermore, trust was identified as a significant predictor for customers' transaction intention and subsequent behaviors (Pavlou and Gefen, 2004; Fang *et al.*, 2014).

Despite previous literature provides us a theoretical foundation to understand institution-based trust in the online transactions, the existing theory may not capture the significant factors that are beneficial to build customers' trust in the emerging context of sharing economy (Mittendorf, 2017a, b). Compared with traditional forms of e-commerce, building and sustaining trust in the sharing economy is quite different and more complex since most of the transactions tend to be one-off among private individuals who are merely coordinated through an intermediary platform (Hawlitschek *et al.*, 2016). Customers and service providers mostly get in contact with each other in the offline world, which may cause potential monetary or physical harms in the sharing transactions (Mittendorf, 2017a, b). In addition, there lacks a standard evaluation criterion in the sharing transactions since most of the service providers in the platform are freelancers (iResearch, 2017). Thus, the regulatory regimes that are effective in the traditional marketplace may be outmoded or less effective, which leads to the legal gray areas of sharing economy (Katz, 2015; Ranchordás, 2015; Koopman *et al.*, 2014). Instead, institutional mechanisms implemented by the third-party platform may play a more significant role in building customers' trust and facilitating their continuance participations in the sharing transactions (iResearch, 2017; Shao and Yin, 2018). There is a call for more empirical studies to examine the specific trust-building mechanisms in the emerging new research context from an institutional theoretical perspective (Cheng, 2016; Huurne *et al.*, 2017; Shao and Yin, 2018).

Considering the complexity of customer protection issues and a lack of research on institution-based trust in the context of ridesharing, this study aims to address the following research question:

*RQ1.* What are the significant institutional mechanisms that are beneficial to build customers' trust and promote their continuance intention in the ridesharing platform?

Overall, the primary objectives of this study are threefold. Firstly, this study aims to examine the joint influences of legally binding and market-driven institutional mechanisms

on customers' trust formulation and continuance intention in the ridesharing platform. In particular, driver certification and surge pricing are introduced in the research model as significant institutional mechanisms in the ridesharing platform, which differs this study from traditional e-commerce literature. Secondly, this study aims to examine the trust transfer mechanism between institution-based trust (trust in the platform) to interpersonal trust (trust in the driver) in the context of ridesharing. Thirdly, this study aims to examine the mediating effects of trust and perceived risk on the relationship between the four institutional mechanisms and continuance intention of ridesharing. The expected research findings can enrich the extant literature of institutional-based trust in the emerging context of sharing economy.

The structure of the paper is organized as follows: we first review the extant literature in ridesharing and institution-based trust. Then, we develop a research model and propose the corresponding hypotheses. Third, we address the research methodology and discuss the data analysis results. We conclude with a discussion of theoretical and practical implications.

## 2. Literature review

### *2.1 Ridesharing*

The term "sharing economy" refers to a type of business model that builds on the sharing of resources between individuals through peer-to-peer service-allowing individuals to access goods from others when needed (Böckmann, 2013). In the past few years, sharing economy has gained notable attention as a new economic paradigm that leverages digital platforms to facilitate the exchange of resources among peers online, and many famous platforms have emerged and developed rapidly in the fields of accommodation and transportation (Cheng, 2016).

Ridesharing has become one of the most popular applications in the sharing economy because of the large volume of traffic demands. Uber, the well-known company in ridesharing, enables its users to offer, share and request a car in the peer-to-peer online platform. Millions of customers and drivers have participated in the online sharing marketplace in the past few years (Demos, 2015). DiDi, another successful ridesharing company in China, has achieved a strategic collaboration with Uber by merging its Chinese market. Founded in 2012, the business strategy of DiDi is to provide a better ridesharing service to customers and drivers by information technologies. When customers need ridesharing service, they can input the destination and find drivers registered on the platform using DiDi's mobile applications. Then, the order will be sent to drivers nearest to the customers using big data analysis, in order to realize an appropriate match between customers and drivers. In the past few years, DiDi has experienced a rapid development and has become the world's largest diversified one-stop ridesharing platform (iResearch, 2017). In the year of 2017, DiDi has provided services for more than 450 million customers, and created job opportunities for more than 17.5 million drivers (SIC, 2017).

Previous studies have examined the antecedents that promote customers' continuance participation in the ridesharing platform from different perspectives. One stream of studies focused on technological issues and found that system assurance and platform quality are positively associated with customers' trust and continuance participation in the third-party platform (Kamal and Chen, 2016; Cheng *et al.*, 2017; Lee *et al.*, 2018). Another stream of studies focused on individual characteristics and reported that customers' familiarity with Uber and disposition to trust is beneficial to promote their trust and continuance participation in the ridesharing platform (Mittendorf, 2017a, b). While the third stream of research concentrated on the economic value of participation and found that customers' willingness to pay for ridesharing service is dependent on their evaluation of benefits and risks of sharing transactions (Zhang *et al.*, 2016; Hong, 2017).

Although previous literature provides us a theoretical foundation to understand customers' trust in the ridesharing platform, to our knowledge, few studies have examined

customers' trust-building mechanisms from an institutional theoretical perspective. Compared with traditional marketplaces, the ridesharing marketplace lacks a clear and developed legal environment from the government, and institutional mechanisms established by the third-party platform may play a more prominent role in regulating the behaviors of service providers and guaranteeing the effectiveness of sharing transactions (Marton *et al.*, 2017). Thus, this study focuses on institution-based trust in the ridesharing platform, which will be described in the next section.

### *2.2 Institution-based trust*

Originated from social psychology science, institution-based trust was defined as trust that is based on guarantees and recommendations from third parties (Zucker, 1986). Previous literatures posited that institution-based trust can effectively balance the gaps of people from different social and cultural backgrounds, and strong institutions in the form of regulative, normative and cognitive structures can enable and inspire trust-relations among individuals at the interpersonal and interorganizational level (Fuglsang and Jagd, 2015; Sønderskov and Dinesen, 2016).

In the past decades, institution-based trust has been widely applied in the e-commerce research since it is especially suited for online marketplaces where buyers predominantly transact with new and unknown sellers under the aegis of third-party platforms that provide an institutional context (Pavlou and Gefen, 2004; Gefen *et al.*, 2008; Gefen and Pavlou, 2012; Fang *et al.*, 2014). In particular, Pavlou and Gefen (2004) argued that some effective legally binding institutional mechanisms in the traditional transactions may not enjoy the same legal enforcement provided by government agencies because of the underdeveloped policies and the lack of clear rules in the online marketplaces. In contrast, market-driven institutional mechanisms such as feedback may play a more significant role in the online transactions. The advantage of combining legally binding and market-driven mechanisms lie in that it can help eliminate customers' concern regarding the unclear and underdeveloped legal environment in the new context by referring to the complementary market-driven mechanisms (Pavlou and Gefen, 2004; Pavlou and Dimoka, 2006; Bakos and Dellarocas, 2011).

Institution-based trust also plays an important role in the context of sharing economy. Previous studies showed that trusted online intermediary can help eliminate potential moral hazard and insure hosts' security in the collaborative-housing transactions (Weber, 2014). Drawing upon Huurne *et al.*'s (2017) study, sharing economy is a special case of peer-to-peer online transactions, thus several trust-building mechanisms established in the traditional e-commerce may also be suitable for transactions in the sharing economy. In particular, this study introduces two significant institutional mechanisms from e-commerce research, regarding payment security and feedback, in the proposed theoretical model. On the one hand, the ridesharing platform requires online payment instead of offline payment, thus payment security is a significant concern when customers make transactions on the platform (iResearch, 2017; Shao and Yin, 2018). On the other hand, the ridesharing platform also encourages customers to evaluate specific drivers who provide service on the platform based on their actual usage experiences. Thus, feedback is also used as a significant reference when customers reserve cars and select drivers on the platform (iResearch, 2017; Shao and Yin, 2018). Accordingly, this study identifies payment security as a significant legally binding mechanism and feedback as a significant market-driven mechanism in the research framework, as suggested in the previous literature (Mcknight *et al.*, 2002; Pavlou and Gefen, 2004; Kim *et al.*, 2008; Gefen and Pavlou, 2012).

Considering the difference between ridesharing and traditional online transactions, this study further introduces two newly institutional mechanisms in the research

framework, regarding driver certification and surge pricing, to describe the unique context of ridesharing. In particular, diver certification is introduced as a legally binding institutional mechanism, which represents a rigorous verification and approval process when a driver wants to provide service in the ridesharing platform (Kamal and Chen, 2016). Given the potential physical harms happened to customers in the ridesharing platform such as DiDi, a credible background check, screening and certification of drivers is important to build customers' trust and decrease their perceived risk in the ridesharing platform (iResearch, 2017; Huurne *et al.*, 2017; Shao and Yin, 2018). Moreover, surge pricing is introduced as a market-driven mechanism in the research framework, which refers to a dynamic pricing adjustment according to the demands and supplies of cars in different time periods (Edelman and Geradin, 2015; Cachon *et al.*, 2017). It was found that an effective surge pricing mechanism can help equilibrate demands and supplies in the ridesharing platform (Chen and Sheldon, 2015).

Table I summarizes the origins and corresponding references of the four introduced institutional mechanisms.

## 3. Research model and hypotheses

### *3.1 Research model*

Drawing upon the previous literature in e-commerce and the specific context of ridesharing, this study develops a research model to examine the influences of four institutional mechanisms on customers' trust, perceived risk and continuance intention of ridesharing. Since different customers may have different perceptions of the implemented institutional mechanisms (Pavlou and Gefen, 2004; Fang *et al.*, 2014), this study adopts the construct of "perceived effectiveness of institutional mechanisms" to assess the degree to which a customer believes that the mechanisms implemented by the ridesharing platform (such as DiDi) are available, enforceable and dependable to protect him/her from potential risks in the transactions (Pavlou and Gefen, 2004; Fang *et al.*, 2014).

Specifically, this study identifies customers' continuance intention of ridesharing service as a dependent variable (DV), in order to capture customers' behavioral intention to persist with the ridesharing service. The selection of continuance intention as a DV is largely because most of the people in China have usage experiences of ridesharing service, thus how to stimulate customers' continuance intention of ridesharing is a big concern for the third-party platform such as DiDi (iResearch, 2017).

The research model is described in Figure 1. We illustrate the theoretical logic of each hypothesis in the following sections.

**Table I.**
Origins of the four institutional mechanisms

| Institutional mechanisms | Category | Research context | References |
|---|---|---|---|
| Payment security | Legally binding | E-commerce; sharing economy | Mcknight *et al.* (2002), Pavlou and Gefen (2004), Kim *et al.* (2008), Gefen and Pavlou (2012), iResearch (2017), Shao and Yin (2018) |
| Feedback mechanism | Market driven | E-commerce; sharing economy | Dellarocas (2003), Pavlou and Gefen (2004), Pavlou and Dimoka (2006), Gefen and Pavlou (2012), iResearch (2017), Shao and Yin (2018) |
| Diver certification | Legally binding | Sharing economy | Sundararajan (2014), Kamal and Chen (2016), Hong (2017), Huurne *et al.* (2017), iResearch (2017), Shao and Yin (2018) |
| Surge pricing | Market driven | Sharing economy | Chen and Sheldon (2015), Edelman and Geradin (2015), Cachon *et al.* (2017), Shao and Yin (2018) |

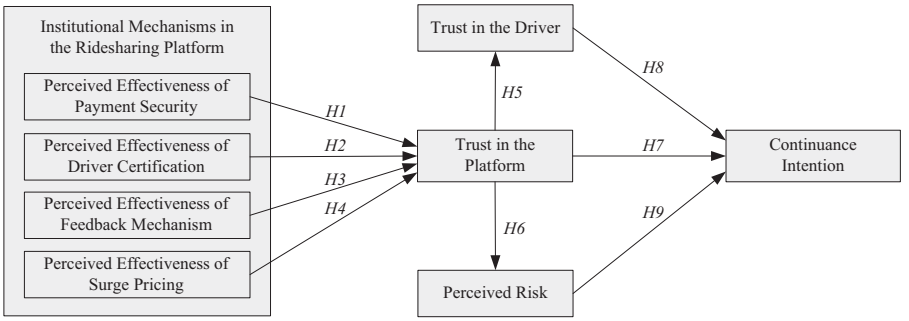



**Figure 1.**
Research model

*3.2 Hypotheses development*

*3.2.1 Payment security and trust in the platform*. Payment security was considered as a legally supported, third-party institutional mechanism that safeguards online transactions by providing protection to the customer (Pavlou and Gefen, 2004). In order to reduce customers' perceived risk of monetary loss in case of illegal and opportunistic behavior, most financial institutions have provided identity authentication and encryption mechanisms to customers. This is beneficial to increase customers' confidence that paying online will not lead to information disclosure of the credit cards. Previous studies indicated that perceived effectiveness of payment security is critical in developing and maintaining consumers' trust in the online platform, which can decrease consumers' perceived risk in completing the transactions (Kim *et al.*, 2008).

Payment security also plays a significant role in the ridesharing platform of DiDi. When customers arrive in the destination, they need to pay the drivers using the mobile phone, and the money is automatically transferred to the drivers' account through the credit card institutions. The online transaction process may increase customers' uncertainty regarding the credit card security. Structural assurance of the third-party platform is beneficial to eliminate customers' social uncertainty and enhance their trust (Mcknight *et al.*, 2002; Pavlou and Gefen, 2004). If consumers find effective payment security features and protection mechanisms in the transaction procedure, their trust in the ridesharing platform will be enhanced accordingly (Yang *et al.*, 2016). The above analysis leads to the following hypothesis:

*H1*. Perceived effectiveness of payment security is positively associated with customers' trust in the platform.

*3.2.2 Driver certification and trust in the platform*. Driver certification was identified as another critical institutional mechanism provided in the ridesharing platform (iResearch, 2017). In the context of ridesharing, customers and drivers not only get in contact with each other online, but also have contacts in the offline world, which may cause potential risks regarding monetary or physical harm to customers (Mittendorf, 2017a, b). Prior studies found that third-party certification of service providers is a significant antecedent to build customers' trust by reducing information asymmetry in the online marketplace (Head and Hassanein, 2003). An appropriate and effective certification of service providers has a remedy effect on customers' intention to finish the online transactions (Dewally and Ederington, 2006).

In the DiDi sharing platform, driver certification has become an indispensable and important institutional mechanism to ensure customers' safety (iResearch, 2017). Since customers are not familiar with the drivers in the online transactions, they prefer to depend on the platform to avoid unexpected incidents related with the ill-disposed drivers. A rigorous certification includes a sequence of procedure such as a criminal

background check, a verification of bank account and a test of driving skills and competence (Huurne *et al.*, 2017; iResearch, 2017). Each newly registered driver must upload detailed information such as certificate identification, driving license and personal photos on the platform, and a driver can receive order and provide service to the customers only after he/she has passed the certification. The rigorous selection and certification mechanism can guarantee that each registered driver in the ridesharing platform is eligible and capable. If customers find that an effective driver certification mechanism has been implemented in the ridesharing platform, their trust in the ridesharing platform will be increased accordingly, which further eliminate their potential worries about the drivers (Kamal and Chen, 2016; Shao and Yin, 2018). The above analysis leads to the following hypothesis:

*H2.* Perceived effectiveness of driver certification is positively associated with customers' trust in the platform.

*3.2.3 Feedback mechanism and trust in the platform.* Feedback was recognized as a significant market-driven mechanism in the online marketplaces, which is a beneficial way to alleviate the information asymmetry between customers and service providers. In the past decades, feedback mechanism was universally adopted in the well-known e-commerce platforms including eBay, Amazon and Alibaba. The word-of-mouth effect of feedback allows customers to trust service providers based on the information they receive from other customers (Doney and Cannon, 1997). Pavlou and Gefen (2004) proved that feedback mechanism can effectively engender buyers' trust in the community of online sellers.

In the ridesharing platform of DiDi, feedback is an effective mechanism to reflect customers' satisfaction regarding the service quality provided by the drivers (iResearch, 2017). Meanwhile, it is also an effective mechanism for the protection of consumers' rights and interests. Feedback mechanism is a good way to monitor and control the drivers' behaviors because customers' comments and evaluations will be published online immediately after the transactions are completed. This is beneficial to prevent the drivers from engaging in opportunistic behaviors and stimulate them to offer better service to the customers, in order to accumulate more credibility and reputation on the platform (Ba and Pavlou, 2002; Pavlou and Gefen, 2004). Accordingly, customers' trust in the platform will be improved if they receive positive feedbacks from others. The above analysis leads to the following hypothesis:

*H3.* Perceived effectiveness of feedback mechanism is positively associated with customers' trust in the platform.

*3.2.4 Surge pricing mechanism and trust in the platform.* Surging pricing was recognized as another significant market-driven mechanism in the ridesharing platform (Chen *et al.*, 2015; Mohamad *et al.*, 2016). The conceptualization of surging pricing originated from price value, which was considered as a critical antecedent that influences customers' cognitive beliefs and behavioral intentions (Alalwan *et al.*, 2017). In IS literature, price value refers to customers' cognitive tradeoff between perceived benefit of the information technologies and the monetary cost for using them. Price value is positive when the benefit of using an information technology is perceived to be greater than the monetary cost (Venkatesh *et al.*, 2012). On the contrary, price value will be negative if customers perceive lower benefit from using an information technology compared with the monetary cost (Venkatesh *et al.*, 2012). Individuals are more likely to use a new type of technology only if the associated costs are reasonable and rational. Thus, setting up an effective pricing mechanism is important to enhance customers' positive attitude and behavioral intention regarding IT usage (Chen and Sharma, 2012; Al-Debei and Al-Lozi, 2014).

In the context of ridesharing, the surge pricing mechanism was first developed and implemented by Uber to effectively manage the balance of demands and supplies of service

providers in the ridesharing markets (Chen and Sheldon, 2015; Edelman and Geradin, 2015). Different from the fixed price of traditional taxis service, the price for ridesharing service fluctuates according to the dynamic market demands in different time periods. In order to balance the demands and supplies of ridesharing service, Uber calculates and adjusts its price using a dynamic algorithm known as surge pricing to reallocate the resources in different time periods. In peak hours with higher demands, a higher price is provided in order to motivate more drivers to offer service on the platform. Meanwhile, customers are more likely to pay a higher price for the ridesharing service since the platform can respond to his/her requirement rapidly (Chen *et al.*, 2015; Mohamad *et al.*, 2016).

DiDi has adopted the surge pricing mechanism in China to provide a more stable and effective ridesharing service (iResearch, 2017). Previous studies have examined the benefit of adopting surge pricing mechanism to increase the number of trips and the overall efficiency of the traveling system (Chen *et al.*, 2015). Drawing upon price value theory, if customers recognize the rationality and effectiveness of surge pricing mechanism, their perceived benefit of the ridesharing service will be higher than their monetary cost (Venkatesh *et al.*, 2012). This is beneficial to enhance customers' beliefs that the platform is competent and reliable to satisfy their requirements (Shao and Yin, 2018). On the contrary, if customers perceive the ridesharing service as over-priced, which exceeds their psychological expectations, their trust beliefs in the ridesharing platform will be decreased accordingly (Shao and Yin, 2018). Drawing upon the extant literature, we propose the following hypothesis:

*H4.* Perceived effectiveness of surge pricing mechanism is positively associated with customers' trust in the platform.

*3.2.5 Trust in the platform and trust in the driver.* The relationship between customers' trust in the platform and trust in the service provider has been discussed and examined in the previous literature. Drawing upon Stewart's (2003) study, trust transfer is a cognitive process in which an individual's trust in an entity (a person, group or organization) can be transferred to another entity by the virtue of certain associations (Stewart, 2006; Kim, 2008; Chen *et al.*, 2015). In the online marketplaces, trust can be amended by the platform through providing various means to help communicating and building relationship with the service provider (Ou *et al.*, 2014). Customers are more likely to form a positive opinion about the service provider in a particular platform if it has established effective institutional mechanisms (Belanche *et al.*, 2014; Chen *et al.*, 2015).

In the ridesharing platform of DiDi, trust in the platform and trust in the driver are considered as related entities. In order to eliminate information asymmetry and enhance customers' trust, the ridesharing platform has implemented effective mechanisms such as driver certification to make a strict background screening and historical driving records check of the registered drivers. In addition, the ridesharing platform has also established a feedback mechanism to monitor and control drivers' behaviors. Following the trust-transference logic, customers' trust in the ridesharing platform can be transferred to their trust in the driver if effective institutional mechanisms are provided on the platform (Stewart, 2003; Pavlou and Gefen, 2004). In other words, when customers have developed a trust in the third-party platform such as DiDi, they are more likely to trust in the drivers who provide service on the DiDi platform, since they believe that DiDi can offer a reliable and trustworthy trading environment that restricts problematic drivers and support the safety of transaction process. The above analysis leads to the following hypothesis:

*H5.* Trust in the platform is positively associated with customers' trust in the driver.

*3.2.6 Trust in the platform and perceived risk.* Prior studies have examined the negative relationship between trust and perceived risk in the online markets (Kim *et al.*, 2008;

Chang and Chen, 2008). For example, Pavlou and Gefen (2004) found that customers' trust in the platform is beneficial to reduce their perceived risk of the sellers' opportunistic behaviors in the online auction markets.

In the ridesharing platform of DiDi, perceived risk also exists since in most occasions, customers are making offline contacts with strangers that they are not familiar with, which may lead to financial loss and personal injury (Yang *et al.*, 2016). If the customers trust in the platform, they will believe that the platform has established and enforced effective rules and procedures to prevent the service providers' opportunistic and inappropriate behaviors (Pavlou and Gefen, 2004). This is beneficial to reduce customers' concern about the potential risk of the transactions. The above analysis leads to the following hypothesis:

*H6.* Trust in the platform is negatively associated with customers' perceived risk.

*3.2.7 Trust in the platform and continuance intention.* Trust was identified as an important influential factor of individuals' adoption and usage of information and communication technology (Kirs and Bagchi, 2012; Aldebei *et al.*, 2015; Cheng *et al.*, 2017; Lin *et al.*, 2018). Previous literature in e-commerce has examined the impact of trust on customers' intention to transact in the online platform. Pavlou and Gefen (2004) found that trust in the community of sellers increases customers' intention to transact in a C2C online market. Hong and Cho (2011) also reported that consumer's behavior is largely determined by a trustworthy platform in a B2C electronic market.

In the ridesharing platform of DiDi, most of the transactions tend to be one-off among private individuals who are not familiar with each other, thus customers prefer to rely on the third-party platforms to make transaction decisions. If a customer has formulated a higher trust belief in the platform, he/she is more likely to continue using the platform for daily traveling. The positive relationship between customers' trust in the platform and continuance intention has been reported in the context of Uber use (Mittendorf, 2017a, b). The above analysis leads to the following hypothesis:

*H7.* Trust in the platform is positively associated with customers' continuance intention.

*3.2.8 Trust in the driver and continuance intention.* In the context of online marketplace, trust in the service provider was identified as a significant antecedent to facilitate customers' continuance transaction behaviors (Gefen *et al.*, 2003; Beldad *et al.*, 2010). Prior studies have found that customers' trust beliefs in the online sellers can help reduce the social uncertainty caused by information asymmetry, which are beneficial to increase their subsequent transactions in the online markets (Pavlou and Gefen, 2004).

In the ridesharing platform of DiDi, if customers trust in the driver who provides service on the platform, their potential worries regarding the online and offline transactions will be reduced accordingly, which is beneficial to enhance their subsequent continuance behaviors. Previous studies have found that customers' trust in the driver is positively associated with their transaction behaviors in the sharing platform of Uber (Mittendorf, 2017a, b). The above analysis leads to the following hypothesis:

*H8.* Trust in the driver is positively associated with customers' continuance intention.

*3.2.9 Perceived risk and continuance intention.* The relationship between perceived risk and continuance intention has been largely examined within the previous literature (Jarvenpaa *et al.*, 2000; Gefen, 2002; Farivar *et al.*, 2017). For example, Pavlou and Gefen (2004) found that consumers' perceived risk in the online marketplace decreases their positive expectations, which results in an unfavorable impact on transactional behaviors.

In the ridesharing platform of DiDi, customers not only connect with the drivers online, but also contact with them in the offline world (Mittendorf, 2017a, b), thus there exists an

overwhelming uncertainty regarding the probability of loss or physical harm in the transactions. If customers believe that it is unsafe to use the ridesharing platform of DiDi and that negative consequences may occur, they will give up using DiDi for traveling in the long term. The above analysis leads to the following hypothesis:

*H9.* Perceived risk is negatively associated with customers' continuance intention.

## 4. Research methodology

### *4.1 Instrument design*

This study referred to the previous literature to design the instrument and all items are measured using seven-point Likert scale ranging from "strongly disagree" (1) to "strongly agree" (7). Instrument of payment security, feedback mechanism, trust in the platform and perceived risk were designed drawing upon Pavlou and Gefen's (2004) study. Items for driver certification was adapted from Kim *et al.*'s (2008) study. While trust in the driver and continuance intention were measured based on Mittendorf's (2017a, b) and Bhattacherjee's (2001) study, respectively. Several items were revised to better adapt to the research context of ridesharing. Considering surge pricing is a new construct which has not been empirically tested in the previous literature, we implemented a procedure of literature review, expert panel and content validity test following Straub's (1989) suggestion, and three items were developed for this construct.

We conducted a pilot study before the final data collection. A total of 152 users of DiDi were invited to complete the survey, and 105 valid questionnaires were received. A few items with factor loadings lower than 0.7 were deleted to improve the validity of the constructs (Chin *et al.*, 2003). Finally, we got three items for each construct. The definitions and references for each construct are illustrated in Table II, and the final instrument is described in Table AI.

### *4.2 Data collection*

DiDi was selected as the research site since it is one of the largest ridesharing platforms in China. In the year of 2016, DiDi's service has covered 80 percent of Chinese market including

| Constructs | Definitions | References |
|---|---|---|
| Payment security | The extent to which a customer believes that credit card is used and protected before and after making a transaction in the ridesharing platform | Pavlou and Gefen (2004) |
| Driver certification | The extent to which a customer believes that drivers in the ridesharing platform have passed through a rigorous certification procedure | Kim *et al.* (2008), Kamal and Chen (2016) |
| Feedback mechanism | The extent to which a customer believes that the feedback mechanism in the ridesharing platform is accurate and effective | Pavlou and Gefen (2004) |
| Surge pricing mechanism | The extent to which a customer believes that the dynamic pricing adjustment in the ridesharing platform is rational and effective | Chen *et al.* (2015), Mohamad *et al.* (2016) |
| Trust in the platform | The extent to which a customer believes that the ridesharing platform is competent, reliable and behaves with integrity | Pavlou and Gefen (2004) |
| Trust in the driver | The extent to which a customer believes that drivers that provide service on the platform are competent, reliable and behaves with integrity | Pavlou and Gefen (2004), Mittendorf (2017a, b) |
| Perceived risk | The extent to which a customer believes that there is some probability of suffering a loss in the ridesharing platform | Pavlou and Gefen (2004) |
| Continuance intention | Customer's intention to continue using the ridesharing platform for travelling | Bhattacherjee (2001), Shao (2018) |

**Table II.** Constructs and definitions

450 million city dwellers. The rapid development of DiDi and its huge market scale provide us a good data source. We conducted a survey during January–March in the year of 2017 to collect empirical data. DiDi users were invited to complete the questionnaires online or using mobile phones, and each respondent was provided with a red envelop of RMB5 for rewards. Since the data collected from mobile phones can record the IP address of each respondent, it can prevent a user from participating in the investigation for more than once. A brief introduction of research background was clearly described at the front of the questionnaire, and the respondents were assured of the confidentiality of this study. In order to guarantee that all the respondents have usage experiences of DiDi, we set up an option in the questionnaire to distinguish between DiDi users and non-users. After removing the questionnaires with no usage experiences, we totally collected 351 questionnaires from DiDi users of more than 15 cities in China. We deleted the questionnaires with incomplete data or dirty data (all the responses are 7 or 1), and finally got 307 valid data sets for analysis.

In order to address the non-response bias issue, we then compared the demographics characteristics between the early and late respondents using *t*-tests, as suggested in the previous literature (Ma and Agarwal, 2007; Phang *et al.*, 2015). The statistics results suggest that there are no significant differences between early and late respondents regarding gender, age, educational background and use frequency ($p > 0.05$). The demographic characteristics of the sample data are described in Table III.

As noted in Table III, 59 percent of the respondents ages from 25 to 40. This is consistent with the iResearch investigation that most users of DiDi are young and middle-aged people (iResearch, 2017). Regarding the gender characteristics, the percentage of males and females are 52 and 48 percent, respectively, suggesting that the number of males is slightly higher than females (iResearch, 2017). In terms of the education background of the respondents, most of the users possess a bachelor's degree or above. Overall, the samples collected in this study are representative of the actual users of DiDi (iResearch, 2017).

### *4.3 Structural equation modeling (SEM) analysis*

We used SEM method to examine the research model since it allows the incorporation and process of both unobserved (latent) and observed variables in a same model, and is able to handle the errors of measurement within exogenous variables in a better manner than the traditional methods (Gefen *et al.*, 2000).

SmartPLS was selected as a primary statistical tool to analyze the measurement model and the structural model since it is more suited for theory exploration and prediction compared with covariance-based SEM method such as AMOS and LISREL (Gefen *et al.*, 2000).

**Table III.**
Sample characteristics

| Items | Types | Numbers | Percentage |
|---|---|---|---|
| Gender | Male | 159 | 52 |
| | Female | 148 | 48 |
| Age | 18–24 | 114 | 37 |
| | 25–30 | 95 | 31 |
| | 31–40 | 87 | 28 |
| | > 40 | 11 | 4 |
| Education | Senior high school and under | 36 | 12 |
| | Bachelor | 192 | 62 |
| | Master | 48 | 16 |
| | PhD | 31 | 10 |
| Use frequency per month | < 10 | 130 | 42 |
| | 10–20 | 78 | 26 |
| | > 20 | 99 | 32 |

In addition, SmartPLS can accommodate smaller data samples without requiring normal distribution of the data (Chin *et al.*, 2003). The sample size of 307 can satisfy the requirements of PLS – either 10 times the larger measurement number within the same construct or 10 times the larger construct number affecting the same construct (Chin *et al.*, 2003).

*4.3.1 Measurement modeling*. The measurement model was firstly tested to analyze the reliability and convergent validity of the constructs. The results are illustrated in Table IV. Reliability refers to the internal consistency of the items, and convergent validity indicates the extent to which the items are related to the construct as theoretically predicted (Chin *et al.*, 2003). As illustrated in Table IV, each construct's Cronbach's $\alpha$ has exceeded 0.7, and the item loadings of all the constructs have exceeded 0.7. In addition, the average variance extracted (AVE) for each construct is greater than 0.5, thus provides an adequate support for construct reliability and convergent validity (Chin *et al.*, 2003).

Discriminant validity assesses if a construct is different from other constructs, and it is examined using the following two criteria: the square root of the AVE for each construct exceeds that construct's correlation with other constructs; and the items load more highly on constructs they are intended to measure than on other constructs (Chin *et al.*, 2003). We first conducted a correlation analysis following the first criterion. As described in Table V, the square root of the AVE for each construct is highly above that construct's correlation with other constructs.

We then conducted a cross-loading analysis in SmartPLS following the second criterion (Chin *et al.*, 2003). As noted in Table VI, the items of each construct load much higher for its assigned construct than on the other constructs. The above analysis results indicate a good discriminant validity of the constructs.

*4.3.2 Structural modeling*. The structural model was analyzed to examine the path relationships among the constructs and the $R^2$ value of the endogenous variables. Bootstrapping procedure method was used to calculate the statistical significance of the

| Construct | Items | Factor loadings | *T*-Statistical Test | Cronbach's $\alpha$ | AVE |
|---|---|---|---|---|---|
| Payment security (PS) | PS1 | 0.79 | 31.46 | 0.78 | 0.69 |
| | PS2 | 0.85 | 43.10 | | |
| | PS3 | 0.84 | 47.47 | | |
| Driver certification (DC) | DC1 | 0.85 | 58.71 | 0.82 | 0.72 |
| | DC2 | 0.84 | 42.27 | | |
| | DC3 | 0.81 | 35.19 | | |
| Feedback mechanism (FM) | FM1 | 0.83 | 42.04 | 0.79 | 0.70 |
| | FM2 | 0.84 | 58.87 | | |
| | FM3 | 0.83 | 36.29 | | |
| Surge pricing mechanism (PM) | PM1 | 0.87 | 53.94 | 0.81 | 0.73 |
| | PM2 | 0.86 | 54.29 | | |
| | PM3 | 0.82 | 37.96 | | |
| Trust in the platform (TP) | TP1 | 0.78 | 21.67 | 0.75 | 0.67 |
| | TP2 | 0.84 | 46.16 | | |
| | TP3 | 0.82 | 38.36 | | |
| Trust in the driver (TD) | TD1 | 0.84 | 54.03 | 0.78 | 0.69 |
| | TD2 | 0.83 | 47.89 | | |
| | TD3 | 0.82 | 47.24 | | |
| Perceived risk (PR) | PR1 | 0.78 | 28.85 | 0.72 | 0.64 |
| | PR2 | 0.82 | 50.79 | | |
| | PR3 | 0.80 | 42.30 | | |
| Continuance intention (CI) | CI1 | 0.82 | 45.61 | 0.79 | 0.70 |
| | CI2 | 0.85 | 53.15 | | |
| | CI3 | 0.83 | 41.22 | | |

**Table IV.** Reliability and convergent validity analysis

**Table V.**
Correlation between constructs

| | Mean | SD | PS | DC | FM | PM | TP | TD | PR | CI |
|---|---|---|---|---|---|---|---|---|---|---|
| PS | 4.60 | 0.84 | *0.83* | | | | | | | |
| DC | 4.57 | 0.94 | 0.66 | *0.85* | | | | | | |
| FM | 4.58 | 0.83 | 0.67 | 0.60 | *0.84* | | | | | |
| PM | 4.58 | 1.02 | 0.68 | 0.72 | 0.66 | *0.85* | | | | |
| TP | 4.64 | 0.68 | 0.64 | 0.63 | 0.67 | 0.67 | *0.82* | | | |
| TD | 4.56 | 0.94 | 0.66 | 0.61 | 0.64 | 0.71 | 0.71 | *0.83* | | |
| PR | 3.87 | 1.14 | −0.55 | −0.50 | −0.49 | −0.52 | −0.51 | −0.56 | *0.8* | |
| CI | 4.74 | 0.81 | 0.56 | 0.57 | 0.55 | 0.59 | 0.61 | 0.62 | −0.51 | *0.84* |

**Note:** Italicized values shown on the diagonal are the square root of AVEs

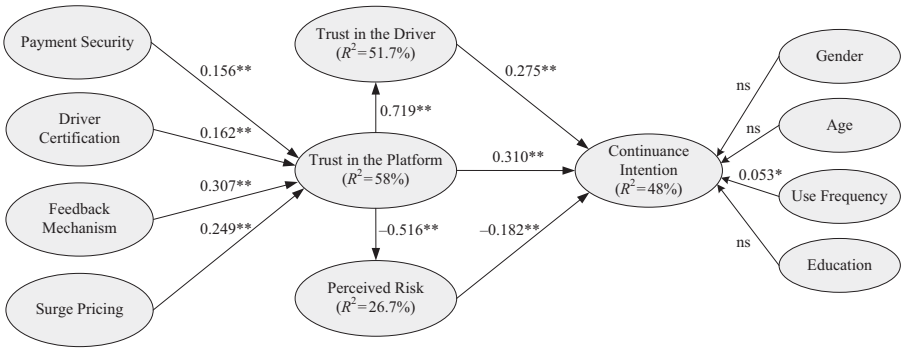
**Table VI.**
Cross loadings of the items

| | PS | DC | FM | PM | TP | TD | PR | CI |
|---|---|---|---|---|---|---|---|---|
| PS1 | *0.79* | 0.50 | 0.50 | 0.53 | 0.48 | 0.47 | −0.40 | 0.43 |
| PS2 | *0.85* | 0.58 | 0.57 | 0.57 | 0.57 | 0.58 | −0.47 | 0.48 |
| PS3 | *0.85* | 0.57 | 0.61 | 0.61 | 0.55 | 0.60 | −0.51 | 0.50 |
| DC1 | 0.64 | *0.86* | 0.59 | 0.66 | 0.56 | 0.56 | −0.46 | 0.48 |
| DC2 | 0.50 | *0.84* | 0.49 | 0.58 | 0.54 | 0.51 | −0.39 | 0.41 |
| DC3 | 0.55 | *0.86* | 0.48 | 0.62 | 0.52 | 0.51 | −0.43 | 0.42 |
| FM1 | 0.55 | 0.49 | *0.84* | 0.56 | 0.56 | 0.51 | −0.38 | 0.47 |
| FM2 | 0.53 | 0.50 | *0.84* | 0.52 | 0.54 | 0.49 | −0.35 | 0.44 |
| FM3 | 0.61 | 0.54 | *0.84* | 0.58 | 0.60 | 0.61 | −0.50 | 0.47 |
| PM1 | 0.57 | 0.62 | 0.57 | *0.87* | 0.59 | 0.63 | −0.46 | 0.48 |
| PM2 | 0.60 | 0.60 | 0.53 | *0.86* | 0.56 | 0.61 | −0.49 | 0.56 |
| PM3 | 0.58 | 0.62 | 0.59 | *0.82* | 0.58 | 0.56 | −0.39 | 0.48 |
| TP1 | 0.48 | 0.51 | 0.47 | 0.49 | *0.78* | 0.50 | −0.40 | 0.46 |
| TP2 | 0.55 | 0.54 | 0.57 | 0.56 | *0.84* | 0.64 | −0.45 | 0.57 |
| TP3 | 0.54 | 0.50 | 0.61 | 0.60 | *0.82* | 0.60 | −0.42 | 0.49 |
| TD1 | 0.59 | 0.53 | 0.60 | 0.62 | 0.64 | *0.84* | −0.48 | 0.54 |
| TD2 | 0.58 | 0.54 | 0.52 | 0.60 | 0.60 | *0.84* | −0.48 | 0.53 |
| TD3 | 0.48 | 0.47 | 0.48 | 0.55 | 0.56 | *0.82* | −0.44 | 0.49 |
| PR1 | −0.40 | −0.33 | −0.36 | −0.35 | −0.38 | −0.44 | *0.79* | −0.38 |
| PR2 | −0.49 | −0.40 | −0.41 | −0.41 | −0.43 | −0.40 | *0.82* | −0.41 |
| PR3 | −0.44 | −0.45 | −0.42 | −0.49 | −0.43 | −0.51 | *0.80* | −0.44 |
| CI1 | 0.48 | 0.41 | 0.47 | 0.49 | 0.53 | 0.50 | −0.41 | *0.82* |
| CI2 | 0.46 | 0.44 | 0.45 | 0.51 | 0.48 | 0.53 | −0.45 | *0.85* |
| CI3 | 0.48 | 0.44 | 0.46 | 0.50 | 0.55 | 0.54 | −0.42 | *0.84* |

**Note:** All italicized values are significant at the level of 0.01

parameter estimates in order to derive valid standard errors or *t*-values (Temme *et al.*, 2006). In order to control individual characteristics that may influence customers' continuance intention, we added gender, age, use frequency and education as control variables in the structural model, as suggested in the previous literature (Fang *et al.*, 2014). The analysis results are illustrated in Figure 2.

As hypothesized in *H1*, payment security is positively associated with trust in the platform ($\beta = 0.156$, $p < 0.01$), indicating that the structural assurance of online transaction is beneficial to enhance customers' trust in the ridesharing platform. While driver certification is also a significant driver of customers' trust ($\beta = 0.162$, $p < 0.01$), thus supports *H2*. The result is consistent with our argument that third-party certification of drivers is a significant guarantee to build customers' trust and reduce information asymmetry in the ridesharing platform.




**Notes:** *,**Represents $p<0.05$ and $p<0.01$, respectively

**Figure 2.**
Structural model analysis results

As hypothesized in *H3*, feedback mechanism is a strong antecedent of customers' trust in the platform ($\beta = 0.307$, $p < 0.01$), indicating that positive online feedback from the previous users is beneficial to enhance customers' trust in the platform. Moreover, surge pricing mechanism is also significantly associated with customers' trust in the platform ($\beta = 0.249$, $p < 0.01$), thus supports *H4*. The result suggests that perceived effectiveness of the dynamic price is helpful to build customers' trust in the sharing platform by balancing the demands and supplies in different time periods.

As hypothesized in *H5*, trust in the platform is positively associated with trust in the driver ($\beta = 0.719$, $p < 0.01$), indicating that there exists a trust transfer mechanism from the platform to the drivers in the context of ridesharing. While trust in the platform is negatively related with perceived risk ($\beta 1 = -0.516$, $p < 0.01$), which is consistent with the previous research findings (Pavlou and Gefen, 2004). The above result can provide support for *H6*.

As noted in Figure 2, trust in the platform and trust in the driver are positively related with continuance intention ($\beta 1 = 0.310$, $\beta 2 = 0.275$, $p < 0.01$), while perceived risk is negatively associated with continuance intention ($\beta = -0.182$, $p < 0.01$). The results can provide support for *H7–H9*. Regarding the influences of control variables, use frequency is positively associated with continuance intention, while gender, age and education have no significant influences on continuance intention.

We then examine the $R^2$ value of the endogenous variables. As illustrated in Figure 2, $R^2$ values of trust in the platform, trust in the driver, perceived risk and continuance intention are 58, 51.7, 26.7 and 48 percent, respectively. The results indicate that the four institutional mechanisms can explain a large variance of the endogenous variables, demonstrating a good explanatory power of the research model.

Following Tenenhaus *et al.*'s (2005) research, we calculated the value of goodness-of-fit (GoF) to examine the global fit measure for PLS path modeling in our study, as described in the following equation:

$$GoF = \sqrt{\overline{community} \times \overline{R^2}} = \sqrt{0.69 \times 0.46} = 0.56.$$

The calculated value of GoF is 0.56, which exceeds the cut-off value of 0.36 for large effect sizes, demonstrating that our model performs well compared to the baseline values, as suggested in Wetzels *et al.*'s (2009) study.

*4.3.3 Mediating test*. We then examined the mediating effect of trust and perceived risk on the relationship between the four institutional mechanisms and continuance intention.

Bootstrapping was identified as a valid method to test the mediation effect in the structural equation modeling by examining how well a structural model that links the antecedent variables to the outcome variables through the mediators fits the observed data (Williams and MacKinnon, 2008; Hayes, 2009). The following criterion need to be satisfied to test the mediating effect: the antecedent variables are significantly associated with outcome variables; the effects of antecedent variables on outcome variables are reduced to 0 (full mediation) or reduced by a significant amount (partial mediation) after adding the mediators; the mediators are significantly associated with outcome variables (Baron and Kenny, 1986; Liang *et al.*, 2007; Shao *et al.*, 2017).

As suggested in Liang *et al.*'s (2007) research, the causal chain signifies dual mediation effect in the research model: trust in the platform mediates the relationship between the four institutional mechanisms and continuance intention, and trust in the driver and perceived risk mediate the relationship between trust in the platform and continuance intention. In order to test the first mediation effect, this study removed trust in the platform from the structural model and added direct links between the four institutional mechanisms and continuance intention. PLS is re-conducted and the empirical results are illustrated in Figure 3.

As suggested in Liang *et al.*'s (2007) research, this study then added trust in the platform in the structural model, and kept the direct links between the four institutional mechanisms and continuance intention. The analysis results of the structural model are illustrated in Figure 4.

By comparing the analysis results between Figures 3 and 4, we note that after adding the mediator of trust in the platform, the path coefficient between payment security and continuance intention reduces from 0.175 ($p < 0.01$) to 0.086 ($p < 0.05$), and the path coefficient between surge pricing and continuance intention reduces from 0.216 ($p < 0.01$) to 0.151 ($p < 0.01$). The empirical results indicate that trust in the platform partially mediates the relationship between payment security and continuance intention, as well as the relationship between surge pricing and continuance intention (Baron and Kenny, 1986; Liang *et al.*, 2007). While after adding the mediator of trust in the platform, driver certification and feedback mechanism have no significant influences on continuance intention. The result indicates that trust in the platform fully mediates the relationship between driver certification and continuance intention, as well as the relationship between feedback mechanism and continuance intention (Baron and Kenny, 1986; Liang *et al.*, 2007). In order to test the second mediation effect (if trust in the driver and perceived risk mediate the relationship between trust in the platform and continuance intention), this study

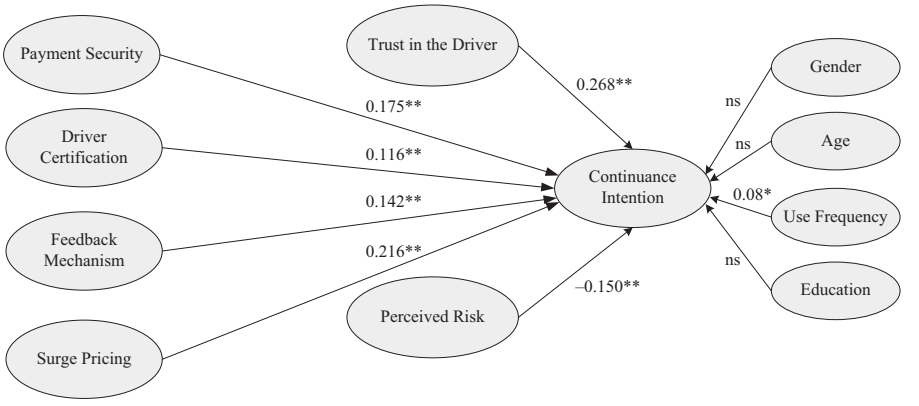
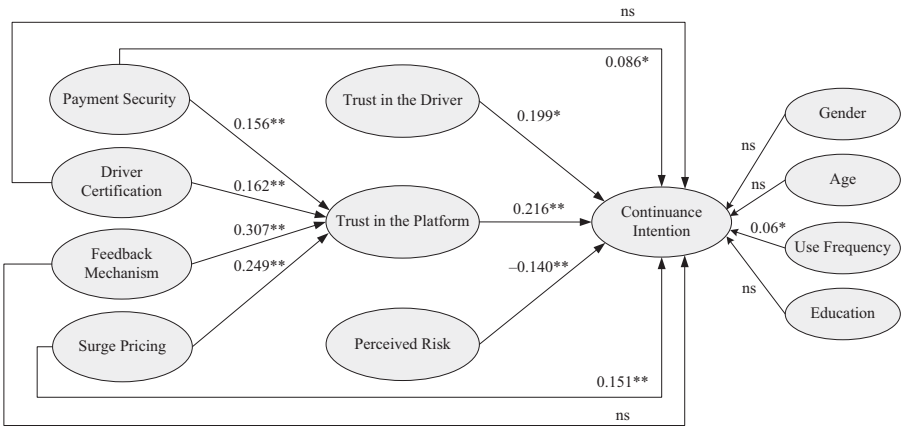



**Figure 3.**
Structural model analysis results – Mediation test I

**Notes:** *,**Represents $p < 0.05$ and $p < 0.01$, respectively



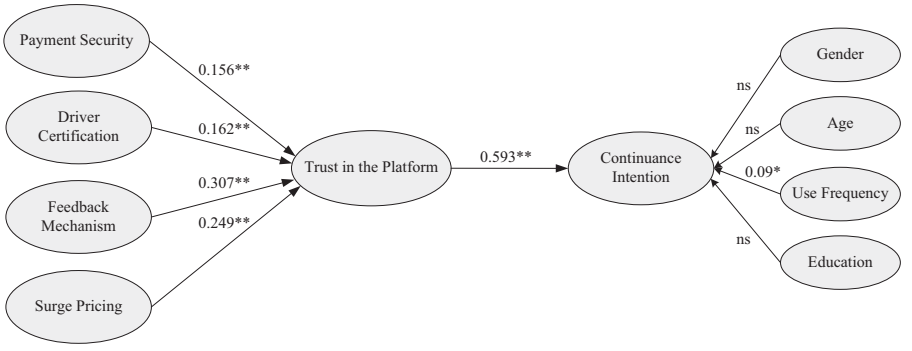

**Notes:** *,**Represents $p<0.05$ and $p<0.01$, respectively

**Figure 4.**
Structural model analysis results – Mediation test II

removed trust in the driver and perceived risk from the structural model and re-conducted the PLS analysis. The empirical results are illustrated in Figure 5. By comparing the analysis results between Figures 5 and 2, we note that the path coefficient between trust in the platform and continuance intention reduces from 0.593($p < 0.01$) to 0.310 ($p < 0.01$) after adding the mediators of trust in the driver and perceived risk. The result indicates that trust in the driver and perceived risk partially mediate the relationship between trust in the platform and continuance intention (Baron and Kenny, 1986; Liang *et al.*, 2007).

## 5. Common method bias analysis

Since all data were self-reported, there is a potential for common method bias resulting from the fact that the predictor and criterion variables are obtained from the same source (Podsakoff *et al.*, 2003). This study conducted a common method bias analysis in SmartPLS to examine if the method is a concern in our study. Following Williams *et al.* (2003) and Liang *et al.*'s (2007) study, we first added a common method factor in the structural model of which indicators included all the principal constructs' indicators, then calculated each indicator's variances substantively explained by the principal construct as well as by the method construct. The analysis results are illustrated in Table VII ($R_1^2$ represents indicators' variances explained by the principal construct; $R_2^2$ represents indicators' variances explained by the method construct).




**Notes:** *,**Represents $p<0.05$ and $p<0.01$, respectively

**Figure 5.**
Structural model analysis results – Mediation test III

| Construct | Indicator | Substantive factor loading | $R_1^2$ | Method factor loading | $R_2^2$ |
|---|---|---|---|---|---|
| Payment security | PS1 | 0.93** | 0.86 | −0.14* | 0.02 |
| | PS2 | 0.81** | 0.66 | 0.04 | 0.00 |
| | PS3 | 0.77** | 0.59 | 0.09 | 0.01 |
| Driver certification | DC1 | 0.73** | 0.53 | 0.15* | 0.02 |
| | DC2 | 0.89** | 0.79 | −0.07 | 0.00 |
| | DC3 | 0.93** | 0.86 | −0.08 | 0.01 |
| Feedback mechanism | FM1 | 0.86** | 0.74 | 0.03 | 0.00 |
| | FM2 | 0.96** | 0.92 | −0.14* | 0.02 |
| | FM3 | 0.69** | 0.48 | 0.17* | 0.03 |
| Surge pricing mechanism | PM1 | 0.90** | 0.81 | −0.04 | 0.00 |
| | PM2 | 0.88** | 0.77 | −0.02 | 0.00 |
| | PM3 | 0.76** | 0.58 | 0.06 | 0.00 |
| Trust in the platform | TP1 | 0.89** | 0.79 | −0.03 | 0.00 |
| | TP2 | 0.78** | 0.61 | 0.07 | 0.00 |
| | TP3 | 0.78** | 0.61 | 0.04 | 0.00 |
| Trust in the driver | TD1 | 0.72** | 0.52 | 0.13* | 0.02 |
| | TD2 | 0.80** | 0.64 | 0.04 | 0.00 |
| | TD3 | 0.98** | 0.96 | −0.17* | 0.03 |
| Perceived risk | PR1 | 0.86** | 0.74 | 0.09 | 0.01 |
| | PR2 | 0.83** | 0.69 | 0.01 | 0.00 |
| | PR3 | 0.72** | 0.52 | −0.10* | 0.01 |
| Continuance intention | CI1 | 0.86** | 0.74 | −0.04 | 0.00 |
| | CI2 | 0.86** | 0.74 | 0.00 | 0.00 |
| | CI3 | 0.80** | 0.64 | 0.04 | 0.00 |

**Notes:** *,**Represents $p < 0.05$ and $p < 0.01$, respectively

**Table VII.**
Common method bias analysis results

As shown in Table VII, the average variances explained by the principal constructs are 0.833 (the average value of $R_1^2$ for all the indicators), while the average variances explained by the method construct is 0.0075 (the average value of $R_2^2$ for all the indicators). The ratio of substantive variance to method variance is about 111:1. In addition, all of the substantive factor loadings are significant, while most of the method factor loadings are insignificant. The results demonstrate that common method bias is not a serious concern in this study (Williams *et al.*, 2003; Liang *et al.*, 2007).

## 6. Theoretical and practical implications

Institution-based trust was recognized as a significant factor in promoting online transactions in the e-commerce research (Pavlou and Gefen, 2004). This study applied institution-based trust in the context of ridesharing and conducted an empirical study to examine the critical institutional mechanisms that are beneficial to build customers' trust in the ridesharing platform of DiDi. Drawing upon the traditional e-commerce research, feedback and payment security were considered as critical market-driven and legally binding mechanisms in the research model (Pavlou and Gefen, 2004). Different from the e-commerce research, this study further introduced surge pricing and driver certification as significant market-driven and legally binding mechanisms based on the institutional environment of ridesharing (iResearch, 2017). The empirical results indicate that perceived effectiveness of payment security, driver certification, feedback and surge pricing can significantly increase customers' trust in the ridesharing platform, which in turn decrease customers' perceived risk and promote their continuance intention. In particular, there exists a trust transfer mechanism between trust in the ridesharing platform and trust in the driver.

For theoretical implications, the research findings make at least four major contributions to the extant literature. Firstly, this study applies institution-based trust from social psychology

in the context of sharing economy to operationalize and examine the perceived effectiveness of four institutional mechanisms in promoting customers' trust and continuance intention in the ridesharing platform. Previous studies mostly focused on the influences of institutional mechanisms on trust formulation in the context of e-commerce (Gefen *et al.*, 2008; Pavlou and Gefen, 2004; Gefen and Pavlou, 2012; Fang *et al.*, 2014), while this study enriches and extends the extant literature of institution-based trust from e-commerce to the sharing economy. The research findings emphasize the significance of market-driven mechanisms combined with legally binding mechanisms in building customers' trust in the ridesharing platform. Secondly, this study introduces surge pricing as a distinct and salient market-driven mechanism in the context of ridesharing. Although surge pricing mechanism has been discussed in the previous literature (Chen *et al.*, 2015; Mohamad *et al.*, 2016), most of the studies focused on the technical issue, while ignoring to evaluate the effectiveness of this mechanism from a user perception perspective. By conducting an empirical study in China, this study conceptualized and operationalized the construct of surge pricing and examined its effectiveness in promoting customers' trust and behavioral intention of ridesharing service. The empirical results suggest that an effective surge pricing mechanism is beneficial to build customers' trust by rationally adjusting the price of ridesharing service according to the real-time demands and supplies. The research findings can contribute to the existing literature of trust-building mechanism from a price value theoretical perspective. Thirdly, this study proposes a new view of trust (one-to-many) in the context of ridesharing. Previous studies mostly focused on trust in a dyadic (one-to-one) relationship between a customer and a service provider (Ert *et al.*, 2016), while this study presents a new perspective of customers' trust in a group of drivers that provide service in a ridesharing platform. The new perspective of trust (one-to-many) enriches the traditional dyadic perspective and puts forward a new avenue for future research to establish effective institutional mechanisms in the ridesharing platform. Furthermore, this study uncovers the trust transfer mechanism from the third-party platform to the service provider in the context of ridesharing. The empirical results suggest that trust in a ridesharing platform is a significant antecedent that determines whether a customer will trust in drivers that provide service in the ridesharing platform. The research findings can contribute to the extant literature of trust transfer theory by extending its application scope from traditional e-commerce to the emerging context of ridesharing.

For practical implications, this study can provide guidelines to the administrators of the ridesharing platform to establish effective institutional mechanisms in order to build customers' trust. Firstly, the administrators need to implement legally binding mechanisms such as driver certification and payment security by providing a rigorous driver identity authentication and establishing a legitimate security policy on the platform. Customers are more likely to trust in the ridesharing platform when they perceive an adequate security guarantee in the platform. Take DiDi as an example, the ridesharing platform has implemented artificial intelligence and face recognition technologies to make a more precise and accurate certification of drivers. Secondly, the administrators need also establish market-driven mechanisms in the platform, in order to provide an efficient and effective ridesharing service. On the one hand, developing an IT-enabled feedback mechanism is beneficial to reduce drivers' opportunistic behaviors and stimulate them to provide better service to the customers. On the other hand, establishing an effective surge pricing mechanism can ensure a rational adjustment of price according to customers' demands and drivers' supplies in different time periods. The administrators need to adopt and implement the two market-driven mechanisms in the platform appropriately so as to enhance customers' trust and promote their subsequent transaction behaviors. Thirdly, the administrators need also recognize that there exists a trust transfer between the ridesharing platform and the drivers. When customers have established trust beliefs in the ridesharing platform, they are more likely to trust in the drivers who provide service on the platform. The trust transfer mechanism requires the administrators to

implement effective structural assurances in the platform. An effective institutional regulation is beneficial to establish a trustworthy environment of ridesharing service, and increase customers' trust in the driver when making transactions in the platform.

## 7. Conclusions and future research directions

Drawing upon institution-based trust, this study developed a research model to examine the influences of four institutional mechanisms on customers' trust and continuance intention in the ridesharing platform of DiDi. A survey was conducted in China and 307 valid questionnaires were collected from DiDi users. Structural equation modeling analysis results suggest that payment security, driver certification, feedback mechanism and surge pricing are significant antecedents in building customers' trust, which in turn promote customers' trust in the driver and reduce their perceived risk of ridesharing service. The mediating test results indicate that the relationship between payment security and continuance intention, as well as surge pricing and continuance intention are partially mediated by trust in the platform, while the relationship between driver certification and continuance intention, as well as feedback mechanism and continuance intention are fully mediated by trust in the platform.

There are some limitations in this study that leave open future research directions. Firstly, this study considered DiDi as a typical third-party platform of ridesharing service in China and selected customers of DiDi as major samples. Future studies can extend the sample size and investigate users from other sharing platforms such as Uber, to obtain more reliable statistical results. Secondly, this study used cross-sectional data to test the theoretical model. Future research can conduct a longitudinal study to examine if the influences of the four institutional mechanisms on trust and continuance intention change over time. Thirdly, this study examined the direct influences of institutional mechanisms on customers' trust belief without considering individual differences in the research framework, such as users' prior experience and acceptance level of sharing economy. Future studies can consider these personal characteristics as moderators in the research model, in order to examine if the relative influences of institutional mechanisms on trust are contingent upon customers' experience or acceptance level of sharing economy.

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## Appendix

| Construct | Instrument |
|---|---|
| Payment security | I believe that DiDi can ensure the safety of my personal property when paying online |
| | I believe that DiDi can ensure the security of my bank card account |
| | I believe that DiDi can ensure the security of the online payment process |
| Driver certification | I believe that drivers' certification mechanism in the DiDi platform ensure that the drivers are eligible and capable to provide service |
| | I feel confident that drivers' certification mechanism in the DiDi platform makes sure that the service is safe |
| | I believe that the drivers' certification mechanism in the DiDi platform is effective |
| Feedback mechanism | I believe that DiDi's Feedback mechanism gives accurate information about the drivers' reputation and service quality |
| | I believe that the Feedback mechanism in the DiDi platform is reliable and dependable |
| | I believe that the Feedback mechanism in the DiDi platform is effective |
| Surge pricing | I believe that the price mechanism in the DiDi platform is appropriate and reasonable |
| | I believe that the price calculation in the DiDi platform is clear and effective |
| | Generally, I can get a faster response by paying the tip in the DiDi platform |
| Trust in the platform | The DiDi platform is in general trustworthy |
| | I believe the service provided in the DiDi platform is safe and reliable |
| | I feel that the DiDi platform is honest and reliable |
| Trust in the driver | I trust the drivers who provide service in the DiDi platform |
| | I believe that the drivers in the DiDi platform are trustworthy |
| | I feel that drivers in the DiDi platform are honest and reliable |
| Perceived risk | The services provided in the DiDi platform is unsafe to a certain extent |
| | There is a high potential for loss involved in using DiDi for travelling |
| | There is a certain risk in the use of DiDi for travelling |
| Continuance intention | I will consider using the DiDi platform for travelling in the future |
| | I will consider using DiDi firstly when I am in need of ridesharing service |
| | My intentions are to continue using DiDi for travelling than use any alternative means |

**Note:** Scale ranging from 1 (strongly disagree) to 7 (strongly agree)

**Table AI.**
Constructs and items

**About the authors**

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# Antecedents and role of individual sociability on participation in mobile collaborative consumption

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## Abstract

**Purpose** – The purpose of this paper is to investigate what may influence participation in mobile collaborative consumption (CC). In particular, the authors investigate the effects of individual sociability and psychological antecedents including enjoyment, social connection, altruistic motivation, reputation, trust and embarrassment on the participation intention in this emerging phenomenon, as well as their relationships.
**Design/methodology/approach** – Survey approach was employed to validate the research model.
**Findings** – Hedonic factor, i.e. enjoyment, and social-related factors including altruistic motivation, reputation and embarrassment emerge as important antecedents of participation in mobile CC. On top of these factors, individual sociability plays an important role, by acting as a direct antecedent of the dependent variable, while also influencing their perceived greater altruistic motivation and reputation from participating in the CC. Yet, sociability has no significant effect on perceived enjoyment and embarrassment associated with the activity, suggesting that addressing these factors may encourage individuals with low sociability to participate.
**Originality/value** – This study taps into mobile technology to support CC in daily consumption activities, and highlights the factors that influence people's participation in such activities. More importantly, the findings suggest that while it is more likely for individuals with high sociability to participate in this emerging form of social activities, for consumers with low sociability, addressing the enjoyment aspect and embarrassment issue of the activities may nonetheless promote their participation.

**Keywords** Social factors, Sociability, Mobile technology, Collaborative consumption
**Paper type** Research paper

## 1. Introduction

Collaborative consumption (CC) is an old phenomenon accrued from offline-based informal exchanges (Ertz *et al.*, 2016a). Consider the following example – a group of consumers want to enjoy quantity discounts yet do not want an entire pitcher of beer. They might look up who are at another table, and persuade them to split a pitcher of beer (Belk, 2014). By coordinating and distributing consumption resources with others, people may gain utilitarian, hedonic, as well as social benefits such as community memberships and connection with others through CC (Ostrom, 1990; Hamari *et al.*, 2016).

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The development of information technologies (IT), especially mobile technologies, has given new impetus to the CC practices, by making them more feasible and at a larger scale spanning various goods or services. With GPS and instant communication services, people are able to micro-coordinate their activities with others, be them friends or strangers (such as in the example above), at the actual place of consumption. In a product or service sharing scenario, people can look up others who are also within the same shopping area via a mobile app (e.g. WeChat's "People Nearby" feature (http://help.wechat.com/cgi-bin/micromsg-bin/oshelpcenter?opcode=2&id=120813euEJVf141023UniUny&lang=en&plat=android&Channel=helpcenter)), share information and coordinate with them instantly via the technology to respond to *ad hoc* demands (Chen *et al.*, 2017; Botsman and Rogers, 2011). For instance, people who are going to the same destination may combine demands and share transportation via Uber pooling. People who encounter a group deal promotion at a shopping place may share the information with those who happen to be nearby via mobile technologies and purchase the products together.

Compared to other forms of consumption, CC is distinctive by its social nature and by affording social-based benefits such as connection with others, and helping out or gaining reputation among like-minded individuals (Habibi *et al.*, 2016; Van de Glind, 2013). However, given its highly social nature, CC may appeal mainly to those who are more sociable, such that they are more willing to engage with unfamiliar others to share consumption resources. How about those with low sociability?

Sociability concerns individual tendency to interact with others, which is presumably an important driver of the development and maintenance of cooperation (Wang *et al.*, 2015; Wolfe and Kasmer, 1988), especially among strangers (Fox, 1984). Compared to those with higher sociability, people inhibited in sociability may prefer being alone, are less likely to participate in daily social events (e.g. parties, and eating and drinking with others) (Watson *et al.*, 1992), and avert to affiliate with strangers (Fox, 1984). Therefore, even when enabled by mobile technologies, people low in sociability may avoid participating in CC given its highly social nature, potentially limiting such activities to highly sociable people. Thus, we ask the following questions: What are the factors affecting people's participation in mobile-enabled CC? What is the extent of importance of sociability in such participation, in relation to these factors and people's participation?

Due to a lack of related mobile apps in the market given the emerging nature of mobile-enabled CC and a consideration to minimize potential interferences, we self-developed a mobile app that specifically focuses on enabling CC campaigns. We employed the mobile app to set up and conducted a CC campaign, and invited our respondents to use the app to experience the CC campaign before providing their responses. This ensures that the responses obtained are not baseless but grounded in real user experience. A total of 200 students from the campus of a large public university were recruited to use our app and experience the mobile CC campaign. In the campaign, they received a CC invitation via the app from our research assistants, who acted as unfamiliar consumers happening to be nearby during the campaign. The invitation message highlighted a chance to enjoy a promoted product at an attractive discount (50 percent off normal price), conditional on accepting the invitation in the app and purchasing the product with the inviter together. The promoted product was a beverage product of a chained cafe in the campus. The inviter (i.e. acted by the research assistants we recruited) was shown on the app interface along with the invitation message, with the physical distance shown as "within 500 meters" from the focal invitee (i.e. one of the 200 respondents). Invitees who received the mobile CC invitation were later asked to indicate their extent of intention to accept the invitation, and their perceptions related to a number of motivational factors as well as their sociability in a survey questionnaire.

Based on a review of the prior literature on IT-enabled CC that highlights three major types of their values, i.e. utilitarian, hedonic and social values (Hwang and Griffiths, 2017;

Hamari *et al.*, 2016; van de Glind, 2013), we identified the following potential motivational factors: perceived economic gain, enjoyment and social factors including social connection, altruistic motivation, reputation and trust, as key antecedents of participating in the mobile CC activity. In addition, we included a potential social deterrence factor associated with the need to interact with a stranger in participation in the CC, i.e. social embarrassment. We further included individual sociability and examined its relationship with users' participation intention and the antecedents of participation in the mobile CC activity.

Our study may contribute to CC literature in several ways. First, while most prior investigations based themselves on online CC platforms (e.g. Airbnb, Carsharing platforms), we set our focus on the relatively novel use of mobile technologies to enable CC. Second, we highlight that in the CC context enabled by mobile technologies that involve sharing among strangers, individual sociability and embarrassment factor are important to consider for, apart from the social benefits it can provide. Third, we comprehensively uncover the antecedents of CC participation, and the effects of sociability on these factors and participation intention. Our findings indicate how consumers different in sociability may perceive the extent of different motivations from participating in the mobile CC, which provide guidance to managers who contemplate to conduct similar CC activities and target consumers with different sociability trait.

The remainder of this paper is organized as follows. In the next section, we first discuss the conceptual background and relevant literature of the study. We then develop our research model and hypotheses. Next, we outline our methodology for data collection and analysis. We then present the results of our data analysis before concluding with a summary of key findings and their implications for theory and practice.

## 2. Conceptual background

### *2.1 Literature on CC*

Although CC is often taken to be web-centered (Harvey *et al.*, 2014; Hamari *et al.*, 2016), it actually accrued from offline-based informal exchanges that are not inherently new (Ertz *et al.*, 2016a). Previously, neighbors or members of a close-knit community resorted to redistribution markets such as garage sales or flea markets to fulfill re-selling or swapping. The advancements of IT enlarge the scope and scale of the exchange systems beyond close social contact boundary to a worldwide level, and enable *ad hoc* exchanges among people who do not previously know each other (Ritzer, 2015; Ertz *et al.*, 2016b). Via web and mobile apps, people may now easily find and coordinate with others who have similar demands, and share or gain access to various goods and services together, such as rooms (e.g. AirBnB, Roomorama), tools (e.g. SnapGoods), cars and bikes (e.g. RelayRides, Wheelz) and *ad hoc* taxi services (e.g. Uber, Lyft).

The widespread practices facilitated by IT favor CC a socioeconomic groundswell to transform business, consumerism and the way people live with its economic and social benefits (Botsman and Rogers, 2011; Cardona *et al.*, 2014). In 2016, according to the Canadian-based Kijiji Secondhand Economy Index focusing on tangible goods only, it was estimated that about 84 percent of consumers acquired or disposed of pre-owned goods through CC schemes, through either online or offline exchange channels (Ertz *et al.*, 2016b).

Formally, CC was coined by Felson and Spaeth (1978) as events in which one or more persons consume economic goods or services in the process of engaging in joint activities with one or more others (p. 614). However, as the conceptualization is too generic and may include trivial activities such as speaking on the telephone with friends, Belk (2014) modified the definition and highlight "jointly coordinating the acquisition and distribution of a resource for a fee or other compensation" as a defining characteristic of CC. Consistent with this, we conceptualize CC as peer-to-peer-based activity of obtaining, giving or sharing the access to goods or services in which consumers attain mutual consumption benefits (Belk, 2014;

Botsman and Rogers, 2010; Hamari *et al.*, 2016). Specifically, CC practices are distinctive with three crucial features. The first is entailing high levels of peer-to-peer cooperation and interaction (Belk *et al.*, 1988; Bardhi and Arnould, 2005). The second and third are combining demands and offering mutual consumption benefits (Buczynski, 2013; Scaraboto, 2015).

### *2.2 Antecedents of CC participation*

The extant studies on CC are mostly qualitative and focus on disentangling and classifying various manifestations of the term (Belk, 1988, 2010, 2014; Lamberton and Rose, 2012; Ozanne and Ballantine, 2010; Wittel, 2011). Despite the many beliefs that the shift in social technologies and consumer attitudes may jointly propel CC to greater popularity (e.g. Bardhi and Eckhardt, 2012; Botsman and Rogers, 2010), empirical investigations on what may influence CC participation remain limited, and an overarching theoretical framework to organize the factors is currently missing.

Among the currently limited literature, Hwang and Griffiths (2017) find that utilitarian value such as economic benefits, hedonic value such as enjoyment and symbolic value related to consumers' increasing awareness of the importance of sustainability (e.g. better resource use), constitute three significant drivers of young consumers' use of CC services (e.g. car sharing). Based on the self-determination theory, prior studies on parallel sharing and context-specific adjustment, Hamari *et al.* (2016) similarly identifies economic benefits, enjoyment and sustainability as important antecedents of people's participation in an online CC platform (Sharetribe[1]). In addition, their study also highlights social-related factor, in particular social reputation, as a participation antecedent that should not be ignored in the CC context.

Indeed, social aspect has been underscored to be indivisible to online CC being sociotechnical systems (Gheitasy *et al.*, 2014). Entailing peer-to-peer collaboration and interaction, CC provides opportunities for participants to develop social connections such as making new friends (Botsman and Rogers, 2010). Through unstructured in-depth interviews, Van de Glind (2013) find that the main motivations of people using CC platforms are social related, e.g. seeking social connections and offering help out of altruistic motivation. Another social-related factor of people engaging in CC is argued to be community memberships (Ostrom, 1990; Nelson and Rademacher, 2009). In addition, trust in strangers has been identified as an important factor determining the use of peer-to-peer CC services such as Airbnb (Tussyadiah, 2015).

Thus, viewing CC as a sociotechnical system comprising salient symbolic and social elements (interaction and collaboration among consumers for outcomes beyond individual benefits) in addition to traditional consumption values (Belk, 2014; Botsman and Rogers, 2010; Hamari *et al.*, 2016), the previous studies have identified factors motivating people to participate in various forms of CC that generally fall under the following four categories: utilitarian, hedonic, symbolic, and social factors. These categories of factors are also consistent with the classification proposed by qualitative research on consumer motives of CC participation (e.g. Benoit *et al.*, 2017). Along the four categories, the following factors in Figure 1 (also summarized in Table AI) are derived and posited to influence individual participation in mobile CC in this study.

It is important to recognize the limitations that exist in the extant literature on individual motivations to participate in CC. First, prior studies mostly based their investigations on people participation in CC in online platforms such as Airbnb, Zipcar and Sharetribe (e.g. Hamari *et al.*, 2016; Bucher *et al.*, 2016). What may influence people participation in the emerging CC enabled by mobile technologies, which may facilitate *ad hoc* interaction among strangers in the actual consumption context, has received scant attention. Second, among the social factors investigated in the literature, benefits of CC participation (such as social connection, reputation and altruistic motivation) have been the focus; yet, possible deterrence factors associated with the social-based CC, such as embarrassment or anxiety to deal with strangers, has been largely ignored.

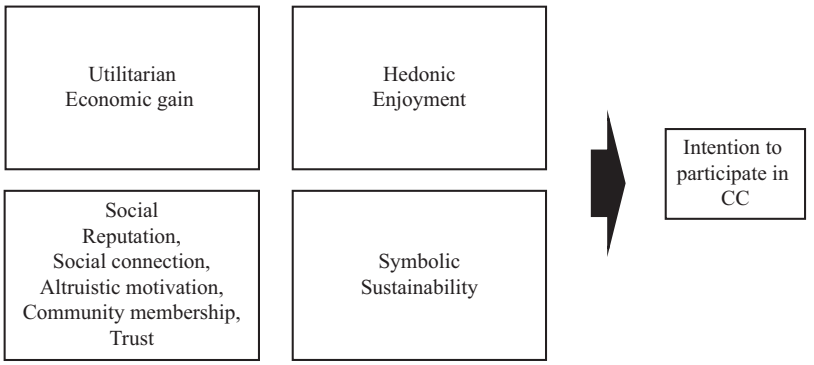


**Figure 1.**
Framework of categories of factors influencing cc participation

*2.3 Individual sociability and CC participation*

In addition to the motivational and deterrence factors of participating in CC, it may also be important to consider the role of individual sociability with regard to their likelihood of CC participation, given the salient social aspect of CC. For instance, Bucher *et al.* (2016) highlighted individuals' sociability as a predictor of their general social motives, and thereby their intention of participating in an online CC platform.

Individual sociability concerns the propensity of an individual to be in the company of people rather than being alone (Cheek and Buss 1981). A sociable person generally tends to be conversational and interpersonally active, and is more likely to affiliate with unfamiliar people (Lee and Ashton, 2004; Fox, 1984). Research on social media and social commerce provides empirical evidence that sociability predicts higher intention to participate in activities that involve social interactions with others. For instances, Wang *et al.* (2015) found that higher individual sociability predicts greater SNS use. Dhaundiyal and Coughlan (2016) indicated that a sociable person looks forward to opportunity for social shopping, with a key objective of meeting people. Given the highly social nature of CC activity that involves interacting with others including strangers, sociability may thus play a non-trivial role in influencing individual participation in CC. However, to the best of our knowledge, no empirical investigation has comprehensively examined the effects of individual sociability in the CC context, including not only its direct effect on CC participation but also its possible links to the psychological antecedents.

Collectively, we include the following factors in our research on individual participation in mobile CC, along the major categories of CC participation antecedents: economic gain that is utilitarian related; enjoyment that is hedonic related; social connection, altruistic motivation, reputation, trust and embarrassment that are social related. We do not include the social factor of community membership and the symbolic value of sustainability, as our mobile CC context is concerned with leveraging the mobile advantage of enabling *ad hoc*, spontaneous interactions among strangers to engage in the joint consumption of a product at a discounted price. In addition, we include individual sociability to account for its possible direct effect as well as its effects on the focal antecedents.

Below we discuss our hypothesis development.

## 3. Research model and hypothesis development

We first provide our arguments for the expected direct effect of individual sociability and also its effects on the included antecedents of individual participation in mobile CC. Per the framework of the theory of reasoned action, personality traits as external variables may influence individual beliefs about the outcomes associated with conducting a

behavior, which in turn shape the individual's intention to perform the behavior (Fishbein and Ajzen, 1975). In line with the theoretical rationale, we theorize that individual sociability, as a personality trait, influences the focal antecedents of participating in CC, and in turn influence their CC participation intention. Our research model is summarized in Figure 2.

### *3.1 Direct effect of individual sociability on CC participation*

As discussed above, individual sociability is the tendency of an individual to be in the company of people rather than being alone (Cheek and Buss 1981). A sociable person generally prefers to actively engage in social interaction with peers (Gifford and Gallagher, 1985), enjoys being engaged in daily social events such as skiing, parties, and eating and drinking with others (Watson *et al.*, 1992). Thus, a sociable person may look forward to an opportunity to participate in CC so as to enjoy the social-based benefits of CC. Accordingly, we hypothesize the direct effect of individual sociality on CC participation as follows:

*H1.* People with higher sociability have a higher intention to participate in mobile CC by accepting a CC invitation from another user.

### *3.2 Psychological antecedents, CC participation and individual sociability*

*Economic gain.* Economic gain has been corroborated as a main utilitarian value for people to engage in CC in previous studies (e.g. Hamari *et al.*, 2016; Van de Glind, 2013; Möhlmann, 2015). In online sharing platforms such as Airbnb, obtaining utilitarian gain in the form of charging monetary fees is a common practice (Lamberton and Rose, 2012). These fees serve as an incentive for individuals to share their possessions; furthermore, they constitute a way to cover costs that arise from sharing (e.g. increased use of water or electricity during apartment sharing) (Benoit *et al.*, 2017). In offline CC models, economic benefits, such as a fee or other compensation also serve as an important reason for people to engage in the exchange or redistribution of a resource spontaneously (Belk, 2014).

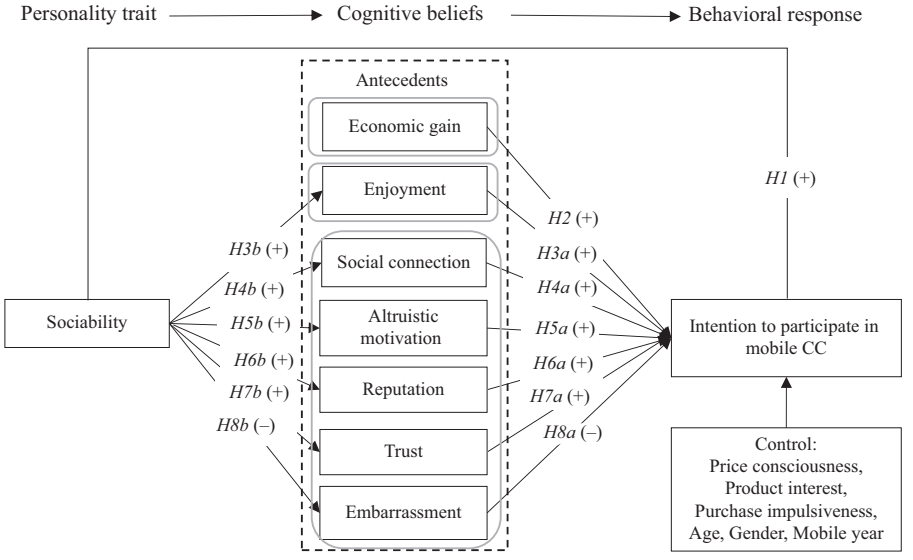


**Figure 2.** Research model

In this study, we offer a price discount in the mobile CC campaign conducted and accordingly expect the perceived economic gain of the activity as a main motivator for people to participate in the CC:

*H2.* Perceived economic gain positively influences people's intention to participate in mobile CC by accepting a CC invitation from another user.

*Enjoyment*. Enjoyment as a hedonic value is a fundamental intrinsic motivation of people participation in CC (Deci and Ryan, 1985; Lindenberg, 2001). For online sharing behavior across technological contexts, such as information system use (Van der Heijden, 2004), open source software development (Roberts *et al.*, 2006), information sharing (Nov, 2007; Nov *et al.*, 2010) and knowledge sharing online (Hsu and Lin, 2008), enjoyment has been an established intrinsic motivational factor. In the same vein, we include perceived enjoyment as a factor in motivating people participation in our mobile CC context. We, thus, hypothesize the following:

*H3a.* Perceived enjoyment positively influences people's intention to participate in mobile CC by accepting a CC invitation from another user.

While we do not expect individual sociability to affect economic gain that is largely non-social in nature, we expect this factor to influence the perceived enjoyment people derived from participating in mobile CC. Trait studies have provided evidence that individual sociability predicts their enjoyment in various social activities. For example, Lucas *et al.* (2000) indicated that sociable individuals are more likely to enjoy parties and other gatherings. Chen and Fu (2008) conducted survey and found that adults higher in sociability are more likely to enjoy participating in physical activities with others. Given the social nature of CC activity, we believe that people higher in sociability may perceive higher level of enjoyment from participating the mobile CC. Thus, we hypothesize the following:

*H3b.* People higher in sociability perceive greater enjoyment from participating in the mobile CC.

*Social connection*. Seeking social connection is an important motive in participating in sharing platforms (Belk, 2014; Wittel, 2011). Since social network and collaboration fuel CC, direct peer-to peer interactions and the sharing of personal experiences allow participants to create and establish social connections with others. Participating in CC is an opportunity to make new friends and to develop meaningful connections (Botsman and Rogers, 2010). CC platforms not only help strangers to meet and communicate online, they also allow individuals and communities to meet physically. Similarly, people who participate in the mobile CC are to interact with nearby strangers and jointly engage in a consumption activity with them in our context. The interaction process provides people a way to know a new friend. We, therefore, include social connection as a potential gain from participating in the mobile CC and hypothesize the following:

*H4a.* Perceived social connection positively influences people's intention to participate in mobile CC by accepting a CC invitation from another user.

Individuals high in sociability tend to be conversational and like being with others rather than being alone (Lee and Ashton, 2004), suggesting that they have a stronger need to meet with other and develop social connections. Research on social media indicated that sociability predicts online social connections. For example, Wang *et al.* (2015) showed that people higher in sociability are more likely to use SNS for its social function. Based on a large-scale study, Mark and Ganzach (2014) suggested that global internet use for social connection is positively related to extraversion, which is associated with higher sociability (Barrick and Mount, 1991). Therefore, in our study, we expect that people higher in

sociability may perceive greater social connection gains from participating in mobile CC. We, thus, hypothesize the following:

*H4b.* People higher in sociability perceive greater social connection from participating in the mobile CC.

*Altruistic motivation*. CC is the process of attaining mutual benefits via helping each other (Chen *et al.*, 2017). In addition to self-benefits, Van de Glind (2013) highlighted the importance of "helping out" in motivating people to participate in CC. Since CC is a joint activity and sharing is mostly spontaneous, altruistic motivation, referring to the degree to which a person is willing to increase other people's welfare without expecting returns, may explain people participation in such activity (Hsu and Lin, 2008). In sharing-related activities in other contexts, such as knowledge sharing (Chang and Chuang, 2011; Lin and Huang, 2013), product information sharing (Tang *et al.*, 2016) and shopping experience sharing (Ho and Dempsey, 2010; Ortiz *et al.*, 2017), altruistic motivation has been identified as one of the salient factors in motivating people's participation. In our context, accepting the mobile CC invitation from another user will benefit the inviter with an opportunity to enjoy a product discount, even when the focal person is not keen in the product involved. Therefore, we hypothesize the following:

*H5a.* Perceived altruistic motivation positively influences people's intention to participate in mobile CC by accepting a CC invitation from another user.

Trait studies found that many altruists tend to be highly sociable (Krebs, 1970). Several empirical studies provide evidence that sociability may predict people's tendency to behave pro-socially, such as engaging in helping behaviors. In observational studies of preschool children, the incidence of children's helping behavior in the classroom was positively correlated with the number of social interactions in which they engaged (Eisenberg *et al.*, 1984; Eisenberg-Berg and Hand, 1979). In situations of helping strangers in everyday context, results of a laboratory experiment indicated that children higher in sociability may be more likely to offer help to strangers than those lower in sociability (Stanhope *et al.*, 1987). Therefore, in our study, we posit that people higher in sociability may perceive higher altruistic motivation in participating in the mobile CC. We, thus, hypothesize the following:

*H5b.* People higher in sociability perceive greater altruistic motivation from participating in the mobile CC.

*Reputation*. Reputation refers to the degree to which a person believes that participation in CC can enhance their social status. Gaining reputation is indicated as an important driver of participation in sharing and other online collaboration activities (Davenport and Prusak, 1998; Wasko and Faraj, 2005; Botsman and Rogers, 2010). For instance, Anthony *et al.* (2009) reported that reputation is an important motivational factor for Wikipedia editors, while Hsu and Lin (2008) showed that gaining reputation is crucial for knowledge sharing. Wasko and Faraj (2005), in their study on an online community of legal professionals, find that desire to enhance reputation explains why individuals share their expertise. In our mobile CC context, by accepting the invitation from another user, people may gain reputation from the inviter and the broader community by being someone willing to be part of a beneficial activity to the consumer community, and making the mutual benefits from the CC materialized through their participation. Accordingly, we hypothesize the following:

*H6a.* Perceived reputation positively influences people's intention to participate in mobile CC by accepting a CC invitation from another user.

Sociability has been found to be positively correlated with individuals' public self-consciousness (Cheek and Buss, 1981; Carver and Glass, 1976). Several studies indicated that people higher in

public self-consciousness are more oriented toward gaining approval and reputation from others (Carver and Scheier, 1981, 1985; Fenigstein *et al.*, 1975). Compared to unsociable people, sociable people are more likely to be aware of themselves, more concerned about their social identities and care about how they are evaluated by others. Accordingly, we posit that people higher in sociability may perceive greater reputation that is obtainable from participating in mobile CC. Accordingly, we hypothesize the following:

*H6b.* People higher in sociability perceive greater reputation motivation from participating in the mobile CC.

*Trust*. Trust is defined as "a psychological state that exists when one party has confidence in an exchange partner's reliability and integrity" (Kimpakorn and Tocquer, 2010, p. 380). In cooperative and collaboration activities, trust is a core variable explaining why individuals tend to cooperate with each other (Cox *et al.*, 2009; Morgan and Hunt, 1994, p. 26). Lacking of trust is the most cited barrier to CC (Olson, 2013). As suggested by Botsman and Rogers (2010), CC implies trusting strangers to a varying degree. For example, to use peer-to-peer accommodation is to believe that it is safe to spend some times at the guest room of a stranger (Benoit *et al.*, 2017). In the same vein, to be involved in a mobile CC is to believe that the inviting stranger can be trusted and is genuine in his/her invitation for the joint consumption. Therefore, in this context, we include trust in the inviter as an antecedent of accepting a mobile CC invitation. This led to the following hypothesis:

*H7a.* Trust positively influences people's intention to participate in mobile CC by accepting a CC invitation from another user.

Trust in strangers could be partly attributed to the effects of antecedent dispositional traits such as optimism, extraversion or sociability (Usianer, 2002; Welch *et al.*, 2007). Previous studies indicated that sociability highly predicts people's tendency to trust in various contexts. For example, in healthcare, Spake and Megehee (2010) showed that sociability highly predicts consumer's trust in their physicians. In social commerce for apparel shopping via SNS, Kang and Johnson (2013) suggested sociability is positively related to trustworthiness of SNSs, and intentions to engage in social shopping. In our context, we posit that people higher in sociability may tend to perceive greater trust in the inviting stranger:

*H7b.* People higher in sociability perceive higher level of trust in the inviter of a mobile CC.

*Embarrassment*. Embarrassment is a widely occurring emotion that affects many facets of social behavior (Dahl *et al.*, 2001). Due to concerns of what others will think about oneself and fears of creating a negative impression, embarrassment occurs during social contacts (Cheek and Buss, 1981), product purchase (e.g. Gannon, 1998; Wilson and West, 1981) and product information sharing contexts especially in the presence of strangers (Keltner and Buswell, 1997; Lewis *et al.*, 1991).

Compared to online context in which interactions are anonymous and "distant" away (Davenport, 2002), people are more likely to be concerned with embarrassment to interact with strangers in the physical context (Gudykunst and Nishida, 2001; Keltner and Buswell, 1997), as in our mobile context. Embarrassment may lead to negative consequences, such as decreasing the likelihood of a participant accepting a request from unknown people (Brown and Garland 1971). This may include accepting an invitation from a stranger to participate in a mobile CC. Drawing on previous conceptualizations of embarrassment, we define embarrassment as an expected aversive and awkward emotional state that increases the

threat of unwanted evaluation from a real or imagined social audience (Schlenker, 1980), and hypothesize the following:

*H8a.* Perceived embarrassment negatively influences people's intention to participate in mobile CC by accepting a CC invitation from another user.

Embarrassment is generally regarded as a form of social anxiety closely related to shyness, which refers to the discomfort and inhibition that may occur in the presence of others (Cheek and Buss, 1981). There is also evidence that embarrassment correlates with low sociability (Neto, 1996). In addition, introversion, which is a related concept with low sociability, is indicated to be positively correlated with embarrassment (Cheek and Buss, 1981; Pilkonis, 1977; Watson and Friend, 1969). Using a survey method, Edelmann and McCusker (1986) suggested that actors who are introverted (usually low in sociability) are particularly susceptible to embarrassment. Therefore, in our study, we posit that people higher in sociability may perceive less embarrassment of participating in the mobile CC:

*H8b.* People higher in sociability perceive lesser embarrassment from participating in the mobile CC.

### *3.3 Control variables*

In addition to the hypothesized relationships, we controlled a number of variables that may affect our results: individual tendency to take up a promotion, including price consciousness and product interest that may increase consumer tendency to react to the product discount offer (Dickerson and Gentry, 1983; Xu *et al.*, 2009), and purchase impulsiveness that may be triggered upon receiving the promotional message (Rook and Fisher, 1995). For demographic variables, we controlled for users' experience of using mobile phone (mobile year), as well as their age and gender.

## 4. Research methodology

### *4.1 Data collection*

To investigate consumer perceptions when receiving a CC invitation via mobile in a realistic manner, the study was organized in two phases: conducting a mobile CC campaign, and administering a survey questionnaire to elicit responses from the participants who experienced the mobile CC campaign. We published the recruitment information on the public bulletin boards of the university, and on students' WeChat (similar to WhatsApp) groups. A total of 200 students were recruited from the campus of a large public university in China to experience in the CC campaign via our app. This helped them form a realistic understanding of such a CC before they provided their responses to our survey. In the first phase, we conducted the mobile CC campaign based on our self-developed mobile app. We engaged research assistants to act as consumers and help us disseminate the CC invitation message during the campaign. The 200 student participants received the CC promotional messages on the app, which highlighted a chance to enjoy a promoted product (coffee) at an attractive discount (50 percent off normal price), conditional on accepting the invitation from a nearby inviter (i.e. the research assistants) and purchasing the products with the inviter together. The participants after reading the message via the app interface were then asked to indicate their acceptance intention as well as the focal psychological factors in the survey in the second phase.

Since the mobile app was new to the participants, we provided a short demonstration to them prior to the campaign to make sure they know how to use the app. We informed the participants that they were to help test a new mobile app, and they would receive a message on the app every day at a specific time (i.e. 10 a.m.) during the course of the study ( four days). They were told that the message they receive via the app might consist of authentic

information related to their everyday living on the campus, such as campus news and lecture information. To obtain an incentive at the end of the study (approximately $11), the participants were to check in the app during a fixed time interval (i.e. 10–11 a.m.) every day, read the information received in the app, and decide whether to respond if applicable.

The mobile CC invitation message was sent on the third day with the help of our assistants (after the participants were familiar with the use of the app). On receiving the invitation message, participants could check the details of the message via the app interface, along with the inviter (i.e. the research assistant) information, including the inviter name and physical distance from them. The physical distance of the inviter is shown to be "within 500 meters," and the inviter is a complete perfect stranger for all the participants (double-checked in the questionnaire in the second phase). After reading the message, the participants were asked to fill in a survey to indicate their perceptions with regard to the mobile CC campaign.

Among the 200 participants, we collected 192 effective responses excluding those who did not check in the app in a timely manner during the four-day study period per our instructions, who failed to recall the content of the promotion message when promoted in the survey, suggesting they might not be serious toward the mobile CC campaign, who reported being familiar with the inviter. There were 79 males (41.1 percent) and 113 females (58.8 percent). The average age was 19.8 and 54 percent of them have an experience of using mobile phone for over six years. The respondents' demographic statistics are presented in Table I. We checked if there was a difference between the excluded respondents and the remaining ones; no significant difference was found.

### *4.2 Instrument development*

To ensure the validity of the survey instrument, we adopted existing measurements whenever available (Nunnally and Bernstein, 1994). We also made necessary adaptations to the measurements according to our research context. The questionnaire uses a seven-point Likert scale. The survey instrument is presented in Table AII.

In developing the questionnaire, we validated the construct validity in three steps. First, we consulted experienced researchers to assess the face validity of the measurements and correct the wording of the items where applicable. Second, a pre-test with eight subjects was conducted to collect both qualitative and quantitative feedbacks to the survey instrument. Minor revisions were made based on the feedbacks. Third, we conducted a pilot study with 80 subjects. An exploratory factor analysis on the data indicates that the instrument possesses satisfactory convergent and discriminant validity.

### *4.3 Reliability and validity*

Following the two-step approach recommended by Anderson and Gerbing (1988), we first examined the measurement model to verify the reliability and validity of the instrument and then assessed the structural model. SmartPLS 3.0 (Ringle *et al.*, 2005) was used to estimate both the measurement and structural models, given the exploratory nature of this study.

| Variable | Values | *N* | % | Variable | Mean | SD | Min. | Max. |
|---|---|---|---|---|---|---|---|---|
| Gender | Female | 113 | 58.8 | Age | 19.781 | 1.771 | 17 | 26 |
| | Male | 79 | 41.1 | | | | | |
| Mobile phone experience (year) | Less than 1 year | 6 | 3.13 | | | | | |
| | 1–2 years | 10 | 5.21 | | | | | |
| | 3–4 years | 20 | 10.42 | | | | | |
| | 4–5 years | 51 | 26.56 | | | | | |
| | Over 6 years | 105 | 54.69 | | | | | |

**Table I.**
Demographic information

We performed principal components factor analysis and confirmatory factor analysis to assess the reliability and validity of the scales. Convergent validity is assessed with three criteria: first, standardized path loadings, which are indicators of the degree of association between the underlying latent factor and each item, should be greater than 0.70 and statistically significant (Gefen *et al.*, 2000). Second, composite reliabilities, as well as Cronbach's $\alpha$s, should be larger than 0.70 (Nunally, 1978). Third, the average variance extracted (AVE) for each factor should exceed 0.50 (Fornell and Larcker, 1981).

As shown in Table II, one item of the control variable, product interest, had a slightly lower path loading than the recommended value (i.e. 0.689, which is slightly lower than 0.70), but all other criteria including AVE, Cronbach's $\alpha$ and composite reliability for product interest are satisfactory (AVE = 0.609; Cronbach's $\alpha$ = 0.704; composite reliability = 0.822). Besides, the path loadings for other constructs are greater than 0.70 and all of them are significant. The reliability measures are all above 0.70 and the AVEs are all above 0.50. Thus, convergent validity requirements are satisfied.

Discriminant validity is assessed by comparing the square root of the AVE of each construct to its correlations with other constructs (Fornell and Larcker, 1981). The results as well as the descriptive statistics are reported in Table III, which indicates satisfactory

| Construct | Item | Loading | Average variance extracted (AVE) | Cronbach's $\alpha$ | Composite reliability |
|---|---|---|---|---|---|
| Economic gain | GAIN1 | 0.852 | 0.770 | 0.853 | 0.909 |
| | GAIN2 | 0.869 | | | |
| | GAIN3 | 0.910 | | | |
| Enjoyment | ENJ1 | 0.892 | 0.820 | 0.890 | 0.932 |
| | ENJ2 | 0.930 | | | |
| | ENJ3 | 0.894 | | | |
| Intention to participate in mobile CC | ACC1 | 0.941 | 0.879 | 0.862 | 0.935 |
| | ACC2 | 0.934 | | | |
| Social connection | CON1 | 0.953 | 0.904 | 0.894 | 0.950 |
| | CON2 | 0.949 | | | |
| Altruistic motivation | ALT1 | 0.949 | 0.913 | 0.953 | 0.969 |
| | ALT2 | 0.959 | | | |
| | ALT3 | 0.958 | | | |
| Reputation | REP1 | 0.771 | 0.744 | 0.825 | 0.897 |
| | REP2 | 0.910 | | | |
| | REP3 | 0.899 | | | |
| Trust | TRU1 | 0.890 | 0.830 | 0.897 | 0.936 |
| | TRU2 | 0.911 | | | |
| | TRU3 | 0.930 | | | |
| Embarrassment | EMB1 | 0.918 | 0.817 | 0.891 | 0.930 |
| | EMB2 | 0.954 | | | |
| | EMB3 | 0.835 | | | |
| Sociability | SOC1 | 0.918 | 0.835 | 0.802 | 0.910 |
| | SOC2 | 0.909 | | | |
| Price consciousness | PRI1 | 0.738 | 0.621 | 0.710 | 0.830 |
| | PRI2 | 0.892 | | | |
| | PRI3 | 0.723 | | | |
| Product interest | PRO1 | 0.897 | 0.609 | 0.704 | 0.822 |
| | PRO2 | 0.740 | | | |
| | PRO3 | 0.689 | | | |
| Purchase impulsiveness | IMP1 | 0.865 | 0.689 | 0.779 | 0.869 |
| | IMP2 | 0.804 | | | |
| | IMP3 | 0.821 | | | |

**Table II.** Construct validity and reliability

**Table III.**
Descriptive statistics and correlation matrix

| | Mean | SD | Acceptance intention | Social connection | Altruistic motivation | Reputation | Trust | Embarrassment | Sociability | Economic gain | Enjoyment | Price consciousness | Product interest | Purchase impulsiveness | Age | Gender | Mobile year |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Intention to participate in mobile CC | 4.154 | 1.557 | *0.937* | | | | | | | | | | | | | | |
| Social connection | 3.734 | 1.267 | 0.221 | *0.951* | | | | | | | | | | | | | |
| Altruistic motivation | 4.870 | 1.571 | 0.379 | 0.012 | *0.956* | | | | | | | | | | | | |
| Reputation | 3.660 | 1.109 | 0.307 | 0.300 | 0.221 | *0.862* | | | | | | | | | | | |
| Trust | 4.177 | 1.108 | 0.181 | 0.297 | 0.103 | 0.278 | *0.911* | | | | | | | | | | |
| Embarrassment | 5.148 | 1.138 | −0.247 | −0.085 | −0.216 | 0.059 | −0.287 | *0.904* | | | | | | | | | |
| Sociability | 3.094 | 1.387 | 0.206 | 0.058 | 0.263 | 0.274 | 0.163 | −0.075 | *0.914* | | | | | | | | |
| Economic gain | 4.882 | 1.138 | 0.368 | 0.301 | 0.177 | 0.051 | 0.103 | −0.205 | 0.086 | *0.878* | | | | | | | |
| Enjoyment | 4.649 | 1.173 | 0.416 | 0.261 | 0.307 | 0.153 | 0.155 | −0.088 | 0.068 | 0.469 | *0.905* | | | | | | |
| Price consciousness | 4.734 | 1.053 | 0.22 | 0.055 | 0.213 | 0.264 | 0.008 | −0.099 | 0.233 | 0.187 | 0.091 | *0.788* | | | | | |
| Product interest | 4.160 | 1.131 | 0.402 | 0.273 | 0.21 | 0.192 | 0.071 | −0.087 | 0.211 | 0.413 | 0.379 | 0.106 | *0.780* | | | | |
| Purchase impulsiveness | 4.111 | 1.190 | 0.086 | 0.170 | 0.099 | 0.196 | 0.143 | −0.04 | 0.154 | 0.086 | 0.151 | 0.098 | 0.169 | *0.830* | | | |
| Age | 19.781 | 1.771 | 0.144 | 0.058 | 0.058 | 0.221 | 0.297 | −0.22 | −0.096 | 0.106 | −0.005 | 0.113 | 0.053 | −0.051 | *1* | | |
| Gender | 1.589 | 0.493 | 0.147 | 0.026 | 0.113 | 0.149 | 0.159 | −0.051 | −0.049 | 0.167 | 0.246 | 0.078 | 0.044 | 0.187 | 0.100 | *1* | |
| Mobile year | 4.245 | 1.042 | −0.079 | 0.002 | 0.026 | 0.077 | 0.012 | −0.040 | 0.070 | 0.059 | 0.054 | −0.016 | 0.021 | 0.067 | 0.114 | 0.024 | *1* |

**Note:** The diagonal elements in italic are the square root of the AVE of the respective construct

discriminant validity. In summary, our measurement model possesses satisfactory convergent validity and discriminant validity.

*4.4 Hypotheses testing*

We then proceed to test the structural model using SmartPLS 3.0 (Ringle *et al.*, 2005). Table IV presents the results of our analyses and Figure 3 summarizes the hypotheses testing results. Specifically, among the psychological antecedents included, hedonic factor (enjoyment), social factors including altruistic motivation and reputation are significantly associated with higher acceptance intention (i.e. *H3a*, *H5a* and *H6a* were supported), while social deterrence factor, i.e. perceived embarrassment is significantly associated with lower acceptance intention (*H8a* were supported). However, utilitarian factor (perceived economic gain), and social factors including expected social connection and trust have no salient effects on the acceptance intention in our context (i.e. *H2*, *H4a* and *H7a* were not supported).

For the effects of individual sociability, we find that the direct effect is significant; in other words, the higher sociability is associated with a higher intention to accept the mobile CC invitation (i.e. *H1* was supported). As for the links between sociability and the antecedents of CC participation, we find that sociability is significantly associated with social factors including expected altruistic motivation, and gaining reputation (i.e. *H5b* and *H6b* were supported), while having a weak effect on social connections and trust (significant at $p < 0.10$; i.e. *H4b* and *H7b* is partially supported). However, sociability has no significant effect on hedonic factor, (enjoyment) and social deterrence factor, i.e. embarrassment associated with the mobile CC activity (i.e. *H3b* and *H8b* were not supported), while the two factors are significant determinants of participation intention in our context.

| Hypotheses | Results of analyzing the relationships | Coefficient | SD | *T*-statistic | *p*-value |
|---|---|---|---|---|---|
| *H1* | Sociability → participation intention | 0.127** | 0.044 | 2.874 | 0.004 |
| *H2* | Economic gain → participation intention | 0.117 | 0.081 | 1.434 | 0.152 |
| *H3a* | Enjoyment → participation intention | 0.198* | 0.088 | 2.256 | 0.024 |
| *H3b* | Sociability → enjoyment | 0.069 | 0.086 | 0.808 | 0.419 |
| *H4a* | Social connection → participation intention | 0.002 | 0.079 | 0.024 | 0.981 |
| *H4b* | Sociability → social connection | 0.183**** | 0.103 | 1.775 | 0.076 |
| *H5a* | Altruistic motivation → participation intention | 0.172* | 0.077 | 2.238 | 0.025 |
| *H5b* | Sociability → altruistic motivation | 0.264** | 0.085 | 3.092 | 0.002 |
| *H6a* | Reputation → participation intention | 0.204** | 0.076 | 2.689 | 0.007 |
| *H6b* | Sociability → reputation | 0.274*** | 0.075 | 3.646 | 0.000 |
| *H7a* | Trust → participation intention | 0.005 | 0.073 | 0.074 | 0.941 |
| *H7b* | Sociability → trust | 0.162**** | 0.097 | 1.679 | 0.093 |
| *H8a* | Embarrassment → participation intention | −0.148* | 0.073 | 2.033 | 0.042 |
| *H8b* | Sociability → embarrassment | −0.076 | 0.09 | 0.848 | 0.397 |
| Control | Product interest → participation intention | 0.19* | 0.075 | 2.523 | 0.012 |
| Control | Price consciousness → participation intention | 0.048 | 0.072 | 0.657 | 0.511 |
| Control | Purchase impulsiveness → participation intention | −0.045 | 0.082 | 0.545 | 0.586 |
| Control | Age → participation intention | 0.012 | 0.065 | 0.185 | 0.854 |
| Control | Gender → participation intention | 0.076 | 0.057 | 1.329 | 0.184 |
| Control | Mobile year → participation intention | −0.132* | 0.055 | 2.388 | 0.017 |

**Notes:** $n = 192$. "Participation intention" above is the same as "Intention to participate in mobile CC". *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$; ****$p < 0.10$

**Table IV.** Results of data analyses

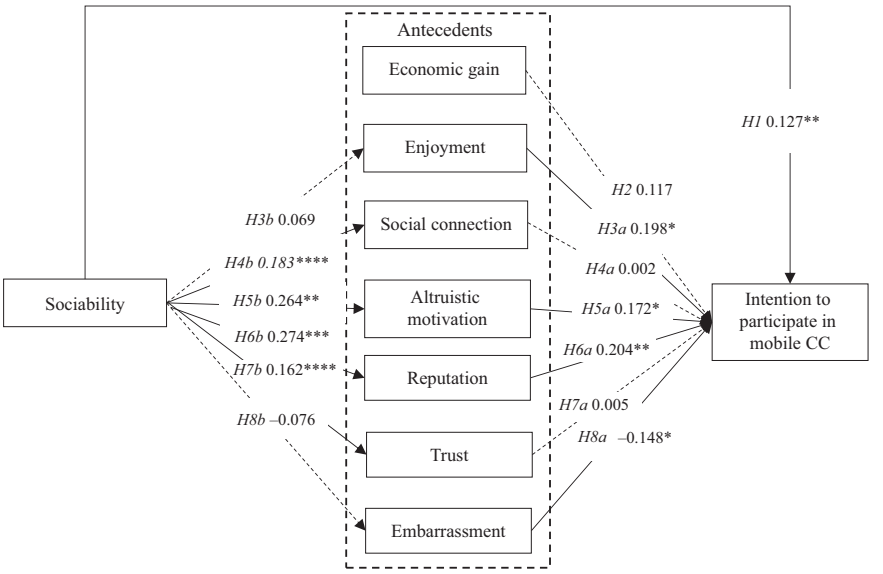


**Figure 3.**
Results of hypotheses testing

**Notes:** $n=192$. Dashed line indicates non-significant at 0.1 level. *$p<0.05$; **$p<0.01$; ***$p<0.001$; ****$p<0.10$

## 5. Discussion and conclusion

The objective of our study has been to investigate what factors influence people's participation in CC enabled by mobile technology, and the role and importance of sociability in this regard. Mobile technology has greatly expanded the possibility and breadth of CC by enabling spontaneous forms of consumption contexts that occur in real-time and at the actual place of consumption. Yet, given its highly social nature that requires interactions among consumers who may not know each other to enjoy a consumption opportunity, individuals inhibited in sociability may hesitate to participate in such an emerging technology-enabled social consumption form.

By surveying participants based on an actual mobile-enabled CC campaign with our self-developed app, we find that perceived enjoyment, reputation and altruistic motivation are important drivers for people to accept a mobile CC invitation from a nearby stranger. At the same time, psychological barriers exist for participation in this form of CC activity in that people may be concerned with potential embarrassment when knowing there is a need to interact with a stranger to enjoy a consumption benefit. However, contrary to expectations, economic gain, trust in the inviter and expected social connection gain are not associated with a higher intention to participate in the mobile CC in our context.

Economic gain has no significant effect probably because in our mobile CC context, such a gain (buying a cup of coffee at a discounted price) is not as substantial as other CC contexts such as engaging in group buying for a big-ticket item. Future research may use other products of higher values to assess if economic gain is an important driver for people's participation in such CC. The insignificant effect of trust could be due to our setting in a university campus – although the inviter is someone unknown to the participant, given that they are university peers may decrease this concern. Again, future research may replicate our study in other more open settings where the participants have no shared identity *a priori*, such as in a shopping mall. Also in spontaneous, one-off CC events such as in our case, to connect and establish relationship with others may be less salient an expectation to the participants.

On top of the psychological antecedents, our results suggest that in the highly social-based mobile CC context, individual sociability indeed has wide importance, by not only directly affecting people's participation intention, but also their perceived altruistic motivation, social connection gain, reputation and trust. Nevertheless, sociability has no significant effect on perceived enjoyment and embarrassment associated with participating in the activity. This suggests that whether a person is highly sociable does not influence their perceived enjoyment that can be obtained from participating in the mobile CC event. Interestingly, the results suggest that whether a person may feel uncomfortable with interacting with a stranger to participate in the CC has nothing to do with his/her sociability. It could be that even for highly sociable people, they may feel uneasy with responding to a spontaneous, unexpected request from a stranger.

### *5.1 Implications to research and practice*

Our research contributes to CC literature in several ways. First, we conduct our investigation in the relatively novel context of CC enabled by mobile technologies (*vis-à-vis* most extant studies that focus on online CC), and thus extend our understanding of the trending practices of everyday consumption and sharing activities. Such a CC is unique in that they enable collaboration among strangers to enjoy a consumption deal in real-time at the actual place of consumption, but which also makes social embarrassment a potentially important factor to consider. Second, we comprehensively uncover the important factors that may influence people's participation in such mobile-enabled CC. Third, we highlight the importance of individual sociability in predicting their participation in mobile-enabled CC, both as a direct antecedent and as a factor that influences a number of their motivational perceptions. Yet, we also demonstrate the limit of the importance of individual sociability, in that there are factors that are unaffected by it (perceived enjoyment, embarrassment) in this context.

Our research also contributes to mobile commerce literature. Previous literature on mobile commerce has focused mainly on the effectiveness of creating individual-based promotional campaigns in specific contexts, such as near a shop or cinema (e.g. Andrews *et al.*, 2015; Banerjee and Dholakia, 2008; Fong *et al.*, 2015; Luo *et al.*, 2014). Our research extends this literature stream by examining mobile social- or group-based promotional campaign under the burgeoning CC phenomenon.

In terms of practical implications, our study offers guidance to practitioners who are keen to experiment with and leverage on CC models with mobile technology. Specifically, they may highlight to consumers the gains in altruistic, enjoyment and reputation values from participating in the novel mobile CC activity that we investigate. In particular, they may highlight the altruistic value by positioning their promotional campaign as a joint consumer activity that can offer benefits to other consumers when one participates. Besides, they may increase the fun and entertainment values in their campaigns through incorporating gamification elements in their mobile CC system to provide more enjoyment to the users. Features may also be incorporated that records and makes user participation in CC activities visible to others, as a way for users to earn enhanced reputation through their participation. In addition, our findings caution the need for mobile CC practitioners to take actions to reduce user embarrassment concern that may inhibit their participation, such as through the use of jokes in the promotional message to ease social uneasiness.

Furthermore, our results provide insights for practitioners into how to better target different consumer segments for their mobile CC campaigns. Specifically, we highlight sociability as an important personality trait that non-trivially affects people participation in mobile CC. Nowadays, many CCs are built on online communities. Previous studies consistently suggest that people higher in sociability may be more active in the use of social functions of online communities, such as social interaction (e.g. Wang *et al.*, 2015). Managers may analyze people's use of such social functions, and based on this identify those who are higher in sociability in the

community, and those who are lower in this aspect. To encourage people higher in sociability to participate in CC activities, managers may provide more social- and community-related benefits, such as ways to enhance their reputation and trigger their altruistic motivation. For consumers lower in sociability, they may nonetheless highlight the hedonic values of the mobile CC activity (i.e. enjoyment) to attract their participation, given that this important motivational factor is not influenced by whether one is sociable.

### *5.2 Limitations and future research*

Our findings should be interpreted in light of some limitations of this study. First, our study's context (a mobile promotional offer to buy a beverage product at a discounted price when two consumers participated together) is, understandably, only one form of CC. Future research may want to explore the use of mobile technology for other forms of CC (e.g. patronizing a restaurant or watching a movie together) and investigate whether the influencing factors are different. Second, our participants were university students. It is suggested that the major group of consumers who participate in CC are those younger and more innovative (Olson, 2013; Tussyadiah, 2015). Indeed, university students may represent a primary age group of CC users (Hwang and Griffiths, 2017). Thus, our study based on the university student sample may have wide applicability. On the other hand, such a social group, being in a place together for an extended period of time and sharing a social identity (i.e. as university peers), may naturally have a higher trust in each other that makes the CC context more viable. Thus, to enhance generalizability and to broaden our understanding of this emerging mobile-enabled CC phenomenon, our study can be replicated with non-student participants in other consumption contexts. Third, we set the mobile CC event to occur at a specific time (i.e. 10 a.m.), while there could be possible changes in consumer acceptance intentions over different times of a day. Using a field experiment, Chen *et al.* (2017) found out that consumers were more likely to participate CC in the morning rather than in the afternoon. They claim that this is because people tend to be more energetic in the morning than in the afternoon. Future research may also consider how time may affect the CC participation in addition to the psychological antecedents.

## Note

1. Sharetribe Ltd is a social forprofit enterprise registered in Finland. Its stated mission is to help people connect with their community and to help eliminate excessive waste by making it easier for everyone to use assets more effectively by sharing them.

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## Appendix

### Literature review

| Study | Context | Method | Utilitarian factor(s) | Hedonic factor(s) | Symbolic factor(s) | Social factor(s) | Personality trait(s) |
|---|---|---|---|---|---|---|---|
| Hamari *et al.* (2016) | Sharetribe | Survey | Economic gain | Enjoyment | Sustainability | Reputation | X |
| Van de Glind (2013) | Online CC platforms | Survey | Economic gain | X | Environmental Impact | Altruism; Social connection; Social attitude towards the neighborhoods. | General social attitudes |
| Möhlmann (2015) | B2C car sharing (car2go); C2C accommodation marketplace (Airbnb) | Survey | Economic gain | X | Environmental Impact | Communality of belongings; Trust | X |
| Tussyadiah (2015) | Airbnb | Survey | Economic gain | Enjoyment | Sustainability | Community; trust; social connection; reputation. | Domain-specific innovativeness (DSI) |
| Mittendorf and Ostermann (2017) | Acceptance of a private or business consumer on Airbnb | Survey | X | X | X | Trust; risk; social motives | Disposition to trust |
| Hwang and Griffiths (2017) | Millennial's determinants of using Zipcar | Survey | Utilitarian Value | Hedonic value | Symbolic value | X | Consumer Innovativeness |
| Lee *et al.* (2016) | Car-sharing activity with Uber | Survey | Economic gain | X | X | Risk | X |
| Albinsson, and Yasanthi Perera (2012) | CC, sharing, and un-consumption at Really Free Markets (RRFMs). | Interviews | X | X | X | Community; Caring; Reciprocity. | X |
| Bucher *et al.* (2016) | Sharing activities at Airbnb and Couchsurfing | Survey | Economic gain | Hedonic motives | X | Social motives | Sociability; Materialism; Volunteering; |
| Benoit *et al.* (2017) | Framework of general CC | Qualitative method | Economic gains | Hedonic value | Environmental benefits | Social motives | X |
| This study | CC enabled by mobile technology | Survey | Economic gain | Enjoyment | Not included, since symbolic value is not salient in our CC context | Altruistic motivation; social connection; reputation; trust; embarrassment | Sociability |

**Table AI.**
Literature review on factors influencing CC participation

**Construct operationalization**

| Construct | Items | Item wording | Item source |
|---|---|---|---|
| *When you received the invitation message, to what extent do you agree with the following statements?* | | | |
| Intention to participate in mobile CC (Scale: From "Strongly disagree" to "Strongly agree") | ACC1 | I will accept the invitation as soon as I can | Adapted from Taylor and Todd (1995) |
| | ACC2 | I will accept the invitation right away | |
| Economic gain (Scale: from "Strongly disagree" to "Strongly agree") | GAIN1 | My participation in this activity benefits me financially | Adapted from Hamari *et al.* (2016) |
| | GAIN2 | I can save money if I accept the invitation | |
| | GAIN3 | I can enjoy a premium discount if I accept the invitation | |
| Enjoyment (Scale: from "Strongly disagree" to "Strongly agree") | ENJ1 | The activity is fun | Adapted from Hsu and Lin (2008), Hamari *et al.* (2016) |
| | ENJ2 | Participating in the activity will offer me much pleasure | |
| | ENJ3 | The activity provides entertainment besides monetary gain | |
| Social connection (Scale: from "Strongly disagree" to "Strongly agree") | CON1 | I would like to connect with the other person involved by accepting the invitation | Adapted from Joinson (2008) |
| | CON2 | I would like to associate with the other person involved by accepting the invitation | |
| Altruistic motivation (Scale: from "Strongly disagree" to "Strongly agree") | ALT1 | I would like to provide the discount opportunity to others by accepting the invitation even if I didn't plan to buy the product | Adapted from Ryan and Connell (1989) |
| | ALT2 | I'd like to benefit others by accepting the invitation even if I didn't plan to buy the product | |
| | ALT3 | I'd like to do good for others by accepting the invitation even if I didn't plan to buy the product | |
| Reputation (Scale: from "Strongly disagree" to "Strongly agree") | REP1 | I could earn respect from the other person involved by accepting the invitation | Adapted from Hsu and Lin (2008) |
| | REP2 | I could earn endorsement in this community by accepting the invitation | |
| | REP3 | I could raise my personal profile in this community by accepting the invitation | |
| Trust (Scale: From "Strongly disagree" to "Strongly agree") | TRU1 | I felt the inviter is trustworthy | Adapted from Ohanian (1990) |
| | TRU2 | I felt the inviter is sincere | |
| | TRU3 | I felt the inviter is honest | |
| Embarrassment (Scale: from "Strongly disagree" to "Strongly agree") | EMB1 | Accepting invitation to participate in this activity is potentially embarrassing | Adapted from Dahl *et al.* (2001) |
| | EMB2 | Accepting invitation to participate in this activity is awkward | |
| | EMB3 | Accepting invitation to participate in this activity makes me feel uncomfortable | |

**Table AII.**
Construct measurements

(*continued*)

| Construct | Items | Item wording | Item source |
|---|---|---|---|
| *When you received the invitation message, to what extent do you agree with the following statements?* | | | |
| Sociability (Scale: from "Strongly disagree" to "Strongly agree") | SOC1 | It's not important to me to spend a lot of time with other people (reversed) | Cheek and Buss (1981) |
| | SOC2 | I like to be with others | |
| Price Consciousness (Scale: from "Strongly disagree" to "Strongly agree") | PRI1 | I find myself checking the prices in the grocery store even for small items | Dickerson and Gentry (1983) |
| | PRI2 | I usually watch the advertisements for sales announcement | |
| | PRI3 | A person can save a lot of money by shopping around for bargains | |
| Product interest (Scale: From "Strongly disagree" to "Strongly agree") | PRO1 | I like the product offered by the store | Developed based on Xu *et al.* (2009) |
| | PRO2 | I shop a lot at the store | |
| | PRO3 | The products offered by the store are good | |
| Purchase impulsiveness (Scale: From "Strongly disagree" to "Strongly agree") | IMP1 | I often buy things I don't need | Adapted from Rook and Fisher (1995) |
| | IMP2 | I buy things I did not plan to buy | |
| | IMP3 | I am a bit reckless about what I buy | |

**Table AII.**

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# The conditioning function of rating mechanisms for consumers in the sharing economy

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## Abstract

**Purpose** – The purpose of this paper is to explore how rating mechanisms encourage emotional labor norms among sharing economy consumers.

**Design/methodology/approach** – This study follows a mixed-methods research design. Survey data from 207 consumers were used to quantify the impact of three distinct rating dimensions on a consumer behavioral outcome (emotional labor). In the second step, 18 focus groups with 94 participants were used to investigate the conditioning functions of ratings in more depth.

**Findings** – Rating mechanisms condition consumers toward performing socially desirable behaviors during sharing transactions. While consumers accept the necessity of bilateral rating mechanisms, they also recognize their coercive nature. Furthermore, the presence of bilateral rating mechanisms leads to negative outcomes such as annoyance and frustration.

**Originality/value** – This study contributes to sharing economy literature by examining bilateral rating mechanisms as a means of behavioral conditioning for consumers. This study points to improvements in platform design and informs theory on tripartite markets as well as trust.

**Keywords** Consumer behaviour, Ratings, Sharing economy, E-Commerce, Airbnb, Uber

**Paper type** Research paper

## 1. Introduction

The peer-to-peer nature of the sharing economy[1] suggests that consumers and providers of sharing services should interact on an equal plane, removed from traditional service hierarchies. Current platforms accordingly co-opt the sharing narratives of earlier reciprocity-focused platforms to define the experiences they offer as social, casual and welcoming (Botsman and Rogers, 2010; Codagnone *et al.*, 2016; Dredge and Gyimóthy, 2015; Lee *et al.*, 2015; Martin, 2016; Walker, 2015). However, the broad commercialization of the sharing economy has generated a duality of expectation and consumers must reconcile the idea of sociality with an increasingly transactional reality.

Although third-party services, such as key-exchanges, are reducing the prevalence of direct human interaction, most sharing platforms still depend on meeting the service provider in person. As such, ensuring that the interpersonal facets of a sharing economy experience remain positive and "on-brand" remains a key concern for platforms. Within sharing economy research, studies have begun to examine how sharing platforms encourage their providers to offer an interpersonal service quality which matches the platform's "branded" experience (Glöss *et al.*, 2016; Lee *et al.*, 2015; Raval and Dourish, 2016). Uber drivers, for instance, are often expected to "read" their passengers, go the extra mile in offering water or sweets, and swallow any discomfort or annoyance (Rosenblat and Stark, 2016; Stark, 2016). While these provider expectations have warranted academic attention, particularly amid greater recognition of the sharing economy as a site of work, there has been insufficient attention to the parallel expectations placed on consumers to perform in a certain way. Consumers may be expected, by platforms and providers alike, to be more personable, sympathetic or friendly than the consumers of traditional services. However, consumers may be left unaware regarding implicit expectations, particularly when considering differing cultural and social norms.

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Ratings typically harness collective intelligence to provide third-party valuations of products and services (Chen, 2017; Lee *et al.*, 2016; Lee and Yang, 2015). While there has been a growing academic interest in the role of ratings in different e-commerce settings, studies have also started to investigate ratings in the sharing economy (Fagerstrøm *et al.*, 2017; Pettersen, 2017; Zervas *et al.*, 2015), finding inflation and bias, among other issues (Hausemer *et al.*, 2017; Newlands *et al.*, 2017). One of the characteristic novelties of sharing economy platforms is that consumers are also subject to ratings. As a measure of reciprocity, providers have the opportunity to reject potential consumers if they have either low ratings or unflattering written feedback (Glöss *et al.*, 2016; Lee *et al.*, 2015). This study, therefore, investigates how bilateral rating systems may operate as a mechanism for encouraging social norms among sharing economy consumers. We ask the following research question:

*RQ1.* How do rating systems condition specific social behavior among sharing economy consumers?

This study relies on a mixed-methods research design that combines survey data and focus group data.

The remainder of the paper is organized as follows. The next section presents a review of current literature on sharing economy consumers, followed by a review of current literature about rating mechanisms. The subsequent section describes the research methodology for both the quantitative and qualitative stages. Finally, the results are presented and discussed, with directions for further research offered. The study makes contributions in theoretical and practical terms. In theoretical terms, it contributes to research on consumer behavior, ratings and electronic word-of-mouth literature (e.g. Lin and Xu, 2017). By stressing the role of the consumer as a party being rated, this study explores novel grounds since consumers are traditionally seen as the authors of ratings, rather than the targets[2].

## 2. Literature review

### *2.1 The sharing economy consumer*

Sharing economy consumers, who number in millions worldwide (Andreotti *et al.*, 2017; Trenz *et al.*, 2018), reflect the entire spectrum between occasional and constant users, with participation occurring for a variety of reasons (Bardhi and Eckhardt, 2012; Bucher *et al.*, 2016; Hamari *et al.*, 2016). In terms of the consumer experience, sharing platforms offer alternatives to traditional service options such as taxis or hotels. Table I contrasts consumer norms in the sharing economy with those found in traditional service settings. Sharing economy platforms are embedded with the notion of authenticity, whereby consumers perceive experiences to be less commercial, more localized and more "real" (Bucher, Fieseler, Fleck and Lutz, 2018; Paulauskaite *et al.*, 2017). Terminology about consumers, mirroring the discourse around provider classification (Pongratz, 2018), is also often euphemistic. Since definitions discursively shape the consumer experience, the use of terms, such as "guests," "friends" and "peers" in platform communication as opposed to "consumer" or "customer", instills pro-social expectations.

Academic literature has begun to engage with the notion that providers in the sharing economy are engaging in emotional labor (Glöss *et al.*, 2016; Lutz *et al.*, 2018; Newlands *et al.*, 2017; Raval and Dourish, 2016; Rosenblat and Stark, 2016). Emerging from the seminal work of sociologist Arlie Russell Hochschild (1983), the concept of emotional labor concerns an individual's efforts to induce or suppress certain feelings so as to produce the outward expression of organizationally desired emotions. It is based on the socio-psychological theoretical underpinning of the concept of emotion regulation (Gross, 1998). By integrating earlier theoretical work into a robust conceptualization of emotional labor (Ashforth and Humphrey, 1993; Hochschild, 1983; Morris and Feldman, 1996), Grandey (2000, p. 97) provided an often-used definition of emotional labor as "the process of regulating both

| | Traditional service settings | Sharing economy |
|---|---|---|
| Functional dimension | Cleanliness secondary: can leave rubbish in the hotel room, can leave the rental car dirty. Limited expectation for cleanliness | Cleanliness important: should leave the room as encountered "Honour your commitments and any house rules" |
| | Timeliness secondary: can arrive at any time within set parameters (e.g. any time after 2 p.m. or 3 p.m.), no-shows are unproblematic. More important for taxi services | Timeliness important: need to arrange with host when to arrive and arrange with the driver where to be picked up. "Always let your host know if you're likely to arrive late for check-in" |
| | Wear and tear secondary: no constraints on how one can use the furniture, including excessive water consumption or towel consumption; no constraints on what can be used | Wear and tear important: consumers are careful not to break something or use it excessively for threat of fines; limited use of host's personal objects for fear of intrusion |
| | Noise secondary: limited expectations for quietness beyond basic human decency. Use of audio/tv noise without restriction | Noise important: careful not to make too much noise in order to not disturb the host or neighbors. "Be respectful of your neighbour" |
| Social dimension | Minimal friendliness: basic friendliness expected but cannot be realistically enforced. Customers can be grumpy, rude and demanding | Heightened friendliness: acting friendly and respectful is a strong norm. "Enjoy your host's home as if you were staying with friends" |
| | Minimal social interaction: no expectation of social interaction. Excessive social interaction could be seen as strange | Forced social interaction: Often minimal opportunity to avoid the host or other guests. In some settings expected interaction. "Explore the neighborhood and support local businesses. It's a great way to feel more like a local. Try asking your host about their favourite neighborhood spots!" |
| | Minimal emotional labor: consumers can behave as they want for most part | Maximum emotional labor: consumers present themselves in the best light, hide their annoyances and grudges and engage in self-optimization; might have to listen to personal stories and engage in emotional labor after transaction. "Always leave an honest review for your host to help guide future guests. Airbnb is built on community, and your host will also be invited to leave a review for you" |

**Table I.**
Consumer norms in traditional service settings vs the sharing economy

feelings and expressions for organizational goals." Traditionally, consumers were not expected to partake in emotional labor (Hochschild, 1983, p. 110). In emotional labor literature of the past three decades, the consumer is perceived as merely a passive audience member whose emotions are there to be managed and influenced (Gountas *et al.*, 2006; Groth *et al.*, 2009; Pugh, 2001; Tang *et al.*, 2013; Tsai and Huang, 2002). In this study, the concept of emotional labor is adopted as a valuable lens for exploring how the emotional presentations of sharing economy consumers are conditioned by rating mechanisms in a form of loose control (Constantinou *et al.,* 2017).

### *2.2 Rating mechanisms as behavioral tools*

In order to make rational purchase decisions, consumers desire fine-grained information to compare alternative offers and select the optimal choice. Simultaneously, consumers desire easily digestible information to reduce the cognitive effort of decision making (Huang *et al.*, 2009). Platforms have therefore adopted rating mechanisms to collect and display feedback as a seemingly objective calculation of reputation within a network (Ba and Pavlou, 2002; Belk, 2014a, b; Bolton *et al.*, 2013; Dellarocas, 2003, 2006; Mayzlin, 2016; Resnick *et al.*, 2000; Tamimi and Sebastianelli, 2015). Rating mechanisms have become widespread throughout

e-commerce and the focus of a significant number of academic studies (Lee *et al.*, 2011; López-López and Parra, 2016).

However, consumer rating mechanisms come with several downsides. Manipulation, for instance, has been identified with regard to hotels or product recommendations (Rietjens, 2006; Schormann, 2012), where hotel reviews online tend to be more negative on average than home-sharing recommendations. Mayzlin *et al.* (2014) noted that this effect could be due to differences in review manipulation, as there is more of an incentive for negative review manipulation by close competitors for hotels. Potentially less severe than active manipulation, bias has presented a serious challenge to rating systems. A key concern regards the overly positive valence of user ratings, a phenomenon for which there is growing evidence (Chevalier and Mayzlin, 2006; Chintagunta *et al.*, 2010; Moe and Trusov, 2011; Resnick and Zeckhauser, 2002). Reputation systems can also be positively skewed due to social and platform norms. For example, Dellarocas and Wood (2008) proposed that the high percentage of positive reputation measures on eBay is explained by the fact that buyers who have poor experiences choose to leave no feedback at all. A key reason for the overly positive valence of ratings is that giving negative feedback is more costly than giving positive feedback due to retaliation (Bolton *et al.*, 2013; Horton and Golden, 2015; Nosko and Tadelis, 2015).

Several studies have started to address the aspects of rating systems in the sharing economy, where rating systems can vary between integer-based rating scales and longer textual comments (Fagerstrøm *et al.*, 2017; Liang *et al.*, 2017; Pettersen, 2017; Zervas *et al.*, 2015). Bilateral rating systems act as an incentive for both providers and consumers to act in a socially desirable fashion. In the context of ride-sharing, Lee *et al.* (2015) found that ratings created a service mentality among providers, while Horton and Golden (2015) stated that the reputation system worked to motivate good behavior. Cockayne (2016) has similarly discussed how ratings can act as an instrument of imposing discipline and economic control over provider behavior, ensuring that provider behavior aligns to what can meet the ratings required. As Van Doorn (2017, p. 903) notes, "customer ratings serve as another crucial metric with which to control service providers."

Both parties in most sharing platform transactions have the opportunity to provide a rating or give feedback, suggesting a notional equivalency of the rating. While the impact of ratings is arguably greater on providers, since providers with bad feedback can face negative consequences including rejection from the platform (Rosenblat and Stark, 2016), the power of ratings can be seen on the consumer side as well. On ride-sharing platforms, for instance, Lee *et al.* (2015) noted that providers would use consumer ratings to decide whether to accept the ride. To explore how these rating mechanisms may shape social norms among sharing economy consumers, this study follows a parallel explanatory design, where a quantitative survey phase was conducted simultaneously with qualitative focus groups. By adopting a mixed-methods research design, it was possible to more clearly understand the interrelationships between rating mechanisms and consumers' emotional labor, while increasing the validity of the findings (McKim, 2017). The research model for the quantitative study is provided in Figure 1.

With emotional labor as the dependent variable, we distinguish among three rating aspects for the key independent variables: negative rating experience, rating literacy and rating process fairness. Negative rating experience describes having experienced negative ratings in the past. Negative ratings in the past may have a strong conditioning effect on consumers because consumers would try to improve their average rating by displaying exemplary social behavior. Rating literacy describes how well consumers think they understand how the rating system works. Consumers who know the system are likely to behave well because they are more aware of the serious consequences of bad ratings. Rating process fairness describes how fair consumers perceive rating and review systems to be.

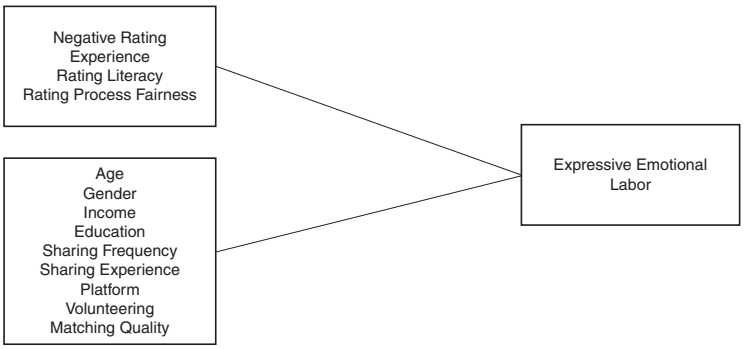


**Figure 1.**
Research model

Again, heightened levels of rating process fairness may condition consumers to act according to socially elevated service norms because it enhances predictability and belief in the system.

## 3. Quantitative study

### *3.1 Methods*

*3.1.1 Questionnaire and sample*. In May 2017, we conducted a quantitative survey among 393 US-based respondents, distributed via Amazon Mechanical Turk. The survey administration was handled via TurkPrime. The questionnaire predominantly consisted of closed questions, where respondents could report their agreement to a statement on a five-point Likert scale, ranging from 1 – strongly disagree to 5 – strongly agree, with 2 – somewhat disagree, 3 – neither agree nor disagree and 4 – somewhat agree as the middle categories.

The questionnaire took, on average, 15 min to complete (as measured by the median due to some extreme outliers), with a standard deviation of 8.5 min. Respondents received a reward of US$2, with an additional US$1 completion bonus. We included an attention check question with the following wording: "The purpose of this question is to assess your attentiveness to question wording. For this question, please mark the 'Weekly' option." Seven participants (1.8 percent) failed the attention check and were subsequently excluded from the data analysis. This left a sample of 386 respondents.

Respondents were filtered into one of four response streams, corresponding to four key groups: providers (e.g. Airbnb host and Uber driver), consumers (e.g. Airbnb guest and Uber passenger), aware non-users (i.e. individuals who have heard of sharing economy services but never used them) and non-aware non-users (i.e. individuals who have never heard of sharing economy services). Respondents who use sharing economy services as providers and consumers were classified as providers. Of these 386 respondents, 3.6 percent were providers (14 respondents), 55.2 percent were consumers (213 respondents), 40.9 percent were aware non-users (158 respondents) and only one person was a non-aware non-user (0.3 percent). For the following data analysis, we focused on the consumer sub-sample ($n = 213$).

In the consumer sub-sample, 61 percent were males. Their average age was 33 (standard deviation 8.5 years, with a range of 21–63 years). In terms of education, 56 percent had a bachelor's degree, 12 percent had a master's degree, 2 percent had a doctorate's degree, 8 percent had a vocational certificate and 22 percent had a high school certificate or lower as their highest qualification. Their median annual income corresponds to the category US$50,000–59,999.

As consumer–provider interaction varies depending on the sharing service, we differentiated between different platforms. We asked the respondents to specify which platform they have used most frequently through an open text field. Six individuals wrote

down services that do not correspond to our understanding of the sharing economy (e.g. Amazon Prime, Etsy, Facebook, none from the above) and were therefore excluded, leaving a final consumer sub-sample of 207. As shown in Table II, more than 70 percent of the final sample selected ride-sharing or ride-hailing (Lyft and Uber) and one-fourth selected home-sharing (Airbnb). Peer-to-peer lending was represented with a low percentage of respondents. No one selected food-sharing and tool-sharing services.

*3.1.2 Measures*. We relied on established scales whenever possible. The dependent variable of emotional labor was measured with four items, adapted from Best *et al.* (1997). The question prompt was: "When you interact with providers (e.g. hosts, drivers), how often do you do the following?" The items were: express feelings of sympathy (e.g. saying you are sorry to hear about something, saying you understand); express friendly emotions (e.g. smiling, giving compliments, making small talk); hide your anger about something someone has done and hide your disgust about something someone has done. Respondents could answer on a five-point scale with the categories: 1 – never; 2 – rarely; 3 – sometimes; 4 – frequently and 5 – very frequently. Initial principal component analysis (Kaiser criterion and Varimax rotation) indicated two distinct sub-constructs. The first sub-construct includes the first two items and revolves around expressive aspects ("express"), while the second sub-construct includes the last two items and revolves around suppressive aspects ("hide"). Consequently, we termed Sub-construct 1 as expression and Sub-construct 2 as suppression.

For the independent constructs of negative rating experience, rating literacy and rating process fairness, we did not find suitable established scales. Therefore, the measures were newly developed for this study. Negative rating experience measures respondents' rating history and whether respondents' had received negative ratings. Negative rating experience is particularly negative if it is perceived as arbitrary and unjustified, namely if the locus of control is outside of themselves. Negative rating experience was measured with four items: providers rate me arbitrarily; I often get unjustified ratings; providers rate me too harshly and providers have unrealistic expectations. The scale had a Cronbach's $\alpha$ of 0.86, showing sufficient reliability. Rating literacy describes respondents' knowledge and awareness of the rating process. Rating literacy was measured with three items: I know how the rating/review system works; I am aware of the consequences of bad ratings for providers and I expect a professional level of service from my providers. The Cronbach's $\alpha$ of this scale was 0.71. In contrast to negative rating experience and rating literacy, which are located more on the user side, rating process fairness describes system and design aspects on the platform side. Rating process fairness includes more functional (efficiency, effectiveness and accuracy) and normative aspects (fairness and transparency). Rating process fairness was measured with four items: the rating/review system is fair; the rating/review system works well; the rating/review system is accurate and the rating/review system is clear. The scale had a Cronbach's $\alpha$ of 0.88, showing sufficient reliability.

| Service | Frequency | % | Cum. % |
|---|---|---|---|
| Airbnb | 52 | 25.1 | 25.1 |
| Uber | 140 | 67.6 | 92.8 |
| Lyft | 11 | 5.3 | 98.1 |
| Lending Club[a] | 3 | 1.4 | 99.5 |
| Prosper[a] | 1 | 0.5 | 100.0 |
| Total | 207 | 100.0 | |

**Note:** [a]Excluded from subsequent regression due to low case numbers and inapplicability of finance-sharing for interpersonal consumer behavior

**Table II.** Services used or most frequently used by respondents

We also included a range of control variables. In addition to age, gender, income and education, respondents' sharing frequency, sharing experience, their most frequently used platform, volunteering and matching quality were assessed. The rationale for including matching quality as an independent variable was to account for platform features more closely. If matching works well, users have more control to tailor their behavior. We did not find suitable scales to measure matching quality. Therefore, we developed an *ad hoc* measure that includes several quality criteria of the matching process such as transparency, control and meaningfulness. Matching quality was measured with six items: the platform does a good job matching me with a provider; the platform is transparent over why I am matched with a provider; the search results/matching mechanisms make sense; I feel I have control over the matching process; I should be allowed to choose a provider based on my own criteria and sharing platforms are fair and unbiased source of information. The scale was newly developed but had good reliability, with a Cronbach's $\alpha$ of 0.80. Volunteering was measured with three items from Bucher *et al.* (2016). The scale proved to have high internal consistency, with a Cronbach's $\alpha$ of 0.89. The reason for including volunteering was to account for experience and possible training with heightened sociality norms in other settings.

*3.1.3 Method.* We used ordinary least square (linear) regression to analyze the influence of demographic characteristics, sharing modalities, matching quality, volunteering and rating aspects on emotional labor. The analysis was conducted with Stata (v.14). We used the robust estimator option to account for possible sources of distortion such as heteroscedasticity and non-normality, and also checked for multi-collinearity, using the VIF post-estimation command. The highest VIF value was 2.18 for the rating process fairness and the lowest was 1.09 for gender. Thus, we can exclude the presence of serious multi-collinearity affecting the estimation process.

### *3.2 Results*

In terms of the descriptive results, we found that consumers of sharing economy services perform moderate to high levels of expressive emotional labor. The item concerning expressing feelings of sympathy is normally distributed with an arithmetic mean of 2.91 and median of 3 (on a 1–5 scale). The item about expressing friendly emotions is positively skewed with an arithmetic mean of 3.86 and a median of 4. Both items of the suppressive factor are negatively skewed, with arithmetic means of 2.33 and 2.28, respectively, and median values of 2. The presence of emotional labor varies substantially by platform. Although the case numbers for Lyft consumers are low ($n = 11$), expressive and suppressive emotional labor values are substantially higher for Lyft than for Uber and Airbnb. This is reflected in the principal component analysis factor scores (which are standardized and thus have an arithmetic mean of 0 and standard deviation of 1). They are on average 0.29 for Lyft, 0.06 for Airbnb and −0.07 for Uber for the expressive dimension and 0.33 for Lyft, −0.11 for Airbnb and −0.11 for Uber for the suppressive dimension. Thus, Airbnb and Uber score similarly for both forms of emotional labor. However, the variance for Airbnb is somewhat lower for expression. Overall, we conclude that Uber is the platform where consumers perform least emotional labor and Lyft is the platform where consumers perform the most emotional labor.

Turning to the regression analysis, we find that rating literacy affects expressive emotional labor significantly and positively (Table III). Thus, the more the consumers claim to understand the rating systems of sharing economy platforms, the more expressive emotional labor they perform. Negative rating experience, on the other hand, does not significantly influence consumers' performance of expressive emotional labor[3]. The non-significance could be understood as some consumers being either not aware of their

| Independent variable | $\beta$ |
|---|---|
| Age | 0.04 (0.01) |
| Gender | −0.00 (0.12) |
| Income | −0.13* (0.02) |
| Education (Ref. = high school or lower) | |
| Vocational certificate | −0.02 (0.23) |
| Bachelor | −0.06 (0.15) |
| Master | −0.09 (0.23) |
| Doctorate or higher | 0.07 (0.29) |
| Volunteer | 0.25*** (0.07) |
| Sharing frequency | 0.15* (0.07) |
| Service (Ref. = Airbnb) | |
| Uber | 0.02 (0.14) |
| Lyft | 0.15* (0.33) |
| Negative rating experience | 0.05 (0.07) |
| Rating literacy | 0.23** (0.08) |
| Rating process fairness | 0.13 (0.08) |
| Matching quality | 0.16* (0.08) |
| Constant | (0.32) |
| $R^2$ | 0.38 |

**Notes:** $n = 203$. Standardized regression coefficients displayed; robust standard errors in parentheses. *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$

**Table III.**
Linear regression of emotional labor factor expression on predictor variables

ratings and having never experienced a negative rating situation. Descriptive analysis supports this, showing low prevalence of negative rating experience (arbitrary, unjustified, too harsh ratings as well as unrealistic provider expectations), with arithmetic means as low as 1.74 for unjustified ratings and 1.81 for too harsh ratings. Rating process fairness does not significantly influence consumers' performance of expressive emotional labor. The assessment of the rating system as generally positive, with relatively limited variance (arithmetic means for the four items range from 3.83 to 4.10 and standard deviations from 0.81 to 0.90), could partially account for the absence of a significant effect. Regarding the suppressive dimension of emotional labor (Table IV), negative rating experience has a significant effect at the 5 percent level, influencing suppressive emotional labor positively. Neither rating literacy nor rating process fairness was significant.

In terms of our control variables, we find that income is the only significant demographic predictor of expressive emotional labor. The effect is negative, indicating that consumers with higher incomes perform less expressive emotional labor. Sharing frequency, volunteerism and perceived matching quality significantly and positively influence expressive emotional labor. Thus, consumers who perceive the matching and search process as efficient, good and transparent are more likely to perform expressive emotional labor. For the sharing frequency, it might be that a habituation and learning process takes place: consumers might learn the implicit rules of the game by repeated interaction and feedback. For volunteering, it could be that a transfer process takes place: consumers might transfer their emotional labor from volunteering, where they have to interact in a friendly and expressive way, to the sharing situation. Regarding the suppressive dimension of emotional labor (Table IV), we find very few significant effects. None of the demographic and socio-economic predictors significantly influences suppressive forms of emotional labor.

We also looked at the attitude of consumers toward the rating system and found that consumers accept the need for ratings. More specifically, they disagreed with two statements addressing the necessity of ratings. First, disagreement with the statement

| Variable | $\beta$ |
|---|---|
| Age | 0.10 (0.01) |
| Gender | 0.03 (0.15) |
| Income | −0.09 (0.03) |
| Education (Ref. = high school or lower) | |
| Vocational certificate | 0.00 (0.22) |
| Bachelor | −0.00 (0.18) |
| Master | −0.02 (0.29) |
| Doctorate or higher | 0.05 (0.33) |
| Volunteer | −0.00 (0.09) |
| Sharing frequency | 0.15 (0.08) |
| Service (Ref. = Airbnb) | |
| Uber | 0.09 (0.17) |
| Lyft | 0.14 (0.35) |
| Negative rating experience | 0.17* (0.08) |
| Rating literacy | −0.01 (0.09) |
| Rating process fairness | −0.00 (0.09) |
| Matching quality | 0.07 (0.11) |
| Constant | (0.34) |
| $R^2$ | 0.10 |

**Table IV.**
Linear regression of emotional labor factor suppression on predictor variables

**Notes:** $n = 203$. Standardized regression coefficients displayed; robust standard errors in parentheses. *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$

"The rating/review system should be removed" was very high (arithmetic mean = 1.83; median = 2 and standard deviation = 1.05 on a 1–5 scale). Thus, most consumers think the review system is necessary. Second, consumers mostly disagreed with the statement "Consumers should not be rated" (arithmetic mean = 2.40; median = 2 and standard deviation = 1.27 on a 1–5 scale). In sum, this indicates that consumers are accustomed to getting rated.

## 4. Qualitative study

### *4.1 Methods*

*4.1.1 Guideline and sample*. In order to gather qualitative data from a variety of participants on the topic of emotional labor, we conducted a series of focus groups. Focus groups encourage participant interaction and elaboration on each other's comments, providing richer data. We conducted 18 focus groups with a total of 94 participants across six European countries in Spring 2017: Germany, Italy, the Netherlands, Norway, Switzerland (German speaking part) and the UK. Within these countries, the focus groups took place in urban areas (Leipzig, Milan, Amsterdam, Oslo, London and St Gallen, respectively). The focus groups in Germany, Switzerland, Italy and the UK were conducted in the respective local language. The focus groups in the Netherlands, Norway and the UK were conducted in English given high English literacy among the participants in these countries.

The respondent sample was selected within an age range of 20–35 years old, representing the millennial generation (Ranzini *et al.*, 2017). We used the snowball sampling approach to source participants. All participants in the focus groups were familiar with sharing services, the overwhelming majority of them as consumers. The research team and additional members of a larger project group organized and moderated the focus groups. Participants were monetarily rewarded depending on their location.

*4.1.2 Coding and analysis*. The focus groups were semi-structured and lasted between 30 and 120 min each. The guideline consisted of an introduction on participants' understanding

of the sharing economy, followed by three topical sections. The first topical section had six themes, the second one had five themes and the third one had three themes. For this study, we focus on the themes that discussed ratings and behavioral norms. All focus groups were recorded using a smartphone audio software and subsequently transcribed. The German and Italian transcripts were translated into English by the research team, based on the original language transcripts. Coding was divided between the research team, with experienced coders inductively analyzing the transcripts. The coders came up with a multi-layered structure of topics and sub-topics.

*4.2 Results*

In line with the general reputation literature and with literature on the sharing economy (Bolton *et al.*, 2013; Glöss *et al.*, 2016; Lee *et al.*, 2015), the element of reciprocity and mutuality was mentioned several times across different focus groups. Bilateral ratings were viewed as a natural and acceptable part of the sharing economy:

> I very much ascribe to this view of you give rating and then you get rating back (UK, male, 27, consumer).

Participants also discussed emotional labor in terms of the differences in service expectations between sharing economy services and more traditional alternatives. For instance, several participants agreed that there was a stronger social involvement in the sharing economy compared with traditional services, with terms such as "friend" utilized to describe the reciprocating partner:

> To me, the nature of relationship is the same. It's commercial so it's service in a way, but I agree with [Participant 3] that with Uber you get a little bit attached to the driver because he typically offers his personal story. And he maybe asked you some often personal questions. So you give a little bit like a friend (Norway, female, 28, consumer).

However, the aspect of emotional labor was not always discussed in a positive manner by respondents, with some highlighting the burdensome nature of "being nice":

> Yeah. I mean, in sharing your comment there, there is this expectation of reciprocity, 'Oh, you're being nice. I have to be nice.' This is horrible (Norway, male, 31, consumer).

> What I find really annoying with Airbnb is that you have to be nice with people. I know it sounds horrible but I don't know. I guess I don't really enjoy small talk and when I go somewhere, it's just because I just want to be by myself or whatever (UK, female, 33, consumer).

Particularly, privacy was seen as an issue and the surveillance implications of ratings were stressed by several participants:

> Yes, I think that's a bit of an issue. On the one hand, you have extreme rating standards, which are currently being used and are maybe beneficial and increase transparency by showing: this and this person drives well. On the other hand, I don't want to reveal so much data about my-self (Germany, female, 25, consumer).

> It's not about only giving information. It's about actually, like, I don't know. Like, it feels like constant surveillance, right? (UK, female, 33, consumer).

One respondent adopted economic language to describe the emotional labor, referring to this as a "cost" paid by the consumer:

> It also costs you something as a consumer (Netherlands, female, 29, consumer).

In light of this emotional labor carried out by consumers, many participants recognized the importance and usefulness of ratings on the consumer side. Ratings were seen

as essential to ensure social norm compliance, for example in terms of orderliness and guest behavior:

> Yes, I think that these ratings are still central. For example, with BlaBlaCar and Airbnb in any case. That you are rated as a visitor or as a passenger. Yes, this person was on time, was nice, was orderly, left everything in a good state or so (Germany, female, 23, consumer).

> Also, for the guests, I think it's important because the other hosts, I feel for the other hosts, then they would know how the guests behave (Amsterdam, female, NA, consumer and provider).

> But now you're afraid that we'll get a bad rating, so we have to talk, we have to entertain. They're sitting there on their best behavior in the Uber and I'm just like, 'Ah, how is your day?' (Norway, male, 31).

In several regards, the conditioning mechanisms of ratings were clearly recognized by participants. Some participants acknowledged that ratings decide about the relative value of consumers and that hosts, as well as drivers, can exercise the power to reject consumers based on their ratings:

> After the ride, they also rate you and I know you can check yourself on the application, what is your grade and because I have already spoken about this with a Uber driver and he told me that sometimes he doesn't accept people because he saw that they have too low grades or he don't want to take the risk to have a rude person. So he only takes high grading people now on the service (Norway, female, 28, consumer).

However, the mechanism also works in the opposite direction, where consumers with particularly good ratings get privileged treatment:

> The interesting thing about the sharing economy is also kind of rating system right? I talked to one of the guys that was driving me in Uber and he said that I had a very good rating. Therefore, I skipped the line in the sense, which is fairly interesting, right? So, I'm positively discriminated (Norway, female, 26, consumer).

The usefulness of consumers being rated was acknowledged specifically for services where consumers can share access to an object or service with other consumers. The following conversation about BlaBlaCar shows how consumer ratings can be helpful for drivers, as responsibility can be more clearly assigned:

> Well, you also have unpunctual passengers and for you as a driver, you only get negative ratings because the person didn't show up. Then I think it has advantages (Germany, female, 24, consumer).

## 5. Discussion

A key finding of the quantitative research phase is that sharing economy consumers perform moderate to high levels of expressive emotional labor. This finding suggests that, although many sharing experiences may have become functionally indistinct from traditional service encounters, consumers retain an expectation for heightened sociality. However, it should be emphasized that this "heightened sociality" corresponds to relatively anodyne traits such as having a friendly and sympathetic demeanor and avoiding outward expressions of anger.

Yet, our findings urge caution about generalizing too heavily about a single sharing economy social "norm," since our findings demonstrate significant platform differences. In the case of the two major ride-hailing services, Uber and Lyft, the results differ while corresponding to the respective company policies and public perception. For instance, while Lyft passengers should sit at the front, Uber has maintained a more professional, less social reputation. A further key finding from the quantitative research phase is that higher levels of rating literacy positively and significantly influence the performance of expressive emotional labor (see Footnote 3). Thus, a more developed understanding of how rating systems operate

corresponds to consumers acting in a more socially normative manner. Similarly, negative rating experiences in the past corresponded to an increase in suppressive forms of emotional labor. In this case, we can identify the role of ratings as a conditioning mechanism on consumers, advancing current research which has identified ratings as a mechanism for providers (Fagerstrøm *et al.*, 2017; Liang *et al.*, 2017; Pettersen, 2017; Zervas *et al.*, 2015).

When combined with the results from the focus groups, a more detailed picture emerges about emotional labor and rating mechanisms. The overall flow of discussion reflected a general agreement that performative sociality was a factor in the sharing experience and constituted a central aspect of the sharing economy. However, a pertinent finding, given the interest of platforms in encouraging participation, was that consumers did not appreciate the pressure to perform emotional labor. The requirement to perform expressive emotional labor, in effect to "be nice" or "be friendly" acted as a form of consumer burden; the implicit and explicit social norms generated pressure and stress in a form which may become exclusionary and disincentivize participation. Concerns over having to act "in a certain way" when a transactional non-social experience was desired may lead to role confusion and distress. With the development of the sharing economy toward a more professional environment, this dynamic may become a greater problem as the chasm between the more "authentic" and more "professional" providers may widen and lead to uncertainty over which experience will be faced. Moreover, given the level of effort expended by platforms in their FAQs to encourage consumer behavior (e.g. Airbnb, 2018), much of the effort may be indirectly harming consumer participation and satisfaction.

In correspondence with the quantitative results, the focus group respondents also recognized the role of ratings as a mechanism for encouraging such expressive displays. Respondents were aware that ratings helped to segregate good and bad consumers and were incentivized to alter their behavior accordingly. Yet, there was also an emerging theme of passive compliance with the status quo. In alignment with the quantitative findings that most consumers accepted bilateral rating mechanisms and did not want them to be removed, the focus group respondents also generally agreed that bilateral ratings were a factor in the sharing economy and had to be endured whether positive or negative. There was little reflection on whether it was appropriate for consumers to be rated at all or that it was a notable difference from traditional service contexts. This can perhaps be understood as emerging from the origins of the sharing economy, which emerged from a more pro-social and communal environment. Moreover, compliance with the bilateral rating mechanisms was, in some instances, welcomed as a tool to generate trust. The personal nature of the sharing economy, whereby providers share their personal possessions, homes and cars, naturally demands a higher level of trust and accountability (Ert *et al.*, 2016; Hawlitschek *et al.*, 2016). As such, respondents were happy to accept the oversight to generate trust in strangers and gain useful insights into their behavior.

As a summary, Figure 2 presents a synthesis of these findings in the form of a process model. The process model includes feedback loops, whereby normatively compliant behavior consolidates and stabilises the sharing economy's service norms. However, while positive outcomes will motivate sharing economy participants to keep using the services, negative outcomes will deter them from using sharing economy services in the future.

## 6. Conclusion

Emotional labor has emerged as an important concept in looking at workers in an organizational context, while psychological research has shown its predictors and – often detrimental – outcomes. However, despite being a widely researched and striving field of research, scholars have only started to explore the prevalence, antecedents and outcomes of emotional labor in the sharing economy (Lutz *et al.*, 2018). Existing studies on emotional labor in the sharing economy, reflecting a focus in the general literature, have focused on the

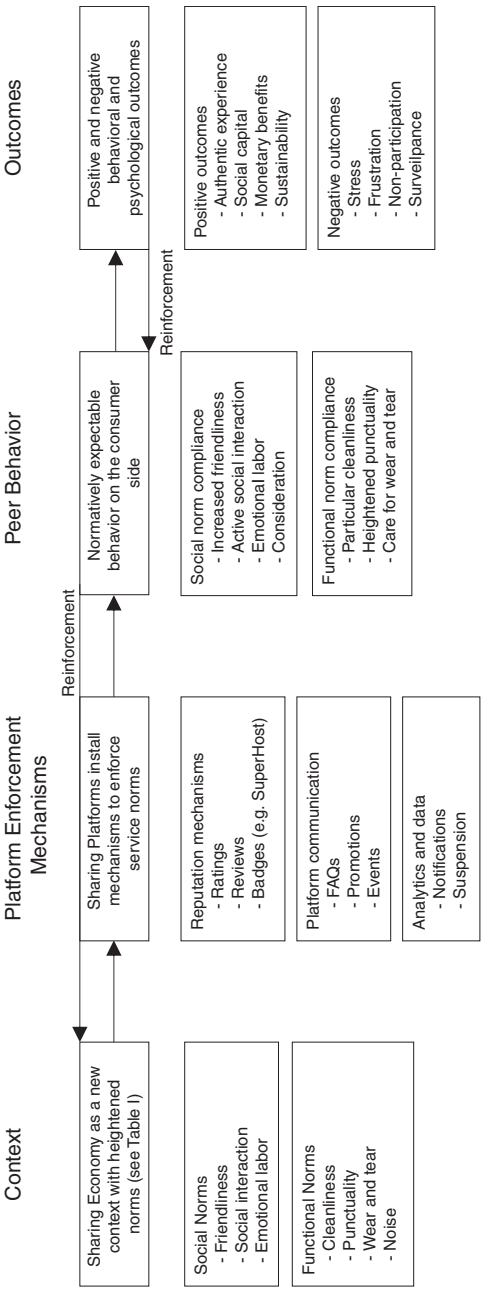


**Figure 2.**
Process model of rating conditioning in the sharing economy

provider side (Glöss *et al.*, 2016; Raval and Dourish, 2016). In this paper, we offered an initial exploration of emotional labor among consumers in the sharing economy. Utilizing a mixed-method study, we outlined how consumers are performing emotional labor during sharing experiences. We were able to specifically identify ratings as one of the mechanisms by which consumers are encouraged to not only regulate their emotional expressions, but also regulate them in a certain way. Whereas, in most consumer transactions, bad consumer behavior will not impact or preclude the future use of the service, in the sharing economy ratings often operate bilaterally, creating a footprint which could impact future use of a service.

Our study has implications for theory and practice. In terms of theory, we contribute by showing how rating differences occur between platforms. Research on digital labor, marketing and information systems – particularly under a trust perspective – could follow up on these findings and study in more depth how platform characteristics and perceptions affect user behavior. For the nascent literature on the sharing economy in general and evolving service norms in the sharing economy in particular, our findings offer first insights on the importance of studying the phenomenon beyond providers. In that regard, the role of the rating system and its underlying mechanisms becomes particularly important, with implications for information systems literature on reputational mechanisms and trust. Further research could also assess the impact of ratings and behavioral conditioning on participation desirability.

From a practical perspective, clearer guidelines on what to expect and what not to expect in a sharing economy experience could give consumers more confidence. Platforms could explain in more depth why they apply consumer ratings and how consumer rating data serve to offer a better service experience. Beyond fostering transparency and accountability, sharing platforms could also facilitate more research into how different rating and review mechanisms might potentially condition users in different ways (Chen, 2017), opting for the most consumer-friendly option.

Our study comes with a few limitations that indicate opportunities for future research. First, the data set at hand is not representative of the overall sharing economy population in the USA or Europe and is relatively small, especially for the quantitative survey. Future research should use population-wide surveys or wider sampling frames to investigate rating and review mechanisms more holistically. This would allow for the comparison between consumers and providers. It would also make comparisons between the sharing economy and traditional industries (hotels and taxis) possible to see whether there is a difference. Second, the quantitative data only covers one point in time. Longitudinal data would allow to observe developments over time, for example whether users become more or less conditioned. Moreover, it would be possible to test causal claims more rigorously. Third, we included relatively few predictor variables. Future research might use additional sociological and psychological predictors to explain the phenomenon better.

## Notes

1. A relatively narrow definition of the sharing economy is used here, where providers (e.g. Uber drivers and Airbnb hosts) grant temporary access to their personal goods (e.g. car, flat and objects) to consumers in return for monetary compensation, mediated through an online platform. Under such an economic lens, the sharing economy can be considered as a multi-sided market (Gawer, 2014). Platform-mediated knowledge work (e.g. Topcoder and Upwork) and non-commercial sharing initiatives, such as time banks or food sharing cooperatives, are excluded from consideration (cf. Botsman and Rogers, 2010; Hartl *et al.*, 2016). We, nevertheless, use the term sharing economy with reservation since, by this point, there is a widespread agreement that the concept of sharing is merely a performative framing (Frenken and Schor, 2017; Slee, 2015) which underplays the control leveraged by platforms over providers.

2. Human resource management research has investigated the behavioral outcomes of employee performance and review systems (e.g. Moon *et al.*, 2016). Organizational sociology has investigated how organizations react to being rated and ranked (e.g. Sharkey and Bromley, 2015). However, such research is not directly applicable as consumers are not within a work setting and differ from organizations.

3. In a large European study using a similar measurement approach, we found positive and strongly significant ($p < 0.001$) effects of three rating dimensions – positive rating system assessment, negative rating system assessment and negative rating experience – on an integral conceptualization of emotional labor (Bucher, Fieseler, Lutz and Newlands, 2018).

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# The sharing economy ideal

## Implementing an organization-sponsored sharing platform as a CSR program

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### Abstract

**Purpose** – Bridging noted gaps in the sharing economy and corporate social responsibility (CSR) literatures, the purpose of this paper is to investigate how an organization-sponsored sharing platform – a new class of information technology (IT) and the sharing economy ideal – is given meaning as a CSR program for internal stakeholders.
**Design/methodology/approach** – The research involves phone interviews conducted with site coordinators of the Zimride by Enterprise® ridesharing platform in 25 organizations.
**Findings** – This case study reveals that two component processes of organizational sensemaking – sensegiving and sensebreaking – are underlying micromechanisms used by organizations to enact a sponsored sharing platform as a CSR program. Qualitative analyses demonstrate that every meaning given to Zimride remained open to sensebreaking during its implementation. As such, site coordinators were continuously drawn into sensemaking about Zimride's cognitive, linguistic and conative dimensions as a CSR program and had to exert ongoing effort to stabilize its socially (re)constructed meaning within their organization. Furthermore, site coordinators' sensegiving narrative about Zimride was often undermined by their sensebreaking communications and organizational actions, albeit unintentionally.
**Research limitations/implications** – Sponsoring a sharing platform to facilitate collaborative consumption can deliver triple bottom line benefits for both organizations and their members, but it may not. The key to accruing this potential shared value lies is how site coordinators navigate organizational sensemaking about these IT-enabled CSR programs.
**Originality/value** – This paper provides valuable insights into these sensemaking processes and develops a prescriptive framework for enacting an organization-sponsored sharing platform as a CSR program.

**Keywords** Sensemaking, Sharing economy, Micro CSR, Ridesharing platforms

**Paper type** Case study

### Introduction

Organization-sponsored sharing platforms are a new class of information technology (IT) that enable firms to create shared value with internal stakeholders by engaging them to live more sustainably as a community of prosumers[1] (Bhappu and Schultze, 2018). These platforms facilitate collaborative consumption – the peer-to-peer sharing of goods and services (Botsman, 2010) – among members of an organization by connecting them virtually in a private social network. By promoting this type of sustainable consumption, which is an important global mandate (World Economic Forum, 2013), organization-sponsored sharing platforms can help firms demonstrate and extend their corporate social responsibility (CSR) to benefit internal stakeholders.

Mounting evidence of the positive impacts of CSR programs on firm performance combined with external stakeholder pressure has created an organizational climate in which CSR initiatives can now be identified at nearly all major corporations around the world (Aguinis and Glavas, 2013). CSR is defined as "context-specific organizational actions and policies that take into account stakeholders' expectations and the triple bottom line of economic, social, and environmental performance" (Aguinis, 2011, p. 855). Furthermore, CSR includes "actions on the part of the firm that appear to advance, or acquiesce in promotion of some social good, beyond the immediate interests of the firm and its shareholders and beyond that which is required by law" (Waldman *et al.,* 2006, p. 1703).

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CSR initiatives that are aligned with organizational members' consumer aspirations are more effective at engaging them (Mirvis, 2012). Firms can also motivate their employees to be critical actors and advocates for more sustainable lifestyles by leveraging the power of collaboration and community (World Economic Forum, 2013). For these reasons, organization-sponsored sharing platforms are an attractive IT-enabled CSR program. They give employees access to consumer goods and services at a lower cost, both economically and environmentally, and help them to build communal ties (Bhappu and Schultze, 2018). Furthermore, consumers are willing to pay a premium for products and services from organizations that promote the triple bottom line and facilitate the development of sustainable economies and societies (Elkington and Zeitz, 2014; Glavas, 2016a; Sen and Bhattacharya, 2001). Therefore, organizations that sponsor a sharing platform can not only demonstrate their social responsibility, but also create shared value (Porter and Kramer, 2011) with internal stakeholders.

The success of CSR programs in general, and organization-sponsored sharing platforms in particular, is contingent on the active participation and support of internal stakeholders (Bhappu and Schultze, 2018; Shen and Benson, 2014). Although a recent study in the information systems literature (Bhappu and Schultze, 2018) investigates how to build engagement on these platforms, there is no research about them in the sharing economy literature. This is surprising because these IT-enabled CSR programs represent the sharing economy "ideal" (Acquier *et al.,* 2017) in that they combine its three foundational cores of access economy, community economy and platform economy. Nevertheless, their existence remains unrecognized in the sharing economy literature, which still questions "whether an ideal type that combines all three cores to leverage the different promises and mitigate most tensions will be feasible in the near future" (Acquier *et al.*, 2017, p. 9). Therefore, empirical research about these platforms would extend the sharing economy literature.

Studies of organization-sponsored sharing platforms are also absent from the CSR literature, which consists mostly of research at the organizational and institutional levels of analysis (Aguinis and Glavas, 2012). "Although CSR takes place at the organizational level of analysis, individual actors are those who actually strategize, make decisions, and execute CSR initiatives. Also, individual actors perceive such initiatives and take action as a result (e.g. purchase products, invest in firms)" (Aguinis and Glavas, 2012, p. 953). The majority of empirical studies about the impact of CSR programs on internal stakeholders simply measure and model the relationships between organizational CSR practices and individual outcomes such as employee engagement, job satisfaction, organizational citizenship behavior and commitment (Glavas, 2016a, b; Shen and Benson, 2014). Still missing is qualitative research that describes how CSR programs are enacted in organizations and sheds light on the underlying micromechanisms that translate CSR goals and objectives into practice (Aguinis, 2011; Aguinis and Glavas, 2012; Glavas, 2016a). Therefore, studying how organization-sponsored sharing platforms are implemented would also extend the CSR literature.

Bridging the noted gaps in the sharing economy and CSR literatures, this paper investigates how an organization-sponsored sharing platform – Zimride by Enterprise® – is given meaning as an IT-enabled CSR program. Specifically, the research question is:

*RQ1.* How do organizations enact a sponsored sharing platform as a CSR program for internal stakeholders?

The reported qualitative research involves a case study of 25 organizations that sponsored the Zimride ridesharing platform for use by their internal stakeholders. Drawing on phone interviews conducted with Zimride site coordinators at each of these organizations, the investigators use a sensemaking lens (Maitlis and Christianson, 2014; Weick *et al.,* 2005) to analyze how these organizations implement the Zimride ridesharing platform as a CSR program for their members.

This paper begins by first reviewing the literature on sharing platforms and then discussing organizational sensemaking. Next, it outlines the methods used to study the Zimride ridesharing platform and summarizes the qualitative findings of this research. It then discusses the implications of these results and develops a prescriptive framework for effectively enacting an organization-sponsored sharing platform as a CSR program for internal stakeholders. It concludes by discussing the limitations of the research and summarizing its contributions.

## Sharing platforms

Most platforms in the sharing economy claim to enhance the triple bottom line by promising economic, environmental and social benefits (Frenken and Schor, 2017; Sundararajan, 2016). Claimed economic benefits include cheaper access to goods and services, which are usually crowdsourced by consumers from a peer-to-peer network of strangers. Such access-based consumption is claimed to reduce the demand for material goods and provide environmental benefits, for example, when consumers borrow or reuse an item rather than buying a new one. Furthermore, such access-based consumption is claimed to facilitate collaboration and trust between strangers, thereby increasing social bonding and solidarity among prosumers when compared to retail purchase transactions.

The sharing economy, however, is replete with contradictions and tensions (Acquier *et al.*, 2017; Laurell and Sandström, 2017). Peer-to-peer sharing platforms that provide access to second-hand goods have been shown to stimulate indulgent rather than sustainable consumption, among both environmentally conscious and materialistic consumers (Parguel *et al.,* 2017). Research has also documented that peer providers of carsharing services are primarily motivated by economic rather than environmental benefits, and perceive sustainability as "an indirect consequence of participation" on a carsharing platform (Wilhelms *et al.,* 2017). There is even evidence that customers of business-to-consumer carsharing services "are disengaged from carrying out their responsibility to the car and to the others using the Zipcar services. There is no thought toward how 'beating the hell out of' the car will affect the next person to use the car" (Bardhi and Eckhardt, 2012, p. 891). Therefore, sharing platforms may not enhance the triple bottom line even if they claim to do so.

Organization-sponsored sharing platforms, however, represent the sharing economy "ideal" because they combine its three foundational cores of access economy, community economy and platform economy (Acquier *et al.*, 2017). Access refers to the sharing economy's potential to make goods and services available to more people, expanding the diversity of prosumers in the economy. Community refers to the sharing economy's potential to socially connect these diverse prosumers and build trust among them. Finally, platform refers to the sharing economy's potential to promote this inclusive commerce at scale by using IT to reduce the cost of peer-to-peer relational coordination. However, "although a triple-core configuration appears ideal, it faces strong tensions in practice […]. any attempt to achieve them all at once lays bare the paradoxical nature of the sharing economy" (Acquier *et al.*, 2017, p. 8). Therefore, the enactment of an organization-sponsored sharing platform as an IT-enabled CSR program for internal stakeholders is likely be characterized by ambiguity and contradictions.

## Organizational sensemaking

Sensemaking provides an analytical framework for understanding how, when and what tensions manifest during the implementation of an organization-sponsored sharing platform. Sensemaking emphasizes discursive action and seeks to answer questions about how organizational reality is constructed:

> Organizational sensemaking is first and foremost about the question: How does something come to be an event for organizational members? Second, sensemaking is about the question: What does an event

> mean? In the context of everyday life, when people confront something unintelligible and ask "what's the story here?" their question has the force of bringing an event into existence. When people then ask "now what should I do?" this added question has the force of bringing meaning into existence, meaning that they hope is stable enough for them to act into the future, continue to act, and to have the sense that they remain in touch with the continuing flow of experience. (Weick *et al.*, 2005, p. 410)

Importantly, a sensemaking lens recognizes that discursive action is "a micro-mechanism that produces macro-change over time" (Weick *et al.*, 2005, p. 419). Sensemaking is, therefore, often used to explain how individual actors enact organizational goals and objectives (Brown *et al.*, 2015).

Sensemaking is defined as a dynamic organizational process "that involves attending to and bracketing cues in the environment, creating intersubjective meaning through cycles of interpretation and action, and thereby enacting a more ordered environment from which further cues can be drawn" (Maitlis and Christianson, 2014, p. 67). It is inherently social because organizational members "produce, negotiate, and sustain a shared sense of meaning" (Gephart *et al.*, 2010, p. 285) that propels them to take coordinated action. Sensemaking is not a process that generates truth or an accurate representation of reality (Weick, 1995). It is a process that produces plausible interpretations that align organizational stakeholders to take action:

> It is about continued redrafting of an emerging story so that it becomes more comprehensive, incorporates more of the observed data, and is more resilient in the face of criticism. As the search for meanings continues, people may describe their activities as the pursuit of accuracy to get it right. However, that description is important mostly because it sustains motivation. (Weick *et al.*, 2005, p. 415)

In this way, sensemaking reflects an ongoing circular process rather than a linear one. Instead of having a clear beginning and end, and generating a stable set of meanings, every sensemaking episode carries with it residual ambiguity, that is likely to spark a new round of sensemaking.

The sensemaking process is described as having many triggers and component constructs (Maitlis and Christianson, 2014). When ambiguous and uncertain events, issues or situations disrupt organizational routines and workflows, sensemaking is triggered. Whether planned or unanticipated, these triggers highlight discrepancies between expectations and reality, which propels the organization to consider changes in organizational practices and structures. The sensemaking process can also be triggered by sensebreaking, one of its component constructs. Sensebreaking is defined as "the destruction or breaking down of meaning" (Pratt, 2000, p. 464), motivates organizational members to question their previous sensemaking and to reconsider their current actions. In this way, sensebreaking can kick off a new cycle of sensemaking.

Sensegiving – another component construct of the sensemaking process – usually follows sensebreaking because organizational members seek to create new meaning to resolve the ambiguity and uncertainty in the aftermath of sensebreaking (Pratt, 2000). Sensegiving is "the process of attempting to influence the sensemaking and meaning construction of others toward a preferred redefinition of organizational reality" (Gioia and Chittipeddi, 1991, p. 442). Sensegiving imbues proposed actions with contextual meaning through their enactment or abandonment:

> Sensegiving is often studied in the context of how organizational leaders or managers strategically shape the sensemaking of organizational members through the use of symbols, images, and other influence techniques (Gioia and Chittipeddi, 1991; Maitlis and Lawrence, 2007). Sensegiving is not simply a top-down process, however, as those receiving sensegiving have their own interpretations and can actively resist efforts from leaders to influence strategic change (Sonenshein, 2010). Furthermore, actors at any level of an organization, or outside its boundaries, may engage in sensegiving with others (Maitlis and Lawrence, 2007). (Maitlis and Christianson, 2014, pp. 67-69)

Sensegiving and sensebreaking can be uncovered through analysis of the cognitive, linguistic and conative dimensions of CSR programs that derive their meaning from organizational sensemaking (Basu and Palazzo, 2008). Cognitive dimensions of CSR programs encompass an organization's relationship with internal stakeholders and its rationale for implementing the initiative – what it thinks. Linguistic dimensions of CSR programs describe how an organization justifies its implementation of the initiative to internal stakeholders – what it says. Conative dimensions of CSR programs, however, highlight an organization's behavioral posture and consistency when implementing the initiative – what it does. In this research, sensegiving and sensebreaking are hypothesized as the underlying micromechanisms used by organizations to enact a sponsored sharing platform, namely the Zimride ridesharing platform, as a CSR program for internal stakeholders.

## Method

Ridesharing is one of the most ubiquitous forms of collaborative consumption (Sundararajan, 2016). Historically, ridesharing grew out of governmental efforts to reduce citizen consumption of natural resources but today organizations are increasingly sponsoring ridesharing platforms for internal stakeholders to comply with environmental regulations as employers (Chan and Shaheen, 2012). Zimride, therefore, provides an exemplar of an organization-sponsored sharing platform, that is being implemented as an IT-enabled CSR program.

### *The Zimride platform*

An important difference between Zimride and its better-known counterparts in the sharing economy (e.g. Bla Bla Car and Lyft) is that it facilitates ridesharing among members of an organization by connecting them virtually in a private sharing community. A sponsoring organization initially pays Zimride a one-time fee to set up its private ridesharing community, which is integrated with its IT infrastructure (e.g. single sign-on authentication system) in order to give only its organizational members access to this community. Thereafter, the organization pays a monthly subscription fee for these internal stakeholders to connect and share rides via its sponsored ridesharing community on the Zimride platform. Organizational members do not incur any transaction fees, nor do they earn any income[2], during shared rides brokered by Zimride because their collaborative consumption is subsidized by their organization.

Within each private ridesharing community on the Zimride platform, organizational members have to create a user name (first name plus first initial of last name) and user profile. They can then post offers and requests for shared rides. They can also search for rides on a number of criteria (e.g. starting location, destination, date and time). Posted rides range from daily commutes to one-off, long-distance trips. Other platform features include the automatic matching of posted rides, calculation of a suggested nominal fee for riders to pay drivers to cover the costs of a given ride, ability to make these payments online and communication options for organizational members to work out details of a shared ride (e.g. pickup location and time).

Since most riders give drivers cash to help cover the cost of a shared ride, and neither is required to update the Zimride platform after completing shared rides, the platform's ability to record actual ridesharing activity is limited. As a result, Zimride estimates the total shared miles and carbon emissions saved through ridesharing on its platform based on the default assumption that 20 percent of posted rides are actually completed. Site coordinators in sponsoring organizations can access data (via an online client dashboard) and run reports about their members' platform usage and saved carbon emissions.

*Data collection*

During Q3 2015, the investigators obtained a list of Zimride customer organizations (114) from its website (https://zimride.com). By cross-referencing this list with customer organizations' publicly available website information about their Zimride ridesharing community, the investigators compiled a database of contact information for site coordinators at these organizations (108). After verifying the e-mail addresses for site coordinators at each organization, the investigators sent them an invitation to participate in an hour-long interview about their Zimride ridesharing community. The invitation directed interested site coordinators to click through a provided hyperlink, which directed them to an online study disclosure and screening questionnaire.

The investigators contacted all consenting and screened participants to schedule a phone interview at a mutually convenient date and time. They used a semi-structured interview guide (see Appendix), which was phenomenologically derived, to direct their questions during the scheduled phone interviews. Each interviewed Zimride site coordinator was thanked for their participation and asked for a mailing address so that the investigators could send them a $10 gift card (optional), which were mailed out within 2–3 weeks.

In total, the investigators interviewed site coordinators of Zimride ridesharing communities at 25 sponsoring organizations (~24 percent response rate). Their sample comprised of 22 universities, 2 government organizations and 1 corporation. These organizations represented an experienced set of customers that had collectively logged an estimated 86,617,092 ridesharing miles on the Zimride platform at the commencement of the study. The majority of interviewed site coordinators were located in a university's transportation or parking department. Others were housed in IT departments, offices of student affairs and offices of sustainability. In one instance, the Zimride site coordinator was a student employed by the student senate. All interviews were transcribed from audio recordings.

The investigators used a grounded approach to analyzing their interview data. Grounded theory advocates a principle of constant comparison, theoretical sampling and a balance of deductive and inductive analysis of data (Corbin and Strauss, 1990; Glaser, 1978; Goulding, 2002). Using a sensemaking lens, the investigators independently read and reread the transcripts in order to get a holistic sense of the data overall, and to let themes emerge (Thompson, 1997). In numerous conversations, the investigators discussed the themes that each identified in an effort to converge on the significance of data that they deemed relevant to the research question, namely, how organization-sponsored ridesharing platforms are socially constructed as CSR programs. In their discussions, the investigators relied heavily on comparing and contrasting the sampled organizations on multiple dimensions including satisfaction with the ridesharing service, transportation constraints and options, site coordinator and organizational characteristics, governance roles and funding sources.

## Qualitative findings

Interviews with Zimride site coordinators provided a number of important insights about how an organization-sponsored sharing platform is enacted as a CSR program for internal stakeholders, particularly the underlying micromechanisms. The investigators categorized this qualitative data into examples of sensegiving and sensebreaking about the cognitive, linguistic and conative dimensions (Basu and Palazzo, 2008) of the Zimride ridesharing platform. These qualitative findings are summarized in Table I and now described in more detail.

*Adopting Zimride*

All site coordinators in the study reported that the adoption of Zimride was triggered by either an organizational need to replace an outdated transportation service (e.g. a physical

| Cognitive dimensions – what they think about it | Linguistic dimensions – what they say about it | Conative dimensions – what they do about it |
|---|---|---|
| *Sensegiving* | | |
| They perceive Zimride as a technological innovation or an alternative transportation service | They promote Zimride as a safe, low-cost and sustainable solution that builds community and saves money | They use sustainability and environmental compliance funds to pay for Zimride<br>They continue to subscribe to Zimride even when it lacks a critical mass of organizational users<br>They continue to subscribe to Zimride even when it is used for infrequent long-distance rides rather than frequent commuter rides |
| *Sensebreaking* | | |
| They acknowledge that their current transportation solutions are inferior to Zimride<br>They realize that Zimride is highly dependent on organizational members' engagement and sociability to build a critical mass of users<br>They realize that Zimride calculates carbon footprint data from estimated rather than actual ridesharing | They caution on having a false sense of security when using Zimride<br>They make disclaimers about their liability related to Zimride<br>They report that Zimride reduces their carbon footprint | They remain ambiguous about liability for property damage and personal injury related to Zimride<br>They do not sufficiently promote or staff Zimride to build a critical mass of organizational users |

**Table I.**
Organizational sensemaking about Zimride as a CSR program

board or an online listserv for ridesharing) or an organizational need to identify a new solution to an existing transportation problem (e.g. limited campus parking or access to nearby towns).

In the first instance when organizations were upgrading a current ridesharing solution, the effectiveness of their existing service – its established organizational meaning – was cast in doubt. This sensebreaking raised questions within the organization about suitable replacements that offered improved functionality and more technological sophistication:

> Our students had previously used a [opt-out] mailing list that included all students […]. And I used that mailing list to communicate various things […] [including] "I need a ride to somewhere […]." There was so much traffic on the list that students who needed a lift didn't see the email from someone else who said that they actually were going and were offering a ride. So students on our student government thought that it would be a good idea to […] improve the mailing list through social online tools. (Director of IT)

As such, the Zimride platform was perceived as a technological innovation when its adoption resulted from this sensebreaking trigger.

In the second instance, when organizations were searching for a novel solution to their perennial parking problems, the Zimride platform was perceived as an alternative transportation service for internal stakeholders through sensegiving. Zimride staff was pivotal in influencing organizations' initial perception of the ridesharing service:

> Zimride contacted our director's office, and because I was involved in transportation they sent the referral to me. I met with [one of the co-founders of Zimride]; he actually came to the site, and we met and had a conversation. It sounded pretty good mainly because it was sort of a minimal investment for us. (Fleet Site Services Manager)

*Promoting Zimride*

As part of a portfolio of benefits (e.g. subsidized public transportation, campus fitness center) provided to organizational members, the responsibility for framing Zimride's intersubjective meaning fell to site coordinators who were tasked with promoting it. Site coordinators engaged in sensegiving by identifying and communicating the value of Zimride to internal stakeholders in order to get them to use it. The investigators now report on the range of meanings that site coordinators ascribed to the Zimride platform and how site coordinators reinforced this sensegiving within their organization.

*Zimride is safe*. One of the key concerns that internal stakeholders (e.g. parents, employees and administrators) raised around ridesharing was safety:

> The biggest risk that we see in terms of […] worries from parents is the whole safety issue of whether or not their son or daughter will be safe when they get into a car with a stranger. (Transportation Demand Manager)

Most site coordinators argued that Zimride's design uniquely addressed this key concern because access to each ridesharing community on the platform was restricted to the sponsoring organization's members using its single sign-on authentication infrastructure. Every site coordinator that was interviewed perceived immense value in this technology feature:

> I personally think that it matters quite a bit "cause it builds a certain immediate level of trust in the system; that you know you're at least going to be interacting with only students, faculty, and staff […] fifteen thousand people that are already part of the community at the university." (Technical Services Coordinator)

Zimride's reputation management tools and linked social media profiles also provided participating organizational members with insights on ridesharing peers, which further contributed to the framing of the Zimride platform as safe transportation solution:

> What Zimride does really well is letting you learn a little bit more about the person that you're gonna carpool with, than other systems where it's just the name and that's it. You know it just brings in like profile pictures from Facebook, you know you're interests from Facebook. It has a rating system, so you know if someone's habitually late you can you know mark them, and say "Hey, this person's never on time." (Assistant Director of Transportation)

The Zimride platform was also cited as providing privacy for participating members because their identifying personal information was not revealed until they agreed to share a ride:

> I think the best [feature] it's the ride matching. You can sign up put in your ride where you're going where you're coming from, and it will immediately match you up with people. It'll sort 'em by your preferences: if you're a smoker, if you're willing to drive, or would you rather ride, you know, and it's anonymous until you decide to contact someone. So just message them within the Zimride system, and they don't have to know your personal information. (Transportation Coordinator)

However, sensebreaking of Zimride's ascribed meaning as a safe transportation option was apparent when site coordinators cautioned that the apparent safeguards that had been designed into the Zimride platform sometimes create a "false sense of security" among organizational members. Some organizations even posted website disclaimers about using Zimride because liability remained largely ambiguous in the event of property damage or physical injury during Zimride-brokered ridesharing:

> Our board of regents was concerned. They just wanted a sort of disclaimer put up on our Zimride website. It said that, you know, you're using this website to self-identify rides. That people are responsible for any risk that you take on personally by signing for using this service. Any risk or loss, etc, the board of regents is not liable for that sort of risk that you might take.' I guess, you know, whether something happened, an accident, or whatever the case might be while using the service, the university is not liable for that. (Technical Services Coordinator)

*Zimride builds community*. Nevertheless, site coordinators pointed out that Zimride's restricted access instilled a desirable sense of community among participating users. Additionally, organizational members could network off the Zimride platform, which enabled them to build communal ties:

> I mean they're kind of, you know, there is a sense of community that builds out of commuting. So that could also be a retention issue. I think it's a great opportunity for alleviating the structure of the daily commute and then an opportunity for employees to engage with each other outside the workplace so there's a sort of bond created. (Travel Manager)

However, there was sensebreaking of this ascribed meaning in site coordinators' acknowledgment that Zimride's community-building potential was contingent on organizational members' sociability:

> And then sometimes people say 'Oh, it's fun because we talk the whole time'. Or some people, they would maybe have a not so great experience "Oh, this person was annoying" or "Our personalities just didn't fit well together" or "We were silent the whole way". So […] [Zimride's role in community building] all depends on like personal experience. (Transportation Demand Management Program Manager)

*Zimride is low-cost*. Zimride charges organizations an initial fee to set up a sponsored ridesharing community plus a monthly subscription fee for its use, which is typically structured as a three-year contract. By and large, the site coordinator that was interviewed considered this expense to be negligible when compared to the cost of providing bus passes and parking subsidies to their organizational members:

> [Zimride's] not a very big expense. We pay like our local transit agency over a million dollars for our partnership with them, so to me $7500 [a year] is a much smaller price tag. (Sustainable Transportation Coordinator)

Additionally, site coordinators regarded the outsourcing of their organization's ridesharing service to Zimride as a good use of their resources:

> And so we realized that we want to just sub it out to you know a third-party. It's not a lot of work on our end. (University Sustainability Director)

Site coordinators, however, began to question the cost effectiveness of their Zimride ridesharing community as they gained more experience and familiarity with it. Their sensebreaking centered on whether Zimride was better suited for infrequent long-distance rides vs frequent commuter rides. Whereas most site coordinators had expected Zimride to facilitate commuter ridesharing (benefiting employees and off-campus students), they soon discovered that the vast majority of rides matched on Zimride were for infrequent long-distance rides (e.g. going home over holiday breaks or attend a sports event in a nearby town):

> It's more one-time rides than commute rides [posted on Zimride], which to me is an important distinction because for one-time rides you're essentially offering students a benefit service. For commute rides, that's where we're actually getting our money back on the program because if we can encourage carpooling, we can reduce parking demand. I think it's pretty standard for college campuses to be more successful in the one-time ride category. (Sustainable Transportation Coordinator)

*Zimride saves money*. Framing the Zimride platform as having financial benefits for internal stakeholders was also central to site coordinators' sensegiving. They highlighted how organizational members could save money by using the platform to share rides:

> I have a means to get to [NEARBY TOWN] or other places with some frequency, and not having to buy a car, not having to spend the extra money besides their share of gas. It seems like a relatively inexpensive endeavor compared to other options out there. (Director of Student Leadership Development)

Site coordinators did, however, acknowledge that Zimride's ability to save internal stakeholders money was contingent on the platform successfully matching riders with drivers among its users. This acknowledgment constituted sensebreaking because Zimride's ability to match rides was constrained by its restricted community access, which often limited the critical mass of participating organizational members. Some site coordinators, therefore, held a more cynical view of the platform's value than they professed:

> Now that we have [Zimride], and it's not being utilized, it's one of those things […] that it's like we have it. It helps, so I can't really complain that we don't provide service. (Director of Student Leadership Development)

*Zimride is sustainable*. Numerous site coordinators highlighted the fit between Zimride's ridesharing service and their organization's commitment to sustainability:

> We all know that if you can encourage less vehicles coming to campus or less people driving around that your greenhouse emissions are gonna go down. That is a concern in our office of sustainability. When we told them about Zimride, they were very excited about it. (Manager of Parking Services)

However, the majority of site coordinators only did so after being questioned about this issue, which suggests that Zimride's sustainability value was not the primary focus of their organizational sensegiving. A few site coordinators even expressed doubts about the accuracy of Zimride's carbon footprint calculator, which is based on the assumption that 20 percent of matched rides are completed. However, this sensebreaking was typically dismissed by the majority of site coordinators upon probing:

> We trust [Zimride's estimates] enough to report them when we do our greenhouse gas inventory. The metrics that we report will go directly to our carbon footprint inventory, our greenhouse gas inventory reports. (Sustainability Director)

*Managing Zimride*

Organizations used money earmarked for sustainability projects and environmental compliance to pay for Zimride:

> Our director of sustainability is actually sponsoring [Zimride], paying for the system. She got involved early on in the process and latched it on to us, so to speak. (Transportation Demand Manager)

> Zimride was partially funded by a grant from a government association that wants to improve air quality and try to reduce traffic congestion. (Transportation Program Manager)

However, this organizational funding obfuscated that the decision to adopt Zimride was largely driven by its appeal as a low-cost alternative transportation service provided to internal stakeholders as a benefit:

> My experience is that my department is much more concerned about money than it is about sustainability. […] The cost of [building] a parking space is like a hundred thousand dollars for a surface lot—like it's so expensive. (Sustainable Transportation Coordinator)

Most organizations did not sufficiently promote nor staff Zimride because it was framed as a low-cost and turnkey IT-enabled CSR program when it was adopted. However, effective promotion of CSR programs is necessary for getting organizational members to participate in them. Furthermore, having a critical mass of prosumers is essential for internal stakeholders to derive functional value from an organization-sponsored sharing platform. Unfortunately, most site coordinators' involvement was limited to having scheduled monthly phone calls with their Zimride sales representative and running an occasional marketing campaign, usually at the

beginning of each semester (bi-annually). Their meetings with a Zimride sales representative typically entailed a review of their organizational members' platform participation metrics and some strategizing about how the latter might be improved:

> I just had a conference call with Zimride a few days ago. In the past ninety days, we saw 199 users sign up, so that's some really good usage out of it especially for the summer. From what [the Zimride rep] telling me, our usage is relatively high compared to other campuses. And Zimride sent me some merchandise, so what I'm doing now is actually advertising. "Post a commute, get a free gift bag from Zimride." A backpack with a water bottle and some magnets, and stuff like that. (Parking Transit Manager)

## Discussion

This paper set out to investigate organization-sponsored sharing platforms – a new class of IT and the sharing economy ideal – by exploring how the Zimride by Enterprise® ridesharing platform is given meaning as a CSR program for internal stakeholders. Bridging noted gaps in the sharing economy and CSR literature about organization-sponsored sharing platforms, the Zimride case study reveals that two component processes of organizational sensemaking – sensegiving and sensebreaking – are underlying micromechanisms used by organizations to enact a sponsored sharing platform as a CSR program. Qualitative findings demonstrate that every meaning given to Zimride remained open to sensebreaking during its implementation. As such, site coordinators were continuously drawn into sensemaking about Zimride's cognitive, linguistic and conative dimensions as a CSR program and had to exert ongoing effort to stabilize its socially (re)constructed meaning within their organization. In fact, site coordinators' sensegiving narrative about Zimride was often undermined by their sensebreaking communications and organizational actions, albeit unintentionally.

Organizations' pragmatic legitimacy when engaging in CSR – their ability to convince internal stakeholders that their decisions and processes are useful (Schultz *et al.*, 2013) – is reduced when there is inconsistency between what organizations say and do. By framing Zimride as a CSR program through sensegiving but then acting in sensebreaking ways, site coordinators undermined its implementation and reduce its impact. As a result, Zimride's organizational value as an internally-focused CSR program was largely symbolic and aspirational – a reminder of what organizational members could and should do. For internal stakeholders to truly derive functional value from the implementation of an organization-sponsored sharing platform, site coordinators must consistently say and do things that reinforce its sensemaking as a CSR program.

When questioned about the inconsistency between their sensemaking communications and actions related to the Zimride ridesharing platform, most site coordinators exhibited a tentative rather than defensive posture. A tentative posture often results from an organization's "inexperience with an issue or because it lacks appropriate tools to devise solutions, causing it to be uncertain regarding the consequences of its actions" (Basu and Palazzo, 2008, p. 129). Site coordinators' tentative posture about Zimride, therefore, suggests that they lack sufficient knowledge and skills to effectively manage this organization-sponsored ridesharing platform. This is an important issue that both sponsoring organizations and service providers must consider when implementing such IT-enabled CSR programs for internal stakeholders. Providing site coordinators with training and support to effectively enact an organization-sponsored sharing platform as a CSR program is pivotal to creating shared value for internal stakeholders. For example, organizations should give site coordinators both time and money to sufficiently promote a sponsored sharing platform to internal stakeholders.

Organizations' normative commitment to CSR, both perceived and actual, would be bolstered if they also invested in scaling their sponsored sharing platform, which would help to institutionalize it as a CSR program (Schultz *et al.*, 2013). Internal stakeholders

can only extract shared value from these IT-enabled CSR programs when a critical mass of them engage as prosumers on a sponsored sharing platform (Bhappu and Schultze, 2018). Organizations' moral legitimacy should be enhanced by making this strategic investment. Moral legitimacy refers to organizations' ability to co-create new behavioral norms with stakeholders in order to affect societal change (Schultz *et al.*, 2013). Although the power to promote sustainable consumption resides with organizations (World Economic Forum, 2013), site coordinators need to depend on their organization's moral legitimacy to compel internal stakeholders to consume collaboratively using an organization-sponsored sharing platform.

*Managerial implications*

Abstracting from the Zimride case study, the investigators have developed a prescriptive framework for effectively enacting an organization-sponsored sharing platform as a CSR program (see Table I). Their framework builds on Acquier *et al.*'s (2017) conceptualization of the sharing economy as having three foundational cores of access economy, community economy and platform economy. It also incorporates Basu and Palazzo's (2008) perspective that organizational sensemaking involves the cognitive, linguistic and conative dimensions of CSR programs. Specifically, the investigators assert that during the stage of adoption, an organization should build its community economy by framing the sharing platform as a CSR program for championing sustainable consumption. Organizational sensemaking should, therefore, be focused initially on the cognitive dimensions of the sponsored sharing platform – what organizations think about it – in order to build support for subscribing to this IT-enabled CSR program. Next, an organization should build its access economy by promoting the benefits of using the sponsored sharing platform to engage members. The linguistic dimensions of this CSR program – what organizations say about it – should be most salient during sensemaking at this second stage. Finally, an organization should build its platform economy by managing the sponsored sharing platform in a morally legitimate manner over time in order to create both functional and symbolic value. Accordingly, the conative dimensions of the sponsored sharing platform – what organizations do about it – should be the focus of sensemaking over time as members affirm or contest their organization's actions related to this IT-enabled CSR program (Table II).

*Limitations*

The generalizability of this case study should be considered in light of the limitations of the research method. The investigated sample of sponsor organizations represented only a quarter of Zimride customers and consisted primarily of universities. Data collection was also limited to telephone interviews of Zimride site coordinators. Nevertheless, these interviews provided rich qualitative insights on how sensemaking about Zimride – an exemplar organization-sponsored sharing platform – unfolded during its implementation as a CSR program for internal stakeholders. They also revealed ongoing tensions between

**Table II.** Prescriptive framework for enacting an organization-sponsored sharing platform as a CSR program for internal stakeholders

| Implementation stage | Implementation focus (Acquier *et al.*, 2017) | CSR program goals | CSR sensemaking focus (Basu and Palazzo, 2008) |
|---|---|---|---|
| Adopting the sharing platform | Community economy | Frame sharing platform as a way to collectively champion sustainable consumption | Cognitive dimensions |
| Promoting the sharing platform | Access economy | Build critical mass of engaged members by highlighting benefits of sharing platform | Linguistic dimensions |
| Managing the sharing platform | Platform economy | Maintain sharing platform in a morally legitimate manner to create both functional and symbolic value | Conative dimensions |

sensegiving and sensebreaking about Zimride, which reflect the contradictions among the three foundational economic cores – access, community and platform – of this sharing economy ideal. Although the incidence and intensity of sensemaking and tensions may differ across organizations, the process-related findings of this research can generalize beyond the sampled organizations and provide initial empirical evidence about a previously unrecognized class of IT. Similarly, the prescriptive framework can offer some preliminary recommendations to corporations and other organizations seeking to implement a sponsored sharing platform as a CSR program. Future research should extend this research by exploring case studies of other IT-enabled CSR programs and investigating their enactment from the perspective of organizational members.

## Conclusions

Creating a sharing economy within an organization is not for the faint of heart. Sponsoring a sharing platform to facilitate collaborative consumption can deliver triple bottom line benefits for both organizations and their members, but it may not. The key to accruing this potential shared value lies is how site coordinators navigate organizational sensemaking about these IT-enabled CSR programs. In this paper, the investigators provide valuable insights on these sensemaking processes and develop a prescriptive framework for enacting an organization-sponsored sharing platform as a CSR program. By effectively implementing this sharing economy ideal, organizations can demonstrate their social responsibility and create shared value among internal stakeholders.

## Notes

1. This portmanteau comes from the blending of "provider" and "consumer," highlighting the conflation of these roles in on peer-to-peer sharing platforms.
2. Riders are encouraged to pay drivers a suggested nominal fee to cover the costs associated with giving them a shared ride but this is left entirely up to them to negotiate.

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## Appendix. Site coordinator interview guide

### Introduction

Ask participant to describe their organizational role and tenure, as well as their organization's transportation needs and programs.

### Zimride experience

(1) How did your organization learn about Zimride?

(2) What motivated your organization to sign up for Zimride? How did that process unfold? Did you champion it from within?

(3) What benefits and risks did you anticipate? Did having a private social network matter?

(4) What did you expect would happen after your organization signed up with Zimride?

(5) What actually happened? Tell me about your members' ridesharing experience to date.

(6) How do you measure and monitor your members' ridesharing experience? What performance goals do you have to justify continued offering of the Zimride service?

(7) Have any members acted in a way that made you uncomfortable or annoyed? Tell me more.

(8) What would (did) you do if (when) you had an issue amongst members, e.g. accidental harm or uncomfortable interaction?

(9) Have any members acted in a way that pleasantly surprised you? Tell me more.

(10) Why do you think that your members use the Zimride service?

(11) How has their participation affected their feelings about your organization?

(12) How has their participation affected their use of vehicles and/or public transportation?

(13) Overall, how would you describe the outcome of offering the Zimride service? How can your experience be improved?

(14) Is there anything else that you would like to tell me before we end?

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# Policy compliance and deterrence mechanism in the sharing economy

## Accommodation sharing in Korea

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### Abstract

**Purpose** – In a sharing economy, economically inactive members can serve as providers owing to the low start-up costs. However, such providers may operate without sufficient knowledge of the market and policies, causing significant problems. To prevent illegal sharing, governments encourage providers to register their businesses after meeting certain requirements, but most providers still operate unregistered businesses. The purpose of this paper is to explore the causes of policy non-compliance and suggest measures that can induce compliance.

**Design/methodology/approach** – Based on the rational choice and deterrence theories, this study combines qualitative and quantitative research. The former is used to investigate the antecedent factors affecting compliance. Using the latter, this study assumes that the existence of platform operators can resolve information asymmetries. The qualitative findings provide the variables that can lead to policy compliance, while the quantitative research verifies the causal relationships.

**Findings** – Business registration by providers in the sharing economy arises from their subjective cost-benefit calculations of policy compliance. According to the qualitative research, they believe there is a low risk of detection of policy non-compliance by the government. The quantitative research suggests that interventions by platform operators could resolve information asymmetries between the government and providers.

**Originality/value** – This study designed a mechanism to guide providers toward policy compliance. To reduce friction with the existing market and ensure efficient growth, it is necessary to cooperate with sharing economy participants. The results suggest that the role of platform operators and the government is important.

**Keywords** Sharing economy, Rational choice theory, Accommodation sharing industry, Deterrence theory, Policy compliance

**Paper type** Research paper

### 1. Introduction

In the past, individuals who could provide a room or a back seat in a car were unable to run an accommodation or transportation business because they had difficulty investing in essential business-based activities such as securing consumers and advertising. However, platform operators have lowered this entry barrier (Belk, 2014), enabling an accommodation or transportation business to run using fewer resources. This phenomenon is called the sharing economy (Belk, 2014; Cohen and Sundararajan, 2015). The low entry barrier in the sharing economy has provided economic opportunities to economically inactive members such as homemakers, the elderly and the unemployed thus far alienated from such activities. However, the low entry barrier means that the regulations are weak (Ranchordás, 2015), resulting in negative consequences, such as the weakening authority of taxation and legal liability in the event of accidents (Hong and Lee, 2018).

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Thus, governments are redefining policy to integrate sharing economy providers into existing systems. For example, in the accommodation sharing industry, national governments in the USA, France, Japan and Korea suggest business providers register their businesses. A registration policy is not inherently powerful, but it is a basic and useful policy enabler. To register, providers must meet certain requirements designed to tackle country-specific social issues. For example, the requirements established by the Korean Government focus on preventing disputes with traditional business owners and local residents (*Forbes*, 2016). As a result, they include items such as primary residence, the consent of property owners and neighbors, and the installation of safety facilities.

According to the Korean Ministry of Culture, Sports and Tourism (2016), only 30 percent of providers have registered their accommodation sharing businesses in Korea. Since 70 percent are thus engaged in illegal sharing, the Korean Government cannot measure the exact number of providers participating in the industry to actively tackle social issues such as conflicts with consumers and traditional business owners (Reuters, 2018). This phenomenon is called policy non-compliance (Young, 2011). However, this is not unique to Korea. Cases of policy non-compliance can be found in many countries with active accommodation sharing sectors (Katz, 2015). When providers do not register their businesses, the government cannot accurately measure their size or impose a tax on them. Moreover, non-policy compliance makes it difficult for the government to control issues including disputes between business owners and consumers (Leaphart, 2016). Therefore, encouraging providers to register their businesses is a priority for the government.

Academic discussions in this area remain limited. Although the sharing economy has gained significant traction within a range of fields such as entrepreneurship, innovation, technology, and management, empirical research on government policy is scarce (Muñoz and Cohen, 2017). In addition, most recent studies of the sharing economy focus on consumers rather than providers, while issues such as policy compliance remain unsolved (Laurell and Sandström, 2017; Lee *et al.*, 2018). Therefore, this study focuses on providers who are participants in the sharing economy. More specifically, it aims to answer the following two questions:

*RQ1*. What antecedents affect the policy compliance behaviors of providers in the sharing economy?

*RQ2*. Which deterrence mechanism can lead them to policy compliance?

To identify the antecedent factors that affect the policy compliance behaviors of providers in the accommodation sharing industry in Korea, this study uses the rational choice theory and deterrence theory. The basic framework of the discussion is based on rational choice theory. According to rational choice theory, an individual's decision on policy compliance is the result of his/her subjective calculations of the costs and benefits involved (Becker, 1968). In short, policy non-compliance means that the provider recognizes that the cost of compliance (non-compliance) is high (low) (Bulgurcu *et al.*, 2010; Li *et al.*, 2010; Paternoster and Simpson, 1996). However, those antecedent factors recognized as costs and benefits by individuals are discussed differently depending on the research context (Boudon, 1998; Sabatier, 1999). Hence, deriving a specific antecedent factor requires further discussion (Sabatier and Jenkins-Smith, 1993). Therefore, this study analyzes measures to encourage policy compliance by adding deterrence theory.

This study uses mixed methods. The qualitative study focuses on 21 providers in the accommodation sharing industry in Korea. Interviews were conducted to derive the significant antecedent factors that affect their perspectives and policy compliance behaviors (Study 1). Based on the study results, a research model was established; a survey was then conducted targeting 251 providers to verify the causal relationships (Study 2). Then, practical and political were proposed to induce providers in the accommodation sharing sector to comply with institutional policies.

The sharing economy is now recognized not as a niche market but as a profitable economy that attracts millions of users and huge investment (Möhlmann, 2015). Indeed, providers in this economy often turn into micro-entrepreneurs (Trenz *et al.*, 2018). However, empirical research on identifying the factors that inhibit market growth from the perspective of providers is insufficient (Lee *et al.*, 2018). Therefore, this study bridges the research gap and contributes to encouraging the healthy growth of the sharing economy.

## 2. Literature review

### *2.1 Policy compliance and rational choice*

*2.1.1 Policy compliance of economic agents.* Policy compliance is defined as "all behavior by subjects or actors that conforms to the requirements of behavioral prescriptions or compliance systems" (Young, 2011, p. 4). Policy compliance has long been an important research topic because a government cannot achieve its goals if individuals do not follow its policies. Since policy compliance is an individual quasi-voluntary act (Levi, 1991), many studies have tried to identify the factors that affect compliance and non-compliance. Since Allingham and Sandmo (1972) analyzed the economic factors affecting tax compliance, many studies have shown that individuals calculate the expected benefits and costs of non-compliance, either consciously or unconsciously.

Rational choice theory is the view that individuals make a balanced decision by comparing the expected costs and benefits (Becker, 1968; Paternoster and Simpson, 1996). This theory has traditionally been used to explain policy compliance in such domains as taxation (Chittenden *et al.*, 2002; Slemrod *et al.*, 2017) and security (Bulgurcu *et al.*, 2010; Son, 2011; Yu *et al.*, 2015). According to it, individuals apply the expected utility principle of economics by acting to maximize the achievement of their desires (Lin and Huang, 2013; Wang *et al.*, 2018).

*2.1.2 Factors that impede rational choice.* The rational choice theory posits that individuals' decisions on policy compliance are the result of their subjective calculations of expected costs and benefits. However, this theory has two main shortcomings. One is that the evaluation of rationality can be highly subjective (Bulgurcu *et al.*, 2010; Sabatier, 1999). The evaluation of costs and benefits is based on individuals' different perceptions and preferences (Becker, 1968). However, individuals have different perceptions and preferences. Moreover, the belief that preferences are in the balance is the result of their subjective judgment (McCarthy, 2002; Paternoster and Pogarsky, 2009). Therefore, many discussions revolve around identifying the antecedent factor perceived as a cost or a benefit in the context of the study, often existing as a black box (Sabatier and Jenkins-Smith, 1993). In other words, the framework of discussion can be built through the rational choice theory but deriving specific antecedent factors requires richer perspectives.

The second shortcoming is information. For example, while certain behaviors, according to the strict rationality assumption, may be the most rational and desirable under the given conditions, it is extremely unusual to satisfy such conditions in reality. In short, individuals do not have perfect information to predict the consequences of their behaviors. In this context, Simon (1972) argued that rationality refers to bounded rationality.

A recent perspective of rational choice theory states that people are unable to understand the value or cost of behaviors intuitively. As a result, they pursue what they perceive to be the most satisfying option within their limited capacity (Simon, 1955). In the context of policy compliance, the suggestion that governments and individuals evaluate each other based on perfect information is a major limitation of the theory (Riker, 1995). In reality, individuals cannot exactly predict the costs and benefits of their compliance and non-compliance behaviors. Therefore, they make decisions based on their bounded rationality. For example, it is difficult for individuals to accurately predict the likelihood of being detected by the

government and punished for their non-compliance behaviors because detecting such behaviors is costly. Thus, studies of policy compliance have found that information asymmetries exist between the government and individuals (Camerer and Kunreuther, 1989; Miller and Rock, 1985). This information asymmetry, resulting from imperfect information, means individuals make satisfactory, limited situational, and rational choices rather than maximizing their utility based on the information available (Ward *et al.*, 2006).



*2.2 Asymmetric information in the sharing economy*

*2.2.1 Deterrence mechanism: strategies to attract policy compliance*. Information asymmetries exist in all basic transactional relationships (Akerlof, 1970). In particular, according to the deterrence theory, individuals comply with policy when there is a high risk of detection (certainty of sanction) by governments and serious penalties (severity of sanctions) in the case of non-compliance (Blumstein *et al.*, 1978; Straub and Welke, 1998). The deterrence theory is based on the idea that people make rational decisions, and it explains the punishment strategies that lead individuals to policy compliance. It was adopted for this study for two reasons: to overcome the limitation that specific antecedents cannot be established through rational choice theory and to explain the punishment strategies that lead individuals to policy compliance, given that people make rational decisions (Achen and Snidal, 1989; Akers, 1990; Quackenbush, 2004).

Two traditional strategies (carrot and stick) can lead to compliance when individuals have a high level of non-compliance: compensation and punishment (Andreoni *et al.*, 2003). Studies of the formalization of informal economic activities argue that a punishment strategy is desirable to eradicate such activities in early stages, whereas a compensation strategy is used for complete transfer into the formal domain in later stages (Oviedo *et al.*, 2009; Pena, 2000). Therefore, since the sharing economy, the context of this study, is still in its early stage and providers have a high level of non-compliance, focus must be first placed on a punishment strategy rather than a compensation strategy.

Deterrence theory emphasizes that if individuals recognize that the audit probability is low, they do not comply with the policy. However, government audits incur a high administrative cost, and after an audit, individuals have a low probability of being re-audited, meaning that the rate of compliance drops sharply (Guala and Mittone, 2005). This theory has also been used to propose that deterrence is influenced by individuals' personal perceptions of punishment rather than the objective existence of the punishment itself (Williams and Hawkins, 1986). The objective audit probability has a direct impact on compliance, while the subjective perceived probability also affects compliance. Furthermore, the fear of legal punishment, expected utility, social criticism and informal punishment act as determinants of compliance (Cornish and Clarke, 1986).

*2.2.2 Assumptions of perfect information in the sharing economy*. Formal implementers, or governments, traditionally monitor and control individual policy compliance behaviors (Mazmanian and Sabatier, 1981). As a result, they should be able to accurately identify and punish individuals for non-compliance (Braithwaite, 1993). However, this requires a considerable amount of resources (Alexander, 1985; Mazmanian and Sabatier, 1981; Nakamura and Smallwood, 1980). Therefore, information asymmetries exist between the government and individuals who engage in policy non-compliance. This is because the government cannot collect all of the information related to individuals' economic activities and their policy compliance behaviors. Such information asymmetries can be mitigated by the unique mechanism of the sharing economy (Bae and Koo, 2018; Thierer *et al.*, 2015). Unlike typical market structures, most transactions in the sharing economy are carried out through platform operators that provide coordination for consumers and providers through direct interactions with the user (Akbar and Tracogna, 2018; Hagiu and Wright, 2011). Since

individual benefits of using a platform depend on how well platform operators mediate between users (Munger, 2015), there is a self-reinforcing dynamic where a higher number of users increases the value of the platform (Arthur, 1989; Schilling, 2009). Given that most transactions are made through platform operators in the sharing economy, the information asymmetry between governments and individuals can then be solved. In addition, this can be a new mechanism of the deterrence theory.

Moreover, not only the government, but also platform operators should intervene in the market to expand innovation in the sharing economy (Arribas *et al.*, 2016). In other words, the government should delegate a part of its powers to enforce its regulations so that platform operators can play the role of an intermediary (Cohen and Sundararajan, 2015). This refers to individuals or groups given the responsibility by implementers to assist in policy implementation (Nakamura and Smallwood, 1980). Traditionally, the local government or parliament is an intermediary, appearing in diverse and complex forms. While intermediaries are known to affect compliance, related discussions are still lacking. Thus, this study examines the appropriate level of intervention taken by platform operators to induce policy compliance.

Careful observation shows that platform operators in the sharing economy have poured their efforts into lobbying to create a policy environment favorable to them or controlled providers by exploiting information monopolies (Koopman *et al.*, 2014; van Doorn, 2017). Further, they often fail to provide sufficient transaction information to providers (Newlands *et al.*, 2017; van Doorn, 2017). In other words, they not only perpetuate information asymmetries with providers, but also encourage them for their own benefit (Koopman *et al.*, 2014; Newlands *et al.*, 2017). However, platform operators must fulfill their social responsibilities because most of their assets, or the data necessary to operate their businesses, are generated by individual users (Sundararajan, 2017). Since platform operators have positive network effects, monopolistic platform operators, which dominate the market, have a competitive edge (Munger, 2015). Therefore, all operators should create a healthy market to ensure their sustainable growth. Further, most submarkets of the sharing economy tend to be dominated by a handful or even one intermediary (Murillo *et al.*, 2017). Indeed, platform operators have been said to be more powerful than factory owners were in the early period of the Industrial Revolution (Kenney and Zysman, 2016).

Given the insufficient research on this topic, this study explores the psychological calculation procedures that providers in the sharing economy use to decide their policy compliance behaviors. It also attempts to verify whether platform operators can work as a deterrence mechanism to control individuals' policy non-compliance behaviors based on perfect information.

### *2.3 Accommodation sharing sector and policies in Korea*

In Korea, the accommodation sharing business is highly active. Airbnb, the most representative platform, launched its service in the country in 2013. In 2016, more than 500,000 foreign tourists to Korea found their accommodation through Airbnb. The number of providers that hosted tourists at least once in the last year was 9,800 and those providers earned an average of US$3,500 a year. Airbnb reported that the income of these providers and tourists' expenditure had a combined economic impact of US$480m in Korea (*Hankyoreh*, 2017). Although the accommodation sharing sector is growing rapidly in Korea, unregistered providers are hindering growth. There are conflicts between providers in the traditional economy such as hotels and guesthouses, legally registered providers and illegally operating providers. Policy proposals are determined by the country's particular social problems. The Korean Government proposed a policy wherein providers must register their businesses after they meet certain requirements

(Korean Ministry of Culture, Sports and Tourism, 2016). Those requirements include primary residence (one provider, one address), the consent of property owners and neighbors, and the installation of safety facilities. The primary residence requirement was created to prohibit professional providers. In Korea, providers can use only the accommodation in which they reside to offer accommodation sharing services. As in Korea, a number of cities including San Francisco and Paris define the primary residence as the residence in which providers live for at least several months during a year (Time, 2014). Moreover, it is illegal in Korea to host *officetels* or studios in high-rise buildings designated for offices and residences as well as hosting an entire home for a guest (*Forbes*, 2016). This is similar to the requirement in Santa Monica, California, that providers be on-site during guests' stay (National Public Radio, 2015). The consent of property owners and neighbors' requirement aims to alleviate conflict with neighbors, while the installation of safety facilities is to prevent disputes with guests.

Through these requirements, the Korean Government has tried to manage providers in the accommodation sharing sector and nurture this industry. However, as noted earlier, 70 percent of providers engage in unregistered accommodation sharing (Reuters, 2018). Moreover, it is estimated that providers that have multiple listings in Seoul account for 30 percent of all providers. This ratio is significantly higher than that of other major cities in the USA (New York: 13 percent, Los Angeles: 20 percent, San Francisco: 15 percent) and Europe (Amsterdam: 9 percent, Paris: 8 percent, London: 17 percent) (Kim *et al.*, 2016).

## 3. Study 1: qualitative study

This research adopts a mixed method approach. First, the qualitative study based on in-depth interviews is conducted to understand the perceptions of providers and derive the variables for the empirical research. The success of a policy is a highly subjective concept that involves individuals' value judgment (Hogwood and Gunn, 1984). Thus, through the interviews, this study specifically examines the antecedents that affect individuals' policy perceptions and compliance-related decisions.

### *3.1 In-depth interview design*

This study collected qualitative data by conducting interviews with 21 providers in the accommodation sharing industry (Table I). Interviewees were recruited through an online community of Airbnb hosts in Korea with the help of the community manager[1]. Interviewees were distributed evenly considering age, area, and duration of operation. They were selected based on four criteria suggested by Spradley (1979). First, participants should be thoroughly aware of the research topic. Second, participants should currently belong to

| Code | Gender | Age | Period[a] | Number[a] | Profit[a] | Code | Gender | Age | Period | Number | Profit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| A | Male | 30s | 2 years | 2 | 3,000 | L | Male | 30s | 6 months | 1 | 600 |
| B | Female | 20s | 7 years | 1 | 400 | M | Male | 30s | 6 months | 1 | 1,500 |
| C | Female | 40s | 2 years | 2 | 2,000 | N | Male | 30s | 3 years | 3 | 1,800 |
| D | Female | 40s | 1 years 8 months | 1 | 500 | O | Male | 50s | 11 months | 1 | 300 |
| E | Male | 30s | 6 years | 5 | 7,000 | P | Female | 30s | 1 year 3 months | 1 | 2,600 |
| F | Female | 30s | 1 years | 1 | 500 | Q | Male | 20s | 8 months | 1 | 1,000 |
| G | Male | 20s | 7 months | 1 | 400 | R | Male | 40s | 1 year 3 monts | 5 | 4,000 |
| H | Male | 40s | 1 year | 1 | 200 | S | Female | 30s | 5 months | 2 | 600 |
| I | Male | 50s | 4 years 1 month | 2 | 2,000 | T | Male | 30s | 5 years 2 months | 6 | 5,000 |
| J | Female | 30s | 1 year 10 months | 7 | 7,000 | U | Male | 40s | 6 months | 1 | 500 |
| K | Male | 30s | 5 months | 1 | 1,000 | | | | | | |

**Notes:** [a]Period means the operating period; number means the number of properties in operation; and profit means average monthly net profit (US$)

**Table I.** Characteristics of participants

such cultural situations. Third, participants should have sufficient time for the interview. Fourth, participants should be non-analytical if possible. Through these criteria, 21 male and female providers in their 20s–50s were selected as participants. They had participated in the accommodation sharing sector as providers for more than six months and were still in operation. For the convenience of participants, groups were formed with people of similar characteristics (Krueger, 1994) and interviews conducted in familiar places. The in-depth interview was conducted by the researcher leading this study. Interviews were conducted four times from November 2016 to March 2017.

The questions comprised four stages: opening questions; introductory and transition questions; key questions; and ending questions (Krueger and Casey, 2009). Opening questions were related to the motivation of providers to participate in the accommodation sharing sector and the general understanding of the business. Introductory and transition questions were related to whether providers perceived the policy and its instruments. Key questions were designed to identify whether providers complied with the government policy. Ending questions queried providers on their thoughts regarding how to improve the policy. Some of the questions may be sensitive to them, so researchers asked them to replace them with general situations or other providers' stories.

### *3.2 Analysis and results*

*3.2.1 Characteristics of providers*. The average monthly incomes from Airbnb vary among providers. The average income of participants is US$1,500 per month, in line with the findings of Bruckner's (2016) survey on sharing economy providers in the USA, which showed that 49 percent of all providers earn US$100–5,000 per year.

These are perceptions of business operations: Interestingly, providers with new contracts or leases, such as Participant J, called it "a business" or defined themselves by using expressions such as "start-ups like us" (Participant G). Moreover, they began increasing the amount of accommodation when profits were generated (Participant J runs seven properties). Some providers thought that their participation was likely to be short-term or that the income would be insignificant. They tended to avoid registering their accommodation with the government, in line with the findings in the literature on the policy compliance of informal economic activities that providers initially test the viability of their businesses (Katungi *et al.*, 2006; Williams *et al.*, 2011). As Participant H stated, "I am doing this as a side job, so if I see no bookings once I start, I will just give up."

*3.2.2 Providers' cost-benefit calculation for policy compliance*. In the interview, providers were asked whether they were compliant with government policy and why. The most mentioned cost of compliance was the loss of business continuity, flexibility and competitiveness. "If I followed the policy, I would not be able to operate as I do now […] The government requires neighbors' consent and the property owner's consent. No property owners and neighbors would agree" (Participant G). "Most guests want to rent an independent whole house. But this is illegal […] So, this does not meet the guest's needs" (Participant K). "I have to pay the registration fee and tax. Then, I have to reflect it in the accommodation fee, and this will make me less price competitive" (Participant C).

However, they were willing to comply with the policy to enable steady operations. The interviewees also mentioned stable operations and mental peace. "I will feel stable. If my anxiety is gone, it would be good for my mental health" (Participant E). "It is good to do business freely if I do it as I do now. If I get caught, I have to close my business suddenly" (Participant T).

*3.2.3 Ways to reduce policy non-compliance*. These are providers' perceptions of policy non-compliance deterrents: First, providers are afraid of the punishment imposed by the government when non-compliance is detected. "I heard someone was hit with a US$2,400

fine, which is about half of my yearly earnings" (Participant F). Providers' behavior is thus based on their calculation of the probability of the detection of non-compliance. "There are locations where it is very easy to get caught. When foreigners are walking around with suitcases, the tourist police ask them for their accommodation address" (Participant T). "[What] I am doing [is] illegal. Because my accommodation is in a rural area" (Participant C). Compliance increases when governments detect non-compliance perfectly and then impose a punishment (Winter and May, 2001). However, providers consider the possibility of detection to be low.

Second, some providers argued that their compliance intention would improve if platform operators provided them with policy information. "We are also consumers, so it is right to inform us of all the policies" (Participant S). However, they did not state exactly the nature of the information they wanted, or what information would make them willing to comply with the policy. Some said that simply providing information would not change their compliance intention. "Although the platform provides information to follow, people will not. People are already doing it illegally […] the scary thing is […] if the platform hands over this information to the government […] they already know it all" (Participant T). The provider above stated that the provision of policy-related information may raise awareness but would not lead to action. In addition, it would be the most powerful way for the platform operator to hand over the accommodation information and sales history to the government. This statement is contrary to the view that providing information to the policy target group alone can lead to compliance (Balch, 1980). Participants were also concerned that platform operators could impose a penalty. Some providers had been removed from the platform for posting unauthorized accommodation. Since Airbnb is the largest platform company in this area, most providers were using it. "Because Airbnb is so predominant now […] I have no booking requests even if I put it up on another site" (Participant A). "If Airbnb also does not work, I would rather close the business" (Participant P). In other words, providers are highly affected by the intervention of the platform operator.

Third, the policy compliance decisions of individuals are affected by peer groups, neighbors, and reference groups (Braithwaite, 1993; Hawkins, 1984; Winter and May, 2001). Providers recognized that most were operating their businesses illegally. "I have seen a person who was operating 15 properties […] And I also heard about someone who is running 30–40 […] This is almost a company. So, if this is regulated, such kind of hosts should be checked first" (Participant A). "There are so many people who are doing business illegally that legal operation looks rather strange" (Participant M).

The focus of Study 1 is understanding the providers' situations and exploring the antecedent factors influencing their policy compliance. Figure 1 summarizes the results of Study 1. Based on these results, Study 2 develops the integrative framework as a research hypothesis and empirically verifies the research model.

## 4. Study 2: quantitative study

### *4.1 Research model and hypotheses*

*4.1.1 Rational choice process.* Recent studies adopting the rational choice theory emphasize that costs and benefits should be defined as antecedent factors that affect compliance (Bulgurcu *et al.*, 2010; Li *et al.*, 2010). For simplicity, this study assumes that the benefit of compliance can simultaneously be its cost because abandoning predicted benefits may be transformed into costs (Hofeditz *et al.*, 2017). In the sharing economy context, a provider may register his/her own accommodation with the government to comply with policy or operate an unregistered accommodation as a result of non-compliance. Thus:

*H1.* The cost of compliance perceived by providers in the sharing economy has a negative impact on their intention to comply.

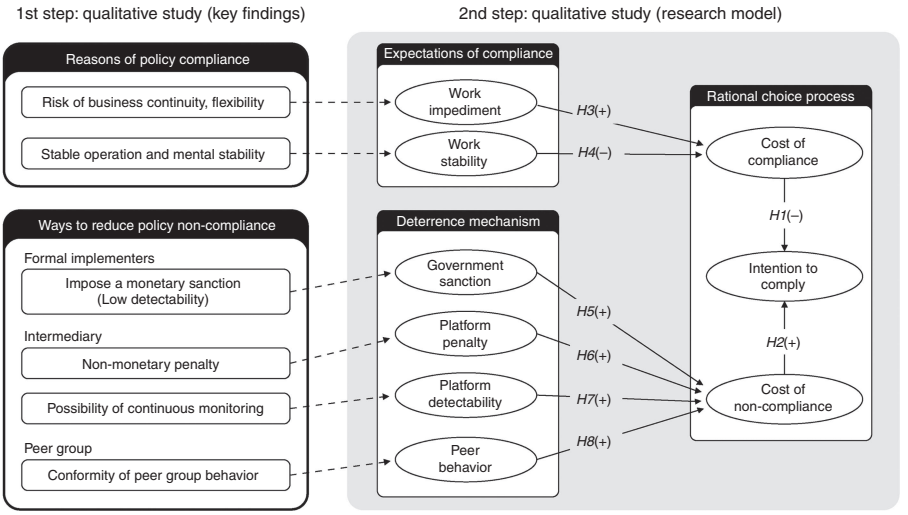



**Figure 1.**
Integrative framework and research model

*H2*. The cost of non-compliance perceived by providers in the sharing economy has a positive impact on their intention to comply.

*4.1.2 Expectations of compliance*. If the requirements of a policy require individuals to modify their behaviors (Mazmanian and Sabatier, 1981) and the work or its procedures are likely to be limited by compliance (Siponen and Vance, 2010), individuals do not comply with the policy. Since such so-called "work impediments" (Bulgurcu *et al.*, 2010; Hofeditz *et al.*, 2017) decrease the benefits of policy compliance, they act as costs of compliance (Hwang *et al.*, 2017). In the interviews, providers stated that policy compliance would weaken the sustainability and flexibility of their businesses. Thus:

*H3*. The work impediment caused by policy compliance has a positive impact on the cost of compliance perceived by providers in the sharing economy.

Individuals are aware that their resources and work may be protected by complying with the policy (West, 2008). If non-compliance is detected, they cannot continue their business activities (Slemrod *et al.*, 2017). In the interviews, providers suggested stable business operations as a benefit of compliance. However, they were also concerned that their work or business activities may be stopped if they failed to comply with policy requirements. Hence:

*H4*. Securing work stability by policy compliance has a negative impact on the cost of compliance perceived by providers in the sharing economy.

*4.1.3 Deterrence mechanism*. A formal sanction has been suggested as a major determinant of compliance (Chittenden *et al.*, 2002; Slemrod *et al.*, 2017; Herath and Rao, 2009). In general, monetary sanctions more efficiently lead to compliance. However, it can be difficult to apply sanctions (Bowles and Polania-Reyes, 2012) and they do not always affect compliance (Braithwaite and Makkai, 1991). While there are no objections to sanctions as a major determinant of compliance, conflicting opinions exist on their impact depending on the context. This study assumes that sanctions by governments (i.e. monetary punishment) do affect the perceived cost of non-compliance by providers.

The in-depth interviews revealed that non-compliance fines (US$2,400) are one of the most feared sanctions. Thus:

*H5.* Government sanctions for policy non-compliance have a positive impact on the cost of non-compliance perceived by providers in the sharing economy.

Sanctions can be imposed by governments, but an intermediary may also induce compliance, when such an intermediary exists (Nakamura and Smallwood, 1980). Platform operators can impose non-monetary punishments and penalties on providers. An organization incurs the cost of non-compliance through penalties such as the loss of position and disciplinary action (Bulgurcu *et al.*, 2010; Son, 2011). However, such penalties have often proven ineffective because they are either absent in the organization or difficult to implement (Guo and Yuan, 2012; Herath and Rao, 2009). In the interviews, providers perceived that they could suddenly be removed from the platform if they did not comply. Since the exposure to searches and rankings on the platform are directly linked to booking rates and revenue, this acts as a strong penalty for providers. Hence:



*H6.* The imposition of platform penalties for non-compliance has a positive impact on the cost of non-compliance perceived by providers in the sharing economy.

Governments are considered to be the only entities that monitor and detect non-compliance in traditional policy compliance studies and deterrence theory. However, governments generate considerable transaction costs to obtain the necessary information and monitor the behavior of individuals. Thus, it is practically impossible for them to detect all non-compliance. As a result, agency problems arise (Herath and Rao, 2009; Tyler and Blader, 2005). In the accommodation sharing industry, transactions are made by dominant platform operators. Therefore, all the transaction information of providers is owned by platform operators. Thus, providers may comply because the cost of non-compliance increases just by recognizing the monitoring and detection efforts of platform operators (Son, 2011). In the interviews, providers expressed a fear of the platform operator possessing their accommodation and transaction information. Hence:

*H7.* Platform detectability of non-compliance has a positive impact on the cost of non-compliance perceived by providers in the sharing economy.

According to the deterrence theory, the social environment is one of the factors affecting policy compliance (Braithwaite, 1993; Hawkins, 1984; Nakamura and Smallwood, 1980). This is expected to have a significant impact on the policy compliance of individuals. In terms of the deterrence theory, it has been suggested that the social environment affects policy compliance and non-compliance as a norm. A higher number of non-compliant peers indicates that individuals are more likely to recognize that their non-compliance behavior is acceptable and thus feel less guilty (Herath and Rao, 2009). This phenomenon is evident in the results of the in-depth interviews, where providers stated that all other providers were non-compliant and did not take their non-compliance seriously. Hence:

*H8.* Peer behaviors of non-compliance have a positive impact on the cost of non-compliance perceived by providers in the sharing economy.

### *4.2 Survey design*

*4.2.1 Measurement development*. As shown in Table II, the questionnaire variables used to measure each latent variable of the research model were adopted from previous studies. To improve the measurement reliability and face validity, an English/Korean bilingual researcher checked the questionnaire to prevent any potential translation mistakes or misunderstandings caused by the language barrier. Then, a pretest was conducted in which

| Dimension and questions | Source |
|---|---|
| *Work impediment* | |
| Complying with the policy _____ | Modified<br>Bulgurcu *et al.* (2010) |
| (WI1) | Holds me back from letting my accommodation |
| (WI2)[a] | Slows my response time to my guests, platform operators, etc. |
| (WI3) | Hinders my productivity |
| (WI4) | Impedes my efficiency |
| *Work stability* | |
| Complying with the policy _____ | Modified<br>Bulgurcu *et al.* (2010) |
| (WS1)[a] | Eliminates the risk of crackdowns |
| (WS2) | Enhances the safety of my accommodation |
| (WS3) | Improves the protection of my accommodation |
| (WS4) | Prevents the potential risk of my accommodation |
| *Government sanction* | |
| If I do not comply with the policy, _____ the fine imposed by the government | Modified<br>Moquin and Wakefield (2016) |
| (GS1) | I will be afraid of |
| (GS2) | I will fear |
| (GS3) | I will be worried about |
| *Platform penalty* | |
| If I do not comply with the policy, I will be worried that the platform _____ my accommodation | Self-developed |
| (PP1) | Might not expose |
| (PP2) | Could stop exposing |
| (PP3) | Could exclude |
| *Platform detectability* | |
| If I do not comply with the policy, the platform may _____ | *Self-developed* |
| (PD1) | Have the location information of my accommodation |
| (PD2) | Know the operation size of my accommodation |
| (PD3)[a] | Know the operation information of my accommodation |
| (PD4) | Monitor the operation information of my accommodation |
| *Peer behavior* | |
| _____ comply with the policy | Herath and Rao (2009) |
| (PB1) | I believe other providers |
| (PB2) | I am convinced other providers |
| (PB3) | It is likely that the majority of other providers |
| *Cost of compliance* | |
| Complying with the policy is _____ for me | Bulgurcu *et al.* (2010) |
| (CC1) | Burdensome |
| (CC2) | Costly |
| (CC3) | Time consuming |
| *Cost of non-compliance* | |
| If I do not comply with the policy, it will _____ | Bulgurcu *et al.* (2010) |
| (CN1)[a] | Be harmful to me |
| (CN2) | Impact me negatively |

**Table II.**
Measurement items

(*continued*)

| Dimension and questions | Source |
|---|---|
| (CN3) | Disadvantage me |
| (CN4) | Generate losses for me |
| *Intention to comply* | |
| _____ the policy | Modified |
| | Bulgurcu *et al.* (2010), Han *et al.* (2017) |
| (IC1) | I intend to comply with the requirements of |
| (IC2) | I intend to carry out my responsibilities prescribed in |
| (IC3)[a] | I intend to follow |
| (IC4) | I may comply with |
| *Community involvement*[b] | |
| On the online community for Airbnb hosts, I like to ___ | Modified |
| | Ifinedo (2014) |
| (CI1) | Participate in informal meetings |
| (CI2) | Build personal relationships with other hosts |
| (CI3) | Get actively involved in community activities |

**Notes:** [a]Dropped item; [b]marker variable

**Table II.**

two questionnaire experts, including a professor of business, evaluated the concreteness, conciseness and appropriateness of the questionnaire. Through this process, 9 variables and 32 reflective measure questions (except marker variable) were derived based on five-point Likert scales. Then, a week-long pilot study was conducted from April 1, 2017 on 32 hosts of Airbnb to ensure the content validity of the questionnaire in advance.

*4.2.2 Sampling and data collection*. The online survey was conducted from April 20 to May 4, 2017, targeting hosts of Airbnb in Korea. To recruit participants, a notice of the survey was announced twice on the board of an online community of Airbnb hosts in Korea with the help of the community manager of Online Community for Airbnb Hosts. Participants were randomly selected after messages were sent to all community members for two times. Through this process, accounts and e-mail addresses of 423 members were collected. The URL of the online survey that was structured in advance through a program called Naver Office (Naver Form) was sent to the participants via e-mail, text and online messaging apps. To encourage honest responses and raise the response rate, an e-mail notification was sent to participants along with two *KaKaoTalk* messages in advance. Furthermore, a mobile gift card worth US$10 was provided to respondents as a post-incentive. To exclude respondents with no experience in the accommodation sharing industry, a screening question was included as the first item of the questionnaire, which asked whether the respondent is hosting a stay. As a result, 252 members responded to the survey (response rate 57.5 percent) and 251 responses, excluding one unreliable response, were used in the analysis.

Table III presents the general demographics of respondents. First, the female participation rate (64.1 percent) was higher than the male participation rate (35.9 percent). Respondents in their 30s and 40s accounted for 82 percent of respondents; 95 percent had a Bachelor's degree or higher. The favored types of accommodation were multi-family, multiplex, or row houses (35.1 percent) and high-rise residential buildings (31.1 percent). In addition, 65.7 percent were hosting accommodation in Seoul, 74.6 percent were participating in the business as a second job and 55 percent stated that they earned less than US$1,000 per month on average through their accommodation sharing businesses. The rate of those who shared their residence (40.6 percent) was found to be similar to the rate of those who hosted accommodation that was newly contracted or leased for accommodation sharing. Most providers (67.7 percent) operated one property.

| Category | Freq. | % | Category | Freq. | % |
|---|---|---|---|---|---|
| *Gender* | | | *Operating city* | | |
| Male | 90 | 35.9 | Seoul | 165 | 65.7 |
| Female | 161 | 64.1 | Others | 86 | 34.3 |
| *Age* | | | *Average monthly net profits* | | |
| 18–29 | 33 | 13.1 | 0–1,000 | 138 | 54.9 |
| 30–39 | 144 | 57.4 | 1,000–2,000 | 82 | 32.7 |
| 40–49 | 62 | 24.7 | 2,000–3,000 | 18 | 7.2 |
| 50 and over | 12 | 4.8 | 3,000 and over | 13 | 5.2 |
| *Education level* | | | *Characteristics of accommodation* | | |
| High school | 13 | 5.2 | Own residence | 102 | 40.6 |
| Bachelor's degree | 195 | 77.7 | Own separate accommodation | 60 | 23.9 |
| Master's degree and doctorate | 43 | 17.1 | New contract or lease | 89 | 35.5 |
| *Type of accommodation* | | | *Amount of accommodation in operation* | | |
| Detached house | 32 | 12.7 | 1 | 170 | 67.7 |
| Multi-family house[a] | 88 | 35.1 | 2 | 56 | 22.3 |
| Apartment house | 53 | 21.1 | 3 | 12 | 4.8 |
| High-rise residential building | 78 | 31.1 | 4 | 3 | 1.2 |
| *Full-time or side job*[a] | | | 5 and over | 10 | 4.0 |
| Full-time job | 63 | 25.4 | *Period*[a] | | |
| Side job | 188 | 74.6 | 1.21 years | | |

**Table III.** Characteristics of the survey respondents

**Notes:** [a]Multi-family house includes multi-family/multiplex/row houses; full-time or side job means whether hosting is a full-time or side job; and period means the average operating period

*4.3 Data analysis and results*

*4.3.1 Reliability and validity of the measures*. An exploratory factor analysis was performed with a principal component analysis and a varimax rotation using SPSS 23.0 (Table IV). After the primary factor analysis, five items (WI2, WS1, PD3, CN1, IC3) were dropped because they had either factor loadings far below 0.6 or cross-loadings. The results showed that the eigenvalues were all above 1.0 and the extracted factors explain about 83 percent of the total variance. Next, a confirmatory factor analysis (CFA) was performed using LISREL 8.80. For convergent validity and reliability, standardized path loading values and Cronbach's $\alpha$s were measured, and all exceeded the critical acceptable value of 0.7 (Fornell and Larcker, 1981).

The reliability of the measures was calculated by using composite reliability (CR) and average variance extracted (AVE). As shown in Table V, all the CR values were above the critical acceptable value of 0.7 and all the AVE values were higher than 0.5 (Gefen *et al.*, 2011). To support discriminant validity, all the correlations between the latent variables needed to be less than 0.6 and the square root of AVE for each construct greater than the correlation between a pair of constructs (Fornell and Larcker, 1981).

Meanwhile, the questions associated with the predictor and criterion variables were asked simultaneously in a single survey, there is a risk of common method variance bias (CMB), namely, the internal consistency of responses occurs (Podsakoff *et al.*, 2003). For this reason, the CFA marker technique (Williams *et al.*, 2010) was applied to statistically verify the potential influence of common method variance. First, community involvement was selected as the marker variable, as this was theoretically unrelated to the substantive variables and had fewer empirical relationships with the nine primary constructs. As shown in Table VI, the correlations between community involvement and the other variables were confirmed to be low.

| Item | Component 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|
| PB1 | 0.932 | −0.032 | 0.175 | 0.010 | 0.172 | −0.053 | −0.082 | −0.004 | 0.007 |
| PB2 | 0.920 | −0.066 | 0.208 | 0.002 | 0.166 | 0.005 | −0.098 | −0.046 | 0.017 |
| PB3 | 0.923 | −0.043 | 0.193 | 0.020 | 0.154 | 0.030 | −0.124 | −0.030 | 0.020 |
| GS1 | −0.056 | 0.932 | −0.062 | 0.124 | −0.021 | 0.073 | 0.108 | −0.011 | 0.079 |
| GS2 | −0.061 | 0.929 | −0.023 | 0.108 | −0.003 | 0.118 | 0.056 | 0.004 | 0.069 |
| GS3 | −0.011 | 0.828 | 0.090 | 0.130 | −0.037 | 0.061 | 0.216 | 0.091 | 0.176 |
| IC1 | 0.159 | −0.001 | 0.897 | 0.062 | 0.108 | −0.062 | 0.005 | 0.026 | −0.112 |
| IC2 | 0.192 | 0.004 | 0.883 | 0.044 | 0.152 | −0.088 | −0.031 | 0.024 | −0.138 |
| IC4 | 0.209 | −0.010 | 0.863 | 0.043 | 0.146 | −0.083 | 0.037 | 0.002 | −0.101 |
| CN2 | −0.044 | 0.154 | 0.009 | 0.875 | 0.031 | 0.042 | 0.100 | 0.087 | 0.045 |
| CN3 | 0.020 | 0.090 | 0.072 | 0.916 | −0.001 | 0.006 | 0.067 | 0.081 | 0.032 |
| CN4 | 0.057 | 0.100 | 0.058 | 0.907 | 0.013 | 0.030 | 0.089 | 0.127 | 0.080 |
| WS2 | 0.158 | −0.044 | 0.117 | −0.050 | 0.849 | −0.071 | 0.112 | 0.015 | −0.084 |
| WS3 | 0.164 | −0.032 | 0.159 | 0.044 | 0.909 | −0.057 | 0.080 | −0.006 | −0.038 |
| WS4 | 0.134 | 0.015 | 0.112 | 0.048 | 0.900 | −0.007 | 0.006 | −0.035 | −0.016 |
| WI1 | −0.012 | 0.088 | −0.027 | 0.019 | −0.042 | 0.866 | 0.011 | 0.030 | 0.153 |
| WI3 | 0.001 | 0.018 | −0.100 | 0.039 | −0.056 | 0.853 | 0.114 | 0.067 | 0.209 |
| WI4 | −0.005 | 0.132 | −0.088 | 0.012 | −0.029 | 0.850 | 0.015 | −0.038 | 0.231 |
| PP1 | −0.043 | 0.148 | −0.001 | 0.034 | 0.173 | −0.008 | 0.803 | 0.080 | 0.069 |
| PP2 | −0.134 | 0.091 | 0.009 | 0.137 | −0.025 | 0.046 | 0.872 | 0.101 | 0.057 |
| PP3 | −0.097 | 0.103 | 0.000 | 0.087 | 0.045 | 0.101 | 0.880 | 0.079 | 0.039 |
| PD1 | −0.023 | 0.046 | −0.060 | 0.063 | 0.048 | −0.055 | 0.114 | 0.838 | 0.025 |
| PD2 | −0.013 | 0.004 | −0.013 | 0.102 | −0.060 | 0.008 | 0.121 | 0.879 | 0.056 |
| PD4 | −0.030 | 0.020 | 0.119 | 0.111 | −0.014 | 0.113 | 0.010 | 0.817 | 0.066 |
| CC1 | −0.083 | 0.280 | −0.209 | 0.202 | −0.070 | 0.347 | 0.061 | 0.098 | 0.654 |
| CC2 | 0.084 | 0.105 | −0.066 | −0.032 | −0.046 | 0.245 | 0.081 | 0.065 | 0.839 |
| CC3 | 0.005 | 0.069 | −0.167 | 0.090 | −0.053 | 0.211 | 0.057 | 0.045 | 0.836 |
| Eigenvalue | 2.800 | 2.634 | 2.623 | 2.593 | 2.553 | 2.511 | 2.370 | 2.234 | 2.072 |
| variance (%) | 10.370 | 9.754 | 9.713 | 9.602 | 9.456 | 9.301 | 8.778 | 8.274 | 7.672 |
| C/variance (%) | 10.370 | 20.124 | 29.837 | 39.439 | 48.895 | 58.197 | 66.975 | 75.249 | 82.921 |

**Notes:** WI, work impediment; WS, work stability; GS, government sanction; PP, platform penalty; PD, platform detectability; PB, peer behavior; CC, cost of compliance; CN, cost of non-compliance; IC, intention to comply

**Table IV.** Results of the exploratory factor analysis

Furthermore, five nested CFA models (Model-1: full CFA, Model-2: Baseline, Model-3: Method-C, Model-4: Method-U, Model-5: Method-R) were generated according to the procedure of the CFA marker technique. Then, goodness-of-fit values were calculated and chi-square difference tests of each model were conducted to verify whether the analysis was free from CMB (for the details of each model and analysis procedures, see Williams *et al.*, 2010). In these tests, if Model-5 does not fit the data better than Model-3 or Model-4, it suggests that common method variance does not significantly bias the correlations among the variables. As shown in Table VII, Model-5 (Method-R) was not superior to Model-4 (Method-U). These results showed that CMB was not a concern in this study (Richardson *et al.*, 2009; Williams *et al.*, 2010).

*4.3.2 Hypothesis testing: structural model analysis*. The hypotheses were tested and all the fit indices met the recommended guidelines (Table VIII).

The structural model had 47, 23 and 16 explanatory power for the cost of compliance, cost of non-compliance and intention to comply, respectively (Figure 2). Table IX summarizes the analysis results of the structural model. The cost of compliance perceived by providers affected their intention to comply negatively ($\beta = -0.33$, $t = -4.76$), and the cost of non-compliance affected their intention to comply positively ($\beta = 0.27$, $t = 4.06$). Therefore, *H1* and *H2* are supported.

| Variable | Item | Std loading | *t*-value | AVE | CR | Cronbach's $\alpha$ |
|---|---|---|---|---|---|---|
| 1 | WI1 | 0.81** | 14.89 | 0.700 | 0.875 | 0.869 |
| | WI3 | 0.85** | 15.81 | | | |
| | WI4 | 0.85 | – | | | |
| 2 | WS2 | 0.80 | – | 0.774 | 0.911 | 0.902 |
| | WS3 | 0.97** | 20.02 | | | |
| | WS4 | 0.86** | 16.46 | | | |
| 3 | GS1 | 0.96 | – | 0.815 | 0.929 | 0.917 |
| | GS2 | 0.94** | 19.38 | | | |
| | GS3 | 0.80** | 15.05 | | | |
| 4 | PP1 | 0.75 | – | 0.716 | 0.882 | 0.851 |
| | PP2 | 0.89** | 16.97 | | | |
| | PP3 | 0.89** | 17.24 | | | |
| 5 | PD1 | 0.76 | – | 0.640 | 0.841 | 0.816 |
| | PD2 | 0.90** | 16.16 | | | |
| | PD4 | 0.73** | 12.44 | | | |
| 6 | PB1 | 0.95 | – | 0.903 | 0.965 | 0.964 |
| | PB2 | 0.95** | 20.10 | | | |
| | PB3 | 0.95** | 20.01 | | | |
| 7 | CC1 | 0.81 | – | 0.635 | 0.839 | 0.825 |
| | CC2 | 0.78** | 12.46 | | | |
| | CC3 | 0.80** | 12.82 | | | |
| 8 | CN2 | 0.84 | – | 0.787 | 0.917 | 0.910 |
| | CN3 | 0.90** | 18.22 | | | |
| | CN4 | 0.92** | 18.65 | | | |
| 9 | IC1 | 0.90 | – | 0.793 | 0.920 | 0.914 |
| | IC2 | 0.91** | 20.74 | | | |
| | IC4 | 0.86** | 18.97 | | | |

**Table V.**
Results of convergent validity and reliability

**Notes:** The first item loading in each latent variable is fixed at 1.00 and does not have a *t*-value. **$p < 0.05$

| Variable | Mean (SD) | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. WI | 4.10 (0.87) | – | | | | | | | | | |
| 2. WS | 3.97 (0.80) | −0.12 | – | | | | | | | | |
| 3. CC | 3.49 (0.97) | 0.54** | −0.14* | – | | | | | | | |
| 4. GS | 3.92 (0.99) | 0.21** | −0.05 | 0.33** | – | | | | | | |
| 5. PP | 3.37 (1.21) | 0.13* | 0.12 | 0.18** | 0.29** | – | | | | | |
| 6. PD | 4.33 (0.87) | 0.07 | −0.02 | 0.16* | 0.10 | 0.21** | – | | | | |
| 7. CN | 4.61 (0.63) | 0.08 | 0.04 | 0.18** | 0.27** | 0.22** | 0.23** | – | | | |
| 8. IC | 4.16 (0.82) | −0.19** | 0.32** | −0.30** | −0.03 | −0.01 | 0.03 | 0.10 | – | | |
| 9. PB | 2.26 (1.30) | −0.04 | 0.35** | −0.05 | −0.11 | −0.19** | −0.06 | 0.02 | 0.41** | – | |
| 10. CI | 2.45 (0.85) | −0.04 | 0.01 | 0.03 | 0.05 | −0.07 | 0.03 | 0.12 | 0.12 | 0.04 | – |

**Table VI.**
Correlations between the latent variables

**Notes:** CI (community involvement) is a marker variable. *$p < 0.05$; **$p < 0.01$ (two-tailed)

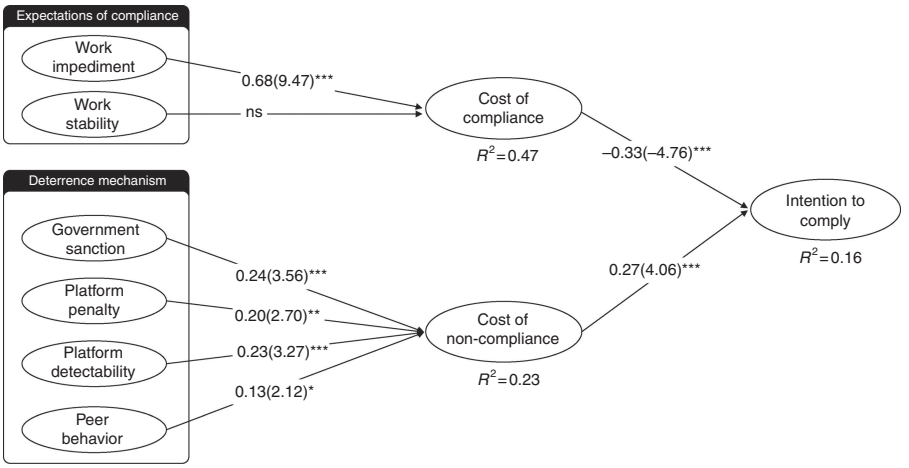
| Model | $\chi^2$ | *df* | CFI | $\Delta\chi^2$ ($\Delta df$) |
|---|---|---|---|---|
| 1. Full CFA | 417.78 | 360 | 0.99 | – |
| 2. Baseline | 481.01 | 369 | 0.98 | – |
| 3. Method-C | 468.72 | 368 | 0.98 | 12.29 (1)*** |
| 4. Method-U | 398.95 | 343 | 0.99 | 69.77 (25)*** |
| 5. Method-R | 402.38 | 347 | 0.99 | 3.43 (3), $p > 0.05$ |

**Table VII.**
Results of the model comparison test for CMB

**Note:** ***$p < 0.001$ (two-tailed)

| Index | Results of the fit index: Measurement model | Results of the fit index: Structural model | Recommended value |
|---|---|---|---|
| $\chi^2$ | 333.29 | 423.39 | – |
| df | 288 | 301 | – |
| Normed $\chi^2$ | 1.16 | 1.41 | < 3.0 (Gefen *et al.*, 2000) |
| RMSEA | 0.025 | 0.040 | < 0.08 (Hair *et al.*, 1998) |
| RMR | 0.042 | 0.11 | < 0.5 (Gefen *et al.*, 1998) |
| CFI | 0.99 | 0.98 | > 0.90 (Hair *et al.*, 1998) |
| GFI | 0.91 | 0.90 | > 0.90 (Hair *et al.*, 1998) |
| AGFI | 0.88 | 0.86 | > 0.80 (Hair *et al.*, 1998) |
| NFI | 0.94 | 0.94 | > 0.90 (Hair *et al.*, 1998) |
| NNFI | 0.99 | 0.97 | > 0.90 (Hair *et al.*, 1998) |

**Table VIII.**
Results of the model fit indices




**Notes:** ns, not significant at the 0.05 level. Numbers in brackets are *t*-values. *$p<0.05$; **$p<0.01$; ***$p<0.001$

**Figure 2.**
Results of the structural model

| Hypothesis | Path | Path coefficient | *t*-value | SE | Result |
|---|---|---|---|---|---|
| *H1* | CC → IC | −0.33*** | −4.76 | 0.069 | Retain |
| *H2* | CN → IC | 0.27*** | 4.06 | 0.066 | Retain |
| *H3* | WI → CC | 0.68*** | 9.47 | 0.071 | Retain |
| *H4* | WS → CC | −0.06 | −1.10 | 0.058 | Reject |
| *H5* | GS → CN | 0.24*** | 3.56 | 0.067 | Retain |
| *H6* | PP → CN | 0.20** | 2.70 | 0.074 | Retain |
| *H7* | PD → CN | 0.23*** | 3.27 | 0.070 | Retain |
| *H8* | PB → CN | 0.13* | 2.12 | 0.061 | Retain |

**Notes:** *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$ (two-tailed)

**Table IX.**
Results of the hypothesis testing

Work impediment and work stability were postulated as antecedents of the cost of compliance. Work impediment affected the cost of compliance positively ($\beta = 0.68$, $t = 9.47$). On the contrary, work stability had no statistically significant effect on the cost of compliance ($\beta = -0.06$, $t = -1.10$). This finding shows that *H3* is supported but *H4* is not.

The roles of the government, platform operators and peers were presented as antecedents of the cost of non-compliance. Government sanctions ($\beta = 0.24$, $t = 3.56$), platform penalty ($\beta = 0.20$, $t = 2.70$), platform detectability ($\beta = 0.23$, $t = 3.27$) and peer behavior ($\beta = 0.13$, $t = 2.12$) all affected the cost of non-compliance positively. As a result, *H5–H8* are supported.

## 5. Discussion and conclusions

This study originated from the awareness of providers in the sharing economy operating their businesses without government registration, which has led to the inaccurate measurement of the number of providers and the scale of this market. This study defined this phenomenon as policy non-compliance and discussed measures to lead providers toward policy compliance. It was conducted in two steps. In the first step, in-depth interviews were carried out with 21 accommodation sharing providers in Korea to understand their perceptions. In the second step, a quantitative study was conducted with the research model built based on the results from the qualitative study results. By surveying 251 providers and verifying the structural model, the causal relationships of each antecedent factor were confirmed.

First, the qualitative study results are as follows. Providers were non-compliant because they perceived that policy compliance could lead to a loss of business continuity, flexibility and competitiveness. However, they also recognized the business stability benefits of policy compliance. This study not only explored these perceptions, but also searched for a specific mechanism that can turn non-compliance behavior into compliance. According to deterrence theory, individuals comply with policy when there is a high risk of detection by governments and serious penalties in the case of non-compliance (Blumstein *et al.*, 1978; Straub and Welke, 1998). However, providers believed that there was a low risk of detection because they knew it was difficult for the government to discover all illegal sharing by providers. Nonetheless, they also feared serious penalties for non-compliance. Hence, detection by the government is an ineffective deterrence mechanism because of the information asymmetries between the government and individuals. Thus, intervention by platform operators was discussed as a new deterrence mechanism. Because the recent growth in the sharing economy hinges on platform operators, their social values can be improved through proper intervention (Bae and Koo, 2018). Moreover, providers were aware that platform operators stored all their transaction information and feared this. They perceived potential damage if platform operators imposed a penalty, such as limiting the viewability of their accommodation on the platform. This finding implies that both monetary sanctions by the government and the platform's non-monetary penalty can work as deterrence mechanisms. In addition, providers were affected by their peer group in the process of policy compliance decision making.

Second, the results of the quantitative study are as follows. The cost of compliance (non-compliance) perceived by providers affected their intention to comply negatively (positively). This result was similar to that of previous policy compliance studies, confirming that providers' decision making for compliance in a sharing economy is a psychological calculation process. This study also found that work impediment affected the cost of compliance positively, whereas work stability did not have a statistically significant effect. Hence, the hypothesis was rejected. Four variables were discussed as the antecedent factors of the cost of non-compliance, including the roles of the government, platform operator and peer group. Further, the newly selected variable – intervention of platform operators, including platform detection and platform penalty – also affected the cost of non-compliance positively, just as government sanctions and peer behaviors did.

### *5.1 Theoretical implications*

First, this study adopted rational choice and deterrence theories, which have long played a role in explaining policy compliance, and expanded them to new dimensions. Humans have

bounded rationality (Simon, 1972). As individuals have inaccurate information on costs when determining policy compliance or non-compliance, they pursue what they perceive as the most satisfactory option in the information acquisition process (Ward *et al.*, 2006). In other words, if they can accurately predict the cost of non-compliance, this becomes a determinant of compliance. Although they are more likely to comply when the government can detect non-compliance and impose sanctions perfectly (Burby and Paterson, 1993; Rodgers and Bullock, 1976; Winter and May, 2001), information asymmetry between individuals and the government occurs in reality. This study suggested that the sharing economy, as a unique mechanism, could provide more perfect information when determining individuals' compliance by eliminating such information asymmetry. Platform operators' existence in the sharing economy was added into this theoretical framework to explain the determinants of compliance, finding that the role of the intermediary – whose impact was only theoretically discussed in previous policy compliance studies (Nakamura and Smallwood, 1980) – was postulated and empirically verified.

Second, this study explained a new dimension of sanctions and detectability, as suggested in deterrence theory. It discovered that the government, as a formal implementer and intermediary, could induce compliance. Specifically, the intermediary intervened in policy compliance intentions by imposing penalties (e.g. non-monetary punishment) as well as fines, a monetary punishment from implementers. Further, individuals were aware of both the government and the intermediary as the primary entities that detect non-compliance. This study thus clarified that in addition to the implementer's role in the traditional domain, individuals recognize the intermediary's role as a cost of non-compliance.

Although various sharing economy studies have been conducted, most have focused on consumers and empirical research that aims to understand the perspective of providers is scant (Lee *et al.*, 2018). This study attempted to derive perspectives and substantial research results by using a mixed methodology, given the current lack of scholarly views on providers in the sharing economy.

### *5.2 Practical implications*

*5.2.1 Implications for the government*. Most policies are designed based on individuals' direct or indirect behavioral changes. However, if the policy is not accompanied by behavioral changes in individuals, policy implementation has failed and social problems cannot be solved (Anderson, 1984; Braithwaite, 1993; Mazmanian and Sabatier, 1981). As providers in the sharing economy are individuals who make decisions under free will, it is necessary to correctly understand them. It is therefore desirable to guide providers to willingly comply with policies and regulations to achieve market purification. According to the qualitative study results, some providers regarded policy compliance as a burden. To prevent illegal sharing, it is desirable to induce providers to meet the requirements. However, some providers perceived their businesses as temporary. They did not comply, as they wanted to test their businesses' viability (Williams and Martinez, 2014). Thus, it is worth considering a grace period for providers or implementing the policy in stages. As providers find it difficult to predict their business potential, it can be burdensome for them to meet the policy requirements. Additionally, they did not comply as they believed that non-compliance would not have an immediate impact because of their underestimation of the likelihood of detection by the government. In fact, it is a huge administrative burden for the government to collect and manage all the information needed. Therefore, most governments rely on self-regulation by providers. However, as the results show, the effectiveness of self-regulation is low because providers do not regard themselves as business owners; further, some factors can lead them to make a false transaction report. Thus, this study proposes cooperation with platform operators. The Seoul, Paris, and Barcelona governments are playing a leading role in implementing a registration policy.

However, in many US cities (i.e. San Francisco, New Orleans and Chicago), the registration of platform operators supports providers. The failure to cooperate with platform operators may result in the commercial misuse of accommodation sharing businesses, unfair competition with existing business owners, and the degradation of service quality. As platform operators have control over transactions, they should be given some responsibilities such as the obligation to manage and report providers or right to implement government policies through delegated enforcement. In particular, registration policy is the most basic and essential policy for tracking down transactions and imposing tax on providers. Through registration, the government can understand the characteristics of the transactions between providers and design a tiered regulation or tax system based on the number of future transactions. Therefore, the government should cooperate with platform operators to induce providers to be protected under the institution's policy.

Moreover, providers were affected by their peer groups in the process of policy compliance decision making. Individual perception and behavior are usually influenced by the signals that come from the people directly or indirectly connected with the individual (Osatuyi and Turel, 2019). According to Jimenez and Iyer (2016), who verified the effect of social influence in the context of tax compliance, which is similar to this research topic, social norms influence compliance intentions indirectly through internalization. In other words, when they believe their peers are not complying with policies, they tend to justify their non-compliance behaviors (Pommerehne *et al.*, 1994). Therefore, it is important to create a social atmosphere ensuring policy compliance.

*5.2.2 Implications for platform operators*. Platform operators should intervene to minimize the sharing economy's socially adverse effects when spreading its innovation (Arribas *et al.*, 2016; van Doorn, 2017). Providers require assistance in navigating through the labyrinth of regulations via proper intervention (Staley, 2007). Therefore, platform operators must attempt to minimize socially adverse effects through appropriate intervention to facilitate the industry's long-term development. Thus, reasonable intervention is necessary. According to the results, platform operators could act as a determinant of policy compliance. During verification, providers' awareness of the detectability and penalty of the intermediary was perceived as the cost of non-compliance. Indeed, Airbnb Korea removed 1,500 providers of unauthorized accommodation (*officetels*) on its platform in 2017 (Quartz, 2017). Consequently, providers realize that their properties could be delisted upon the detection of non-compliance. This study confirmed the imposition of penalties for illegal sharing to be an effective deterrence mechanism for non-compliance. As an implication, allowing platform operators to remove providers' accommodation advertisements before the government imposes sanctions could be a more powerful form of regulation enforcement when providers engage in illegal sharing. As discussed, if a dominant platform operator exists, as in the accommodation sharing sector, the industry's existence depends on this operator's strategy and policy. Since data – the foundation and major resource of the business of platform operators – come from individual users (*MIT Technology Review*, 2018), they must fulfill their responsibilities through appropriate intervention for providers lost in the myriad of regulations.

### *5.3 Limitations and future research directions*

First, this study focused on a deterrence mechanism, as the sharing economy market is in an early stage and non-compliance is high. However, a compensation strategy should be considered upon complete transfer into the formal domain at a later stage (Oviedo *et al.*, 2009; Pena, 2000). Further research can discuss the appropriate combination of punishment and compensation to induce providers in the sharing economy to comply with policy.

Second, this study found that the intervention of platform operators could improve the compliance intention of providers by exploring providers' perceptions and verifying the model. In particular, the intention to comply can increase even when providers become aware of the risk of penalties imposed by platform operators. However, platform operators can impose different types of penalties. Therefore, further discussion is needed to identify which penalty produces the greatest effect.

Third, to prevent CMB, a bilingual expert reviewed the questionnaire items to eliminate the ambiguity of the items in the research design stage and a statistical verification procedure was undertaken with marker variables in the analysis stage. However, different ranges of sources and contexts were not considered as exhaustively as possible when collecting data on the predictor and criterion variables (Podsakoff *et al.*, 2003). Therefore, a follow-up study should consider using a more precise procedural measure to prevent CMB when designing the survey and collecting data.



## Note

1. Online Community for Airbnb Hosts (http://café.naver.com/maplepath, number of members: 211,100). Prospective members of this community must submit their active Airbnb hosting page to community staff and be authenticated as a real host of the page to join.

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# Does more crowd participation bring more value to crowdfunding projects? The perspective of crowd capital

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## Abstract

**Purpose** – The purpose of this paper is to focus on investigating the impact of crowd participation on degree of project success, which is defined as the total amount of funds a project can obtain after it reaches its initial funding goal threshold.
**Design/methodology/approach** – Drawing on the theory of crowd capital, this study develops six hypotheses about the impact of crowd capability of a fundraiser (i.e. project updates, goal setting, reward levels and social media usage) and crowd participation (i.e. namely, funds pledge and on-site communication) on degree of project success. The hypotheses are tested using data sets of successful projects collected from two popular crowdfunding websites.
**Findings** – This study finds that funds pledge has an inverse U-shaped relationship with degree of project success. Project updates, reward levels and on-site communication positively influence degree of project success, while funding goal negatively affects degree of project success.
**Research limitations/implications** – This study contributes to prior literature by investigating the degree of project success determinants using the perspectives of both fundraisers and crowds, which provides a more comprehensive understanding of what makes a crowdfunded project a success.
**Practical implications** – The empirical results of this study provide fundraisers with guidelines about how to access more funds after achieving the initial funding goals.
**Originality/value** – This work is one of the first to investigate the degree of project success and its determinants from the perspectives of both fundraisers and crowds.

**Keywords** Crowdfunding, Crowd capability, Crowd capital, Crowd participation, Degree of project success
**Paper type** Research paper

## 1. Introduction

Online crowdfunding has received a great deal of attention from entrepreneurs and individual fundraisers (Burtch *et al.*, 2015). Crowdfunding platforms, such as Kickstarter and IndieGoGo, combine unique functionalities of collective evaluation and crowd-based fundraising, which provide new business ventures and startups an opportunity to raise funds that cannot be accessed through traditional fundraising channels (e.g. venture capital, angel investment and donations). There are nearly 150,000 projects that have been successfully funded and 3,428 projects that are currently raising funds on Kickstarter up until and in the month of August in 2018 (www.kickstarter.com/help/stats), respectively. However, not all new business ventures and startups can easily raise funds, especially projects launched on crowdfunding platforms that have an "all-or-nothing" fundraising model (i.e. a fundraiser sets a funding goal in advance, and receives no funds if this goal cannot be reached). Up until the month of August in 2018 (www.kickstarter.com/help/stats),

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there were 261,870 (64 percent) launched projects on Kickstarter that failed to achieve their funding goals. Given this backdrop, both academics and practitioners are becoming more interested in investigating the factors that can help fundraisers successfully compete for funds on crowdfunding platforms.

Existing crowdfunding literature has studied the paths leading to a project success, mainly focusing on the likelihood of success, that is, whether a crowdfunding project can achieve its initial funding goal (Beier and Wagner, 2014; Liu, Bhattacharya and Jiang, 2014; Xiao *et al.*, 2014; Zhang *et al.*, 2014; Zheng, Li, Wu and Xu, 2014; Du and Wang, 2017). Prior literature also investigated the crowdfunding process and identified the motivators and deterrents that influence participation on crowdfunding platforms, which inform design implications, targeted to improve the overall success rate of projects (Greenberg *et al.*, 2013; Hui, Gerber and Gergle, 2014; Hui *et al.*, 2012; Hui, Greenberg and Gerber, 2014; Gerber and Hui, 2013; Greenberg and Gerber, 2014; Harburg *et al.*, 2015; Hui and Gerber, 2015). However, in reality, fundraisers not only expect to achieve their initial funding goals, but also exceed their initial goal, which might help risky, new ventures and startups to avoid financial losses and failures in the short to medium run. Mollick (2015) investigated projects on Kickstarter that succeed in achieving their funding goals but later failed to deliver rewards to funders. Findings of this study indicate that projects which raise less than $1,000 are more likely to fail in delivering rewards. That is, crowdfunding projects with less raised funds are likely to fail even though they have successfully met their initial funding goals. Furthermore, overwhelmingly successful crowdfunded projects, also known as blockbusters, have attracted considerable media attention. For instance, the "Exploding Kittens" project that was launched in January 2015 has attracted 219,382 funders who pledged over $8m above its initial fundraising goal of $10,000, making it one of the most successful crowdfunding projects and reference case for future fundraisers. Such successful projects not only appeal to a great number of funders, but also draw attention to projects within the same category because of the network effects (Liu *et al.*, 2015). Hence, instead of studying the likelihood to succeed, the current study intends to focus on degree of project success, which is defined as the total amount of funds a project obtains after successfully reaching its initial funding goal.

Previous studies on crowdfunding success mainly focused on the fundraisers' perspective and examined factors such as project design strategies and social capital of fundraisers. Nevertheless, crowdfunding is not a single-sided market only accommodating fundraisers. It is a two-sided market that links capital-seeking agents (i.e. fundraisers) with an IT-mediated crowd of capital-giving agents (i.e. funders or backers) (Haas *et al.*, 2014). As a result, it is necessary to study the success of crowdfunding projects from the perspectives of both fundraisers and funders. The theory of crowd capital provides appropriate theoretical lens to study these two perspectives of crowdfunding projects. According to this theory, there is a new emergent capital named crowd capital that refers to a broad range of organizational resources, including knowledge, funds and opinions, generated from IT-mediated crowds (Prpić *et al.*, 2015; Prpić and Shukla, 2013). To generate crowd capital, an organization must rely on two conditions: the crowd capability of organizations to engage the IT-mediated crowds and the disperse resources embedded in crowds (Prpić *et al.*, 2015). In this study context, the resources embedded in the crowd are funds and the organizations are fundraisers. Therefore, it is important to consider the role of crowds (i.e. funders) as well as the crowd capability of fundraisers when attempting to attain crowd capital (i.e. funds).

When considering the role of crowds, attracting more funders seems to be a major focus for fundraisers as discussed in previous studies (Burtch *et al.*, 2013, 2015; Zhao *et al.*, 2017). Nevertheless, whether more funders are equal to more funds is still questionable because funders' behaviors are found to be affected by various contextual factors such as diffusion of responsibility effects (Kuppuswamy and Bayus, 2013; Li and Duan, 2014; Thies *et al.*, 2014).

The latter implies inconsistency between funding and degree of project success. Accordingly, this study aims to answer the following two questions:

*RQ1.* What factors affect the degree of project success on crowdfunding platforms?

*RQ2.* Do more funders means more degree of project success on crowdfunding platforms?

Drawing on the theory of crowd capital, this study posits that degree of project success is directly dependent on crowd capital, which is generated under two conditions – crowd capability of fundraisers and dispersed resources of crowds. Although crowd capability of fundraisers has been studied in prior literature, these studies focused on the probability of project success rather than degree of project success. Hence, the current study attempts to explore whether crowd capability of fundraisers affects degree of project success. Specifically, we focus on several factors, including project updates, goal setting, reward levels and social media usage. The dispersed resources (i.e. funds) of crowds are generated on the crowdfunding platforms with the participation or contribution behaviors of crowds (Burtch *et al.*, 2013). There are two major ways for crowds to participate on crowdfunding platforms – funds pledge and on-site communication. Funds pledge is the fundamental way of participation with which crowds can provide funds to support their preferred projects. In addition, crowdfunding platforms also integrate specific on-site social features (Fisk *et al.*, 2011), such as on-site communication function, allowing crowds to communicate with fundraisers by giving comments and receiving responses. In the research model of this study, both funds pledge and on-site communication as crowd participation with investment funds in crowdfunding projects are considered. The research model is also tested and robustness check is conducted with two data sets from Kickstarter (USA) and Zhongchou.cn (China).

This study has three main contributions. First, previous studies are focused on the capital-seeking perspective by examining factors such as project design strategies and social capital of fundraisers. In this study, factors that influence the degree of project success from both capital-seeking and capital-giving perspectives are examined using the theory of capital as a theoretical lens. Second, this study focuses on degree of project success, moving from considering success as a binary concept (i.e. success vs not success). The current study furthers the understanding for degree of project success and its determinants, which is important for fundraisers seeking to exceed their initial funding goals so as to support their new and potentially risky ventures or ideas; innovation-driven organizations attempting to reduce the risk associated with launching new products on the market; and crowdfunding platforms, in general, looking to increase the amount of funds raised by other projects within the same category. Third, prior literature mainly studied the linear relationship between pledgers and degree of project success. We contribute to the literature by investigating the inverse U-shaped relationship between numbers of pledgers and degree of project success, which furthers the understanding about the latter relationship.

The remainder of the study is organized as follows. An introduction to crowdfunding and theory of crowd capital are presented next, followed by a literature review of crowdfunding process, participation and project success. Hypotheses development followed them. Then the research methods and results follow. Finally, implications and future research are discussed.

## 2. Theoretical background

### *2.1 Crowdfunding*

With the development of Web 2.0 and other information technologies, crowdfunding has become a popular platform for new ventures and startups to raise funds from crowds. Schwienbacher and Larralde (2010) defined crowdfunding as "the financing of a project or a

venture by a group of individuals instead of professional parties" (p. 370). Burkett (2011) described crowdfunding as "a process where entrepreneurs, artists, and nonprofits raise money for their projects, businesses, or organizations by gaining the support of many people on the Internet who collectively contribute money to projects to which they feel some affinity" (p. 66). In its core, crowdfunding involves organizations, small teams and individuals raising funds from crowds via the internet, that is, fundraisers seek funds from an IT-mediated crowd.

There are four types of crowdfunding platforms: donation based, reward based, equity based and lending based (De Buysere *et al.*, 2012). Donation-based crowdfunding platforms, such as Crowdrise, allow charity projects to raise funds from crowds without existential reward. Reward-based crowdfunding platforms, such as Kickstarter, IndieGoGo and Zhongchou.cn, are the most common ones. On these platforms, fundraisers launch their projects that provide tangible but non-financial benefits for crowds (e.g. specific products or services). Equity-based and lending-based crowdfunding platforms, such as SellaBand, Wefunder and AngelCrunch, involve providing funds in return for financial returns or profit sharing (Agrawal *et al.*, 2011; Ward and Ramachandran, 2010; Zhang and Liu, 2012; Burtch *et al.*, 2014). Reward-based crowdfunding platforms have two types of fundraising models: "all-or-nothing" (e.g. Kickstarter) and "keep-what-you-raise" (e.g. IndieGoGo) (Gerber *et al.*, 2012). In the "all-or-nothing" model, a fundraiser receives the pledged funds only if the funding goal is reached, whereas in the "keep-what-you-raise" model, a fundraiser receives the pledged funds regardless of whether the funding goal is met or not.

This study focuses on reward-based crowdfunding platforms with "all-or-nothing" fundraising model for two reasons. First, this type of crowdfunding platform has the largest number of users and is the fastest growing one on a global scale. For example, the most popular one is Kickstarter, which has attracted 14m funders worldwide and has pledged more than $3bn for various projects up until the end of 2017. Having such a large number of users provides sufficient data to test the research model of this study. Furthermore, to increase the robustness the research model and make the conclusions more generalizable, data were collected from another large reward-based crowdfunding platform in China with "all-or-nothing" fundraising model, Zhongchou.cn.

Second, focusing on reward-based crowdfunding platforms with "all-or-nothing" fundraising model is in line with the testing the dependent variable – degree of project success – of this study's research model, which is defined as the total amount of funds a project obtains after successfully reaching its initial funding goal. If data were to be collected from a crowdfunding platform with "keep-what-you-raise" fundraising model then degree of project success would not be possible to be tested.

### *2.2 Theory of crowd capital*

The theory of crowd capital is recently developed by John Prpić and his colleagues to describe the process of how IT-mediated crowds generate resources or value for organizations (Prpić and Shukla, 2013, 2014b, 2016; Prpić *et al.*, 2015). This theory identifies a newly emergent type of capital, named "crowd capital." Crowd capital is first conceptualized as "a heterogeneous organizational knowledge resource, generated by the organization' crowd capability: an organizational-level capability that is defined by the structure, content, and process of an organizations engagement with the dispersed knowledge of individuals-the crowd" (Prpić and Shukla, 2013, p. 2). Crowd capital refers to a broad range of organizational resources, including knowledge, funds and opinions, generated from IT-mediated crowds (Prpić *et al.*, 2015; Prpić and Shukla, 2013). Thus, the theory of crowd capital is appropriate for studying research contexts closely associated with the engagement of an IT-mediated crowd, such as crowdsourcing, crowdfunding and open innovation platforms.

Although crowd capital is an organizational resource, it is different from other types of organizational resources, such as social capital, in the sense that it does not require the network of relationships held by organizations and it is based on dispersed and unique resources possessed by IT-mediated crowds (Prpić and Shukla, 2013). It is the key benefit that organizations seek from IT-mediated crowd engagement (Prpić and Shukla, 2016), and is outcome or potential outcome of engaging IT-mediated crowds (Prpić *et al.*, 2014; Prpić and Shukla, 2013). In the context of crowdfunding, funds successfully raised from crowds are an outcome of the crowd engagement for fundraisers. Therefore, the theory of crowd capital is also suitable to explain the underpinning of the fundraising process, and the degree of project success that can be considered a key crowd capital in our study context.

The theory of crowd capital is a process theory that describes how organizations generate crowd capital through their crowd capability which engages the dispersed resources of individuals. During this process, two critical conditions for crowd capital generation – crowd capability of the organization and dispersed resources of crowds – are proposed. Crowd capability refers to an organization's capability to engage the IT-mediated crowds, including three dimensions: structure (i.e. what information technology will be used), content (i.e. what resources are sought) and process (i.e. how to obtain desired sources) (Prpić and Shukla, 2013, 2014a). Hui *et al.* (2012) described the crowdfunding process from the perspective of fundraisers, including six consecutive tasks: understanding opportunities and responsibilities of crowdfunding; preparing campaign materials; testing campaign materials and project prototypes; marketing the project; executing the project goals; and contributing knowledge back to the crowdfunding community. This crowdfunding process reflects the process dimensions of crowd capability in which fundraisers use a crowdfunding platform as an IT to acquire funds possessed by IT-mediated crowds by completing series of tasks. Hence, the crowdfunding process can be regarded as the process dimension of crowd capability of fundraisers. In addition to crowd capability, another indispensable antecedent condition is the "dispersed resource" embedded in the crowds (Prpić *et al.*, 2015; Prpić and Shukla, 2013). Crowds possess dispersed and unique resources, and are expected to aggregate their resources to organizations. On the crowdfunding platforms, crowds contribute their resources – funds – to interested projects through their participation behaviors. Therefore, crowd participation is significant for crowd capital generation of fundraisers. In sum, drawing on the theory of crowd capital, the current study aims to explore the effects of both crowd capability of fundraisers and crowd participation on the degree of project success.

### *2.3 Crowdfunding process, participation and project success*

In the following paragraphs, previous studies on crowdfunding process, participation and project success are reviewed to position this study in the existing literature. Table I summarizes the four major research streams in this literature.

The first research steam focuses on investigating the crowdfunding process. Hui *et al.* (2012) explained the crowdfunding work. Authors identified six subsequent tasks that comprise the crowdfunding process from the perspective of fundraisers: understanding the opportunities and responsibilities of crowdfunding; preparing campaign content and initial prototypes; testing the campaign content and initial prototypes; marketing the crowdfunding project to potential supporters; executing the project by following through with campaign goals; and contributing to the crowdfunding community with advice and mentorship. Drawing on the resource exchange theory (RET), Greenberg *et al.* (2013) studied the exchange of resources and mechanisms that facilitate this exchange on crowdfunding platforms. It was found that crowdfunding platforms support exchange of all six resources described by RET – money, love, information, statues, goods and services – for fundraisers, funders and public using mediated, unmediated and hybrid mechanisms. Hui, Gerber and

Gergle (2014) and Hui, Greenberg and Gerber (2014) studied the role of online communities and social networking sites in supporting the crowdfunding process from the fundraisers' perspective. Results show that online communities provide support for each of the six tasks of the crowdfunding process. Likewise, social networking sites help fundraisers with understanding (i.e. estimating the network support size and willingness to support), activating (i.e. identifying and asking network influencers and individuals to support) and expanding (i.e. connecting through structural holes and building reputation) their social networks, which improves project success.

The second research stream investigates the motives and deterrents for participation on crowdfunding platforms. Gerber and Hui (2013) developed a grounded theory that explains the motivators and deterrents for participating in crowdfunding from both fundraisers' and crowds' perspectives. Fundraisers' motivations include the desire to raise funds, expand awareness of work, connect with others, gain approval, maintain control and learn, whereas funders' motivations include desire to collect rewards, help others, support causes and be part of the community. Authors revealed that fundraisers are discouraged to participate in crowdfunding platforms because of their inability to attract supporters, fear of public failure and exposure, and lack of time and resources to commit. Distrust in fundraisers' use of funds is the most influential deterrent for using crowdfunding by funders. Greenberg and Gerber (2014) explored the motivators and deterrents for relaunching failed projects on crowdfunding platforms. The encouraging power of a crowd of supporters helps fundraisers with relaunching, providing feedback and an established crowd of supporters from which they can grow their support base. Fundraisers also reported that they had lost their social capital by contacting their social networks repeatedly during the first campaign, resulting in lower self-esteem. Hui and Gerber (2015) found that scientists are motivated to crowdfunding because they want to share their work and engage the public in the research process. They also perceive crowdfunding as a more accessible approach relative to traditional fundraising approaches, such as grant applications. Drawing on the social cognitive theory, Harburg *et al.* (2015) showed that crowdsourcing has impact on the entrepreneurial self-efficacy through social validation, role modeling, mastery and physiological states supported by social technical features, such as displaying a concrete goals, examples of other's work or public feedback.

The third research stream focuses on the design strategies for crowdfunding projects, and identifies three types of design strategies. The first design strategy deals with how to design the project content. For instance, quality of project descriptions (e.g. spelling error), intensity of updates (e.g. weekly or monthly) and duration of projects (e.g. one to two years or three to four years) are several factors that influence project success (Mollick, 2014;

| Research perspectives | References |
|---|---|
| Crowdfunding process | Greenberg *et al.* (2013), Hui, Gerber and Gergle (2014), Hui *et al.* (2012), Hui, Greenberg and Gerber (2014) |
| Crowdfunding participation | Gerber and Hui (2013), Greenberg and Gerber (2014), Harburg *et al.* (2015), Hui and Gerber (2015) |
| Project design strategies | |
| Project descriptions | Mollick (2014), Beier and Wagner (2014), Cordova *et al.* (2015), Davis *et al.* (2017), Liu, Brass and Chen (2014), Raab *et al.* (2017) |
| Social media usage | Beier and Wagner (2014), Moisseyev (2013) |
| Reward schema design | Du and Wang (2017), Weinmann *et al.* (2017), Xiao *et al.* (2014), Zhang *et al.* (2014), Zheng *et al.* (2017) |
| Social capital | Giudici *et al.* (2013), Kang *et al.* (2016), Kim and Zhang (2017), Mollick (2014), Zheng, Wan, Chen and Wang (2014) |

**Table I.**
Literature review on crowdfunding project success

Beier and Wagner, 2014; Cordova *et al.*, 2015). The design of video advertisement content was also found to impact the pledge volume (Liu, Bhattacharya and Jiang, 2014). In addition, creative crowdfunding projects are likely to have better performance (e.g. more investment and higher predicted success) (Davis *et al.*, 2017), and rich project descriptions (e.g. using emotive words and human pictures) are found to positively affect the success of crowdfunding projects (Raab *et al.*, 2017). The second design strategy is related to social media usage that is embedded in crowdfunding platforms as off-site communication channels. Beier and Wagner (2014) found that social media use significantly affects project success. Moisseyev (2013) showed that the number of social media followers predicts the project success. The third design strategy is associated to the reward schema. Zhang *et al.* (2014) found that the reward levels with popular options till date were perceived to be more favorable. Xiao *et al.* (2014) indicated that a project with higher maximum funding goal and less reward tiers in terms of reward schemes raises more money. Weinmann *et al.* (2017) proposed that the use of artificially limited rewards promotes funders' behavior, thus increasing the success of crowdfunding projects. The study of Zheng *et al.* (2017) examined the effect of use of lottery in reward-based crowdfunding platforms, and figured out that it increases the number of funders, while reduces the total money raised by a crowdfunding project and the probability to succeed. Du and Wang (2017) found that the more numbers of options in reward tiers, the higher probability that a crowdfunding project will succeed.

The fourth research stream focuses on investigating the effect of social capital of fundraisers (Giudici *et al.*, 2013; Mollick, 2014; Zheng, Li, Wu and Xu, 2014; Kang *et al.*, 2016; Kim and Zhang, 2017). Giudici *et al.* (2013) distinguished between individual and territorial social capital, and concluded that the individual social capital positively affects the crowdfunding project success, while the geo-localized capital has negative influence on the project success. Mollick (2014) noted that social network size played a key role in determining the crowdfunding success, which was explained through the family and friends effects. Zheng, Li, Wu and Xu (2014) identified three dimensions of social capital based on the social capital theory, including social network ties, obligations to fund others and the shared meaning of project between the entrepreneurs and other sponsors. Kang *et al.* (2016) argued that the social capital of fundraisers who have invested in other crowdfunding projects increases the amount of funding received for their own projects. Kim and Zhang (2017) asserted that tie strength (i.e. dyad interaction between a potential backer who is an online friend and a project initiator) and embeddedness (i.e. the number of common friends between a potential backer who is an online friend and a project initiator) increases the likelihood of a crowdfunding project success. Garimella *et al.* (2017) indicated that projects that participate in prefunding strategies are more possible to get success by increasing both the initial number of backers and the initial average contribution of per backer.

Prior literature offers valuable insights in understanding the crowdfunding process, participation and project success. However, there are still three limitations, which can be seen as significant research opportunities. First, previous studies consider success as a binary concept: success vs not success. For example, previous studies explained the crowdfunding process and identified important motivators and deterrents for participation, which can be translated into valuable design implication for crowdfunding platforms, potentially improving the overall success rates of (re)launched projects. However, degree of project success, which is underexplored, is also critical for several reasons. Fundraisers expect to raise more funds even after successfully meeting their initial funding goals to ensure survival of their risky and new business ventures or startups in the short to medium run. Furthermore, projects with extremely high degree of success (i.e. blockbuster projects), which have raised significantly more funds than their initial funding goals, can increase the amount of funds raised by other projects within the same category (Liu *et al.*, 2015). Hence, understanding the degree of project success and its determinants can be beneficial for fundraisers and crowdfunding platforms in general.

Second, many organizations not only use crowdfunding platforms as channels for fundraising, but also consider crowdfunding platforms as marketing tools to promote a new product or to assess the viability of new products (Brown *et al.*, 2016). Considering the definition for degree of project success – the total amount of funds a project obtains after successfully reaching its initial funding goal – it can be concluded that this measure might be a reliable proxy for new product success on the market. For example, a launched project for new product exceeding its initial funding goal might indicate that this product will outperform others when introduced on the market. Thus, understanding degree of project success and its determinants is important for innovation-driven organizations that seek to reduce the risk associated with launching new products on the market.

Third, crowdfunding is a two-sided market that connects both capital-seeking agents (i.e. fundraisers) and capital-giving agents (i.e. crowds) (Haas *et al.*, 2014). Existing literature on project success largely focuses on investigating from the perspective of fundraisers. That is, these studies proposed how fundraisers should design a project on the platforms or how fundraisers should utilize their social capital to achieve their funding goals. Studies on project success from the perspectives of both fundraisers and funders are still rare. Nevertheless, according to the theory of crowd capital both fundraisers and funders are equally important in the process of fundraising according (Prpić and Shukla, 2013, 2014b, 2016; Prpić *et al.*, 2015). Therefore, this study investigates the degree of project success from both perspectives of fundraisers and funders using the theoretical lens of crowd capital theory, which offers valuable implications for both academics and practitioners.

## 3. Hypotheses development

Crowd capability of a fundraiser refers to the capability to engage the IT-mediated crowds using a crowdfunding platform as an IT (i.e. structure) to obtain the sought after funds processed by the IT-mediated crowd (i.e. content) via conducting six subsequent tasks (i.e. process) (Prpić and Shukla, 2013, 2014a; Hui *et al.*, 2012). Therefore, this study focuses on the process dimension of crowd capability, that is, how a fundraiser can access funds from the IT-mediated crowds. Building on prior literature, the current study hypothesizes that project updates, goal setting, reward levels and social media usage are key factors to predicting the degree of project success.

As to crowd participation, there are two ways that crowds can participate in crowdfunding platforms and show interests in and devote resources to projects, namely, through pledging funds and on-site communication. With pledging funds, crowds support crowdfunding projects substantially and help projects to become successful at achieving their funding goals and even getting more funds after projects had successfully reached their initial funding goals. Besides, crowds can also participate through interaction with fundraisers that helps crowds communicate with fundraisers. This study focuses on the latter approaches to contributing to crowdfunding and intends to investigate the effects of crowd participation on the degree of project success. The research framework is depicted in Figure 1, and the hypotheses are elaborated as follows.

### *3.1 Crowd capability*

*3.1.1 Project updates*. The frequency of communication, together with media richness, is crucial to effective information exchange (Dennis *et al.*, 2008) because it helps establish social relationships with potential and actual project funders. Frequency of interaction is another crucial aspect of communication intensity. Hence, high frequency content provision facilitates development of social relationships (Heide and Miner, 1992; Smith *et al.*, 1994). Frequent interactions are also widely accepted measure for relationship quality (e.g. Hansen *et al.*, 2005; Gibbons, 2004).

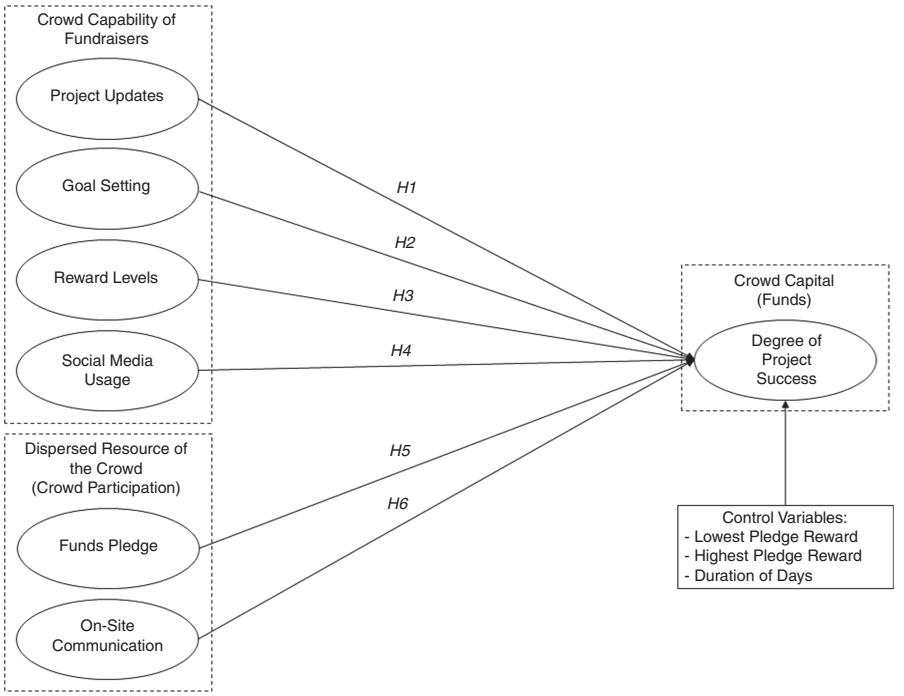


**Figure 1.**
Research model

Mollick (2014) found that quick updates within the first three days of a campaign launch are positively correlated to the raised funds for projects with relatively high funding goals. As well, success of website usability is correlated to content sufficiency, which includes the amount and variety of information (Palmer, 2002). Thus, having a wide range of provided online information (i.e. high information sufficiency) can help potential and actual project funders with their decision on whether to invest in a particular project. Furthermore, the extent of written communication influences the social relationship building (Ready *et al.*, 2004). To sum up, a higher frequency of project updates with recent information on the actual development status of a crowdfunding project will have positive effects on the willingness of potential funders to support this project.

Crowdfunding platforms allow fundraisers to post their project progress to their funders using the update function during and after the fundraising period (Wang *et al.*, 2018; Mollick, 2014). Frequent project updates provide more timely information and raise funders' confidence about the project in the sense that fundraisers are capable in completing the project (Beier and Wagner, 2014). As a result, funders may be willing to fund such projects, thus increasing the amount of money received by a project. Thus:

*H1.* The frequency of project updates is positively related to the degree of project success.

*3.1.2 Goal setting.* In reward-based crowdfunding platforms, funding is provided by relatively small contributions of many individuals over a fixed time period (e.g. a few weeks) (Gerber *et al.*, 2012). In smaller projects with low funding goals, funders' contributions can be proportionately relevant in getting the overall amount financed to closer to the funding goal. That is, funders might be willing to contribute more funds in percentage terms in small projects with lower funding goals.

On the other hand, in bigger projects with high funding goals, funders may perceive that the requested funding amount reduces the relevance of their contribution, which might negatively impact the project success. In other words, when funders are faced with a relatively large project with high funding goal, they know that their contributions are not going to be determinant for the success of the project, which might reduce their willingness to fund this particular project (Cordova *et al.*, 2015). More importantly, while many factors influence the project goal, there is a strong incentive for fundraisers to set realistic project goals, since raising too little capital might result in project non-delivery, and overly ambitious project goals make projects less likely to succeed (Mollick, 2014).

In the "all-or-nothing" fundraising models, fundraisers must set a goal in advance. Only if the goal is achieved, the fundraisers can use the funds to start their projects. Otherwise, the projects will receive nothing and are considered to be unsuccessful. Therefore, setting a proper funding goal is critical for a crowdfunding project. If a goal is set too high, it is less possible for a project to achieve its funding goal (Cordova *et al.*, 2015; Du and Wang, 2017), not to mention achieving high degree of success. Therefore:

*H2.* Funding goal is negatively related to the degree of project success.

*3.1.3 Reward levels.* Consumer choice is a well-researched topic in marketing and economics disciplines. It is widely accepted that most buying decisions are not fully made by rationale, following the decision criteria of value maximization (Ross, 1979). Both product line design and product presentation have impact on the perception and decision making of consumers. Consumer choice literature suggests that consumers suffer from various cognitive biases, that is, deviations from normative decision making happen occasionally due to limited cognitive capacity of humans. Compromise effect describes the phenomenon of extremeness aversion in consumer choice, which belongs to the set of context effects caused by cognitive biases (Simonson and Tversky, 1992). It states that when an alternative becomes a compromise or middle option on a set of options, its market share tends to increase (Simonson, 1989). This effect is a result of the excessive attention to the relational properties of alternatives (Khan *et al.*, 2011), which has implications for product positioning, assortments and branding.

In a reward-based crowdfunding platform, fundraisers provide tangible rewards for the funders. Almost all projects provide multiple types of rewards, listing in an ascending order of price. Previous studies indicated that more options in the reward tier can increase the possibility of a crowdfunding project success (Du and Wang, 2017), which is mainly due to the compromise effect. That is, a large option set will benefit project success because funders are prone to find a match option in a large option set. In the crowdfunding platforms, this effect is also observed when funders are inclined to choose those options located in the middle reward tier (Simons *et al.*, 2017). Therefore, offering more options means more middle choices, thus attracting more potential funds from crowds and increasing the degree of success:

*H3.* The number of options in the reward tier is positively related to the degree of project success.

*3.1.4 Social media usage.* The use of additional social media sites assists fundraisers to reach existing social networks and even develop new ones. Most fundraisers consider that it is useful to leverage their social networks via social media sites before and during the crowdfunding campaign. Correspondingly, the number of Facebook friends of fundraisers can be regarded as a crucial factor in crowdfunding campaigns as a means of raising social capital for the project (Giudici *et al.*, 2013). Hence, social media sites, such as Facebook, Twitter and Weibo, can be valuable tools for word-of-mouth marketing for crowdfunding campaigns.

Social media profiles are also useful tools for reaching prospective funders within an anonymous but public mass (Beier and Wagner, 2014). Social media can increase the quality of interaction because it can increase the potential for direct feedback – nonverbal and verbal interaction forms and messages (Montoya *et al.*, 2009). Therefore, most crowdfunding platforms provide the opportunity to link project descriptions and pages to fundraisers' profiles on social media sites.

Crowdfunding platforms allow fundraisers to forward their projects into their social networks through social media sites such as Facebook, Twitter and Weibo. By forwarding on social networks sites, launched projects are visible to large crowds not only on the crowdfunding platforms but also outside the platforms, some of which are potential funders. Previous studies have recognized the positive effect of social media usage on the likelihood of a crowdfunding project success (Beier and Wagner, 2014; Inbar and Barzilay, 2014). When considering degree of success, this study proposes that social media usage can enhance a project's visibility to more individuals who may pledge funds on the project later, thereby helping fundraisers to access more funds. Hence:

*H4.* Social media usage is positively related to the degree of project success.

### *3.2 Crowd participation*

*3.2.1 Funds pledge.* Funds pledge is the most fundamental behavior of crowds on the crowdfunding platforms. This behavior is studied by previous studies that explore how and when crowds pledge. Prior literature on equity-based and lending-based crowdfunding platforms found that crowds will manifest a herding behavior when they decide to pledge funds on a project (Zhang and Liu, 2012). Given that financial return is the major expectation on these platforms, following others is a rational way for individuals to look for high-quality projects, implying that a project with high degree of success will attract more funders.

However, it is observed in the study of donation-based crowdfunding platforms that a crowding-out effect may occur when individuals perceive others' contributions on a project as sufficient (Andreoni, 1990). That is, individuals decrease their contributions when others have already contributed more to a project and turn to other projects with less success (Burtch *et al.*, 2013). This is because crowds participate in donation-based crowdfunding platforms for the purpose of helping others without tangible or financial rewards (Burtch *et al.*, 2013; Smith *et al.*, 2012). Accordingly, this implies that a project with a high degree of success may not be necessary the project that attracts the largest number of funders.

The focus of this study is the reward-based crowdfunding platforms, on which funders do receive tangible rewards but not as sensitive as financial rewards. Hence, the funders' pledge behavior on these platforms must be different from that of equity-based or donation-based crowdfunding platforms. They participate in reward-based crowdfunding platforms not only for egoistical motivations (e.g. getting rewards) but also for prosocial motivations (i.e. altruism) (Bretschneider and Leimeister, 2017; Gerber *et al.*, 2012). Previous studies provided mixed findings about funders' pledge behaviors on reward-based crowdfunding platforms. Some studies indicated that funds pledge behavior occurs when crowds find the project already to have high degree of success (Thies and Wessel, 2014; Li and Duan, 2014), while others found the opposite results in the sense that crowds will pledge the projects with less success presumably out of goodwill or benevolence to help others (Kuppuswamy and Bayus, 2013). With it in mind, we postulate that the effect of funds pledge on the degree of project success will be mixed.

Specifically, at the early stage, a project that has already obtained its initial funding goal will continuously attract funders, because the initial success signals good project quality and high probability for a project to keep its promises (Kuppuswamy and Bayus, 2017; Guo *et al.*, 2017). Thus, it will attract more funders to pledge funds. Later, when a project has received funds largely exceeding its set funding goal and even become a blockbuster project, crowds may turn to other similar projects with less success. Since crowds are able to check the status of the project from the very beginning to its completion, they would like to choose those projects that are either approaching or have just reached their funding goals. This can help the project initiators to successfully raise money on the one hand, and can lower the probability of losses to crowds on the other hand because these projects either have higher probability of success or have already achieved success in reaching the initial funding goals. In a conclusion, we postulate that there exists a tipping point between the crowd participation in funds pledge and the degree of project success: they are positively related before the tipping point, while are negatively related after the tipping point. Therefore:

*H5.* The crowd participation in funds pledge has an inverse U-shaped relationship with the degree of project success.

*3.2.2 On-site communication*. Information asymmetry exists on crowdfunding platform; hence, funders must acquire more information to reduce information asymmetry. Although fundraisers' project descriptions and frequent updates can provide some information, funders cannot directly communicate with fundraisers through descriptions and updates. Therefore, crowdfunding platforms provide a two-way on-site communication channel for funders – a comment function (Wang *et al.*, 2018). This channel allows crowds to interact with current and prospective project fundraisers, that is, crowds give comments and fundraisers respond to the comments, enhancing the interaction between crowds and fundraisers. This type of participation behavior of crowds is different from funds pledge in the sense that crowds can either be not related to any types of rewards for crowds or provide any substantial financial support for project initiators. Therefore, its effect on the degree of project success should also be studied separately from funds pledge.

Previous studies in other contexts, such as new product development, indicated the motivating role of communication (Gruner and Homburg, 2000; Coviello and Joseph, 2012). Similarly, studies on crowdfunding showed that the frequency of communication between project fundraisers and funders positively relates to the volume of fund raised (Xiao *et al.*, 2014). Another study proposed that comment quantity is positively related to the probability of success (Wang *et al.*, 2018). Thus, we also expect that the more crowds are involved with on-site communication, the higher the funds a project can raise even after it reaches its funding goal. Accordingly:

*H6.* The crowd participation in on-site communication is positively related to the degree of project success.

## 4. Methodology

### *4.1 Data collection*

Data were collected from Kickstarter (www.kickstarter.com/), one of the biggest crowdfunding platforms in the USA. Kickstarter is an online crowdfunding platform that enables organizations or teams to issue funds over the internet and receive small investments from registered funders in return. It is a typical reward based with "all-or-nothing" crowdfunding approach that focuses on creativity. Launched in April 2009, Kickstarter has become one of the largest online crowdfunding platforms. Up until August 2018, there are 415,077

launched projects in total that have selected Kickstarter to raise funds. With a success rate of 36 percent, about 15,127,360 funders participate in funds pledge, and more than $3.86bn is pledged (www.kickstarter.com/help/stats). It provides a platform for organizations and individuals to post and promote their project and interact with users. Users on the platforms can pledge a project, and post comments to a project.

The major focus of this study is degree of project success rather than the possibility of success; thus, data were collected only from those projects that have already succeeded. The data were collected for all crowdfunding projects on Kickstarter from June 2012 to April 2013. To ensure the sample included only successful projects, projects which completed over 100 percent were selected. There are 14,079 successful projects out of 28,447 projects. All the data are cleaned based on the requirement.

*4.2 Measures*

*4.2.1 Funds pledge*. The platform enables users to pledge in projects based on their preferences. Users can choose the amount they plan to pledge in a particular crowdfunding project. In this study, funds pledge is operationalized as the total number of funders in a particular project.

*4.2.2 On-site communication*. Users can give comments to a certain project if they are interested in. In turn, fundraiser can give feedback to users' comments to interact with them. Therefore, on-site communication is operationalized as the total number of comments a project has received.

*4.2.3 Project updates*. In Kickstarter, fundraisers can update their project to provide more details for the project or update project' status during the crowdfunding process. In this study, project updates are operationalized as the total number of fundraisers' update on the project.

*4.2.4 Crowdfunding goal*. Each project has a target goal that it wants to achieve. Therefore, the crowdfunding goal is operationalized as the total amount a project asks for its target.

*4.2.5 Reward level*. In Kickstarter, fundraisers can set reward scheme for backers. Reward scheme is a reward menu provided by the fundraisers and there is inherent order of reward items. Fundraisers can set the reward level for each project. Reward level is operationalized as the total number of reward level fundraisers provide.

*4.2.6 Social media usage*. In Kickstarter, the fundraisers can share their project on Facebook. The number of friends that fundraiser have on Facebook will show on the project description. Social media usage is operationalized as the total number of friends that fundraiser have on Facebook.

*4.2.7 The degree of project success*. Users are able to check the status of the project from the very beginning to its completion. Because projects differ in the volume of funds that they ask for, it is improper to operationalize project success as the total amount funds. This study operationalizes project success as the completion percentage of a project, which is the ratio of the target goal divide current funding (as shown in the formula below). The log trans were used due to its skewed nature (Table II):

$$\text{Degree of project success}_i = \ln\left(\frac{\text{Crowdfunding goal}_i}{\text{Received funding}_i}\right).$$

*4.3 Data analysis and results*

Ordinary least squares (OLS) method was used for data analysis using SPSS. Panel data random effects regression with robust standard error were performed, which were pooled over OLS analysis with standard error clustered by user. Clustered standard errors can control for potential heteroscedasticity. The research model was tested using the regression

**Table II.**
Summary of the descriptive statistics for each variable

| | *n* | Min. | Max. | Mean | SD |
|---|---|---|---|---|---|
| DurationDays | 14,079 | 1 | 60 | 31.45 | 10.47 |
| CrowdfundingGoal | 14,079 | 1 | 2,000,000 | 9,474.58 | 35,055.81 |
| ProjectUpdates | 14,079 | 0 | 90 | 4.87 | 6.17 |
| Fundspledge | 14,079 | 0 | 91,584 | 240.84 | 1,585.26 |
| OnsiteCommunication | 14,079 | 0 | 59,463 | 58.03 | 1,049.7 |
| SocialmediaUsage | 14,079 | 0 | 5,247 | 540.76 | 763.57 |
| Minpledge | 14,079 | 1 | 599 | 7.168 | 12.39 |
| Maxpledge | 14,079 | 1 | 10,000 | 2,021.33 | 2,810.64 |
| RewardLevels | 14,079 | 1 | 31 | 10.05 | 5.54 |
| lnprojectsuccess | 14,079 | 4.61 | 12.39 | 4.93 | 0.55 |

framework below. To test the inverse U-shaped effect of participation in funds pledge, participations in funds pledge$^2$ as one factor were created:

$$\begin{aligned}\text{Degree of project success} = {} & \beta_0 + \beta_1 \times \text{Fundpledge}^2 + \beta_2 \times \text{Fundpledge} \\ & + \beta_3 \times \text{OnsiteCommunicaiton} + \beta_4 \times \text{ProjectUpdates} \\ & + \beta_5 \times \text{CrowdfundingGoal} + \beta_6 \times \text{RewardLevels} \\ & + \beta_7 \times \text{SocialmediaUsage} + \beta_8 \times \text{Maxpledge} \\ & + \beta_9 \times \text{Minpledge} + \beta_{10} \times \text{DurationDays},\end{aligned}$$

where Fundpledge refers to number of funds pledge, Fundpledge$^2$ refers to square of number of funds pledge, OnsiteCommunication refers to total number of comments, ProjectUpdates refers to total number of a project updates, CrowdfundingGoal refers to total amount of a project target, RewardLevels refers to total level of rewards scheme of a project, SocialmediaUsage refers to the total number of friends that fundraiser have on Facebook, Maxpledge refers to the maximum backing price in a project's reward scheme, Minpledge refers to the minimum backing price in a project's reward scheme and DurationDays refers to the project survival time. In this study, Maxpledge, Minpledge and DurationDays are used as control variables.

The regression analysis results are summarized in Table III. The results indicate that project updates ($\beta = 0.142$, $p < 0.001$) and reward levels ($\beta = 0.054$, $p < 0.01$) have positive

**Table III.**
Results of the research model

| Parameter | $\beta$ | SE | Hypothesis test df | Hypothesis test Sig. |
|---|---|---|---|---|
| Fundspledge$^2$ | −0.539 | 0 | 1 | 0 |
| Fundspledge | 0.954 | 0 | 1 | 0 |
| OnsiteCommunication | 0.079 | 0 | 1 | 0 |
| ProjectUpdates | 0.142 | 0.002 | 1 | 0 |
| CrowdfundingGoal | −0.507 | 0 | 1 | 0 |
| RewardLevels | 0.054 | 0.002 | 1 | 0.003 |
| SocialmediaUsage | −0.05 | 0 | 1 | 0.001 |
| Maxpledge | −0.032 | 0 | 1 | 0.631 |
| Minpledge | −0.006 | 0.002 | 1 | 0.548 |
| DurationDays | −0.028 | 0.001 | 1 | 0.171 |

Dependent variable: lnprojectsuccess

$R^2 = 0.264$ (df = 10)

influence on the degree of project success, supporting *H1* and *H3*. Crowdfunding goal ($\beta = -0.507$, $p < 0.001$) has negative effect on the degree of project success. Hence, *H2* is supported. In addition, participation in funds pledge has an inverse U-shaped effect on the degree of project success that both quadratic term ($\beta = -0.539$, $p < 0.001$) and primary term ($\beta = 0.954$, $p < 0.001$) are significant. The results support *H5*. *H6* is also supported that on-site communication has a significant positive effect ($\beta = 0.079$, $p < 0.001$) on the degree of project success. Surprisingly, social media usage ($\beta = -0.060$, $p < 0.05$) has negative effect on the degree of project success, not supporting *H4*. Overall, the model explains 26.4 percent of the variance in the degree of project success. A summary of hypotheses results is shown in Table IV.

### *4.4 Robustness check*

Robustness check was conducted to confirm the inverse U-shaped relationship about the effect of funds pledge on the degree of project success as well as the main effect of on-site communication. Thus, the model was tested with another data set which was collected from an Asian crowdfunding platform – Zhongchou.cn (www.zhongchou.cn/) – which is similar like Kickstarter and is a typical reward based with "all-or-nothing" fundraising model. Launched in February 2013, Zhongchou.cn has become one of the largest online crowdfunding platforms in China. Data were collected for all crowdfunding projects in Zhongchou.cn before February 2014. To ensure the sample included only successful projects, projects which completed over 100 percent were selected. There are 1,513 successful projects with 8,732 users in Zhongchou.cn before February 2014. The results of the analysis are in Table IV, and they are similar to the results of Kickstarter, suggesting that the findings of crowd participation are robust (Table V).

## 5. Discussion and conclusion

### *5.1 Key findings*

This study aims to explore the antecedents of degree of project success thorough the perspectives of both capital-seeking agents (i.e. fundraisers) and capital-giving agents

| Hypothesis | Variables | Support |
|---|---|---|
| *H1* | ProjectUpdates | Supported |
| *H2* | CrowdfundingGoal | Supported |
| *H3* | RewardLevels | Supported |
| *H4* | SocialmediaUsage | Not supported |
| *H5* | $Fundpledge^2$, Fundpledge | Supported |
| *H6* | OnsiteCommunication | Supported |

**Table IV.** Summary of hypotheses

| Parameter | $\beta$ | SE | Hypothesis test df | Sig. |
|---|---|---|---|---|
| $Fundspledge^2$ | −0.437 | 0 | 1 | 0.005 |
| Fundspledge | 0.498 | 0 | 1 | 0.005 |
| OnsiteCommunication | 0.296 | 0 | 1 | 0 |
| CrowdfundingGoal | −0.177 | 0 | 1 | 0 |
| Maxpledge | 0.018 | 0 | 1 | 0.47 |
| Minpledge | 0.008 | 0 | 1 | 0.743 |
| $R^2 = 0.110$ (df = 6) | | | | |

**Table V.** Robust check of research model for Zhongchou.cn

(i.e. the IT-mediated crowds) using the theory of crowd capital as theoretical lens. In the research model, the degree of project success is a key crowd capital sought by fundraisers in the crowdfunding context, indicating the equally important role of both fundraisers and crowds. Further this study investigated the effect of crowd capability of fundraisers on degree of project success, including project updates, goal setting, reward levels and social media usage. As well, research focus was put on the crowd participation (i.e. funds pledge and on-site communication) through which crowds can exert effects on crowd capital generation.

First, as expected, more frequent project updates and more options in reward tier predicted higher degree of project success. These results are also consistent with the literature on the probability of project success (Beier and Wagner, 2014; Du and Wang, 2017). This empirical study also verified that setting higher initial funding goal would lead to lower degree of project success, which is also consistent with the existing literature (Cordova *et al.*, 2015; Du and Wang, 2017). These results indicate that these design strategies predicting probability of project success still work in predicting the degree of project success.

Second, the empirical results indicated that the crowd participation in funds pledge had an inverse U-shaped relationship with the degree of project success. Funds pledge is the major way of crowds to generate crowd capital – raising more funds. Prior literature provided mixed findings that some studies indicated that funds pledge occurred by herding, i.e. following others' pledge behaviors, implying that a project with high degree of success would attract more funders (Thies and Wessel, 2014; Li and Duan, 2014), while others found the opposite results (Kuppuswamy and Bayus, 2013). This study reconciles the inconsistency of previous studies on funders' participation in reward-based crowdfunding platforms, and reveals that there should be a tipping point.

Third, in addition to funds pledge, crowds can also participate through on-site communication (i.e. giving comments to fundraisers and receiving responses from fundraisers), which was found to have positive influence on the degree of project success. This on-site communication can help crowds to have direct interaction with fundraisers, thus understanding more about the projects and gaining more confidence. The positive effect of on-site communication is consistent with prior literature of crowdfunding that higher frequency of communication between project fundraisers and backers leads to larger volume of funds generated (Xiao *et al.*, 2014) even the projects have already reached the set funding goal. This finding is also consistent with the effect of communication on other types of success, such as new product development (Gruner and Homburg, 2000; Coviello and Joseph, 2012).

### *5.2 Contributions to theory*

This study has threefold theoretical contributions. First, this research contributes to the literature of crowdfunding project success by studying the degree of project success instead of the possibility to succeed. Prior literature mainly takes the success as a binary construct, distinguishing only between "success" or "not success" (Beier and Wagner, 2014; Liu, Bhattacharya and Jiang, 2014; Xiao *et al.*, 2014; Zhang *et al.*, 2014; Zheng, Li, Wu and Xu, 2014). However, achieving the initial funding goal is only the first step in launched projects. In order to start up new ventures more smoothly, fundraisers expect to raise as much funds as possible. Furthermore, a project with high degree of success is also critical in influencing both the success of other projects and the entire crowdfunding platform (Liu *et al.*, 2015). Hence, this study furthers the understanding of the extant literature for project success by exploring the determinants of the degree of project success.

Second, this work contributes to the literature of crowdfunding project success by introducing the theory of crowd capital and conceptualizing the degree of project success as

the crowd capital. As indicated in prior literature, crowdfunding is a two-sided market which interlinks capital-seeking agents (i.e. fundraisers) and an IT-mediated crowd of capital-giving agents (i.e. backers or funders) (Haas *et al.*, 2014). The existing literature on project success mainly explored the antecedents of project success through the perspective of fundraisers (Beier and Wagner, 2014; Liu, Bhattacharya and Jiang, 2014; Xiao *et al.*, 2014; Zhang *et al.*, 2014; Zheng, Li, Wu and Xu, 2014), ignoring the critical role of IT-mediated crowds. To address this research gap, this study draws on the theory of crowd capital (Prpić and Shukla, 2013, 2014a, b, 2016; Prpić *et al.*, 2015), highlighting the equally important role of fundraisers and IT-mediated crowds.

Third, this work advances the understanding of funds pledge on the degree of project success. Although the crowd participation in funds pledge is expected to generate crowd capital, i.e., to raise more funds in the current context, the findings in the existing studies remain inconsistent and mixed. On the one hand, previous studies indicated that funds pledge is driven by herding others' behaviors (Thies and Wessel, 2014; Li and Duan, 2014). With this logic, a project with high degree of success should attract more backers. On the other hand, other studies provided opposite results indicating that a crowding-out effect may occur in some situations (Kuppuswamy and Bayus, 2013). Following this, a project with low degree of success could attract relatively more funders. The current research proposes an inverse U relationship between funds pledge and the degree of project success, which could reconcile the inconsistency and offer relatively new insights on the relationship between funds pledge and the degree of project success.

### *5.3 Contributions to practice*

The initial objective of fundraisers is to achieve their set funding goals. After that, the fundraisers expect to raise more funds for reasons discussed in previous sections. This study sheds light for fundraisers about how projects generate crowd capital from IT-mediated crowds in reward-based crowdfunding platforms with "all-or-nothing" fundraising model. The findings of this study provide guidance to practitioners. First, as the empirical results show, frequent updates and more options in reward tiers are still beneficial to fundraisers whose purposes are not only achieving the funding goals but also accessing more funds. Therefore, designers of crowdfunding platforms should include multiple communication channels, such as newsfeed, Q&A forums and instant messaging tools, to facilitate more frequent communication between fundraisers and funders. Second, this work also indicates that social media usage that is a useful strategy for achieving funding goals may not be a good way to pursue more funds. Therefore, fundraisers should use social media before funding goals are achieved and discontinue the use of social media after achieving their funding goals. Third, there is a tipping point between the funds pledge and degree of project success. This tipping point indicates that the large number of funders cannot guarantee high degree of project success. Instead, fundraisers should maximize the total funding amount within a moderate number of funders. Despite of funds pledge, fundraisers should increase communications with the funders, to improve interactions with the crowd, which, in turn, will have positive effect on the degree of project success.

### *5.4 Limitations and future research*

This study also has limitations. First, the effect of social media usage was found to be opposite from the findings of previous studies that explored the probability of project success (Moisseyev, 2013). That is, after reaching initial funding goals, projects that used social media raised less funds than those ones that did not use. Although not focusing on the effect of social media, some studies revealed insignificant effect of social media on total amount of funds pledged (Xiao *et al.*, 2014). Therefore, this inconsistency in the crowdfunding studies gives a possible research direction for future studies, which should

further explore the effect of social media on the degree of project success in the reward-based crowdfunding context.

Second, the direct effects of design strategies and crowd participation on degree of project success were only investigated. In future studies, other types of effects should be considered. For example, proper design strategies may attract potential funders and encourage them to pledge funds. Hence, design strategies may predict funds pledge or exert effects on the degree of project success through the mediation effect of funds pledge. Furthermore, the possible interdependencies between design strategies and crowd participation could be investigated, and some conditional factors could also be explored, such as time of project campaign and its impact of degree of project success.

Third, crowd participation was operationalized as a count variable, that is, the number of individuals to represent the crowd participation behavior was utilized. This operationalization is intuitive but ignores some meaningful information. For instance, the specific amount of funds that is pledged by each funder could also be used to represent funds pledge behavior. Additionally, the number of comments was taken to represent on-site communication, while the quality of the comments, including the specific content and valence, and the interaction dynamic between the crowd and the fundraisers could also be used to represent on-site communication. Future studies should consider these aspects of crowd participation to gain a more comprehensive understanding of crowd participation behaviors.

### *5.5 Conclusion*

In conclusion, the current study draws upon the theory of crowd capital and focuses on the effects of the crowd capability of fundraisers and crowd participation on the degree of project success. Four crowd capabilities (i.e. project updates, goal setting, reward levels and social media usage) and two ways of crowd participation (i.e. funds pledge and on-site communication) are identified and examined. Particularly, funds pledge is argued to have an inverse U-shaped relationship with the degree of project success, while other factors are expected to directly affect the degree of project success. The empirical data validate most of our argumentations. This work enriches the literature of crowdfunding on project success and sets a light for future research.

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# Analyzing campaign's outcome in reward-based crowdfunding

## Social capital as a determinant factor

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### Abstract

**Purpose** – The purpose of this paper is to probe how reward-based crowdfunding campaigns accomplish their goal by adopting the theoretical constructs of social capital dimensions: structural, cognitive and relational.

**Design/methodology/approach** – The approach used is a design model for concluded campaigns in a Mexican crowdfunding platform, which determines social capital from operating social networks (Facebook and Twitter). By using this model, the associations between the dimensions are revealed, verifying how social capital flourishes during the campaign and how it alters the campaign's outcome.

**Findings** – The findings demonstrate how social interaction through a wide social network (structural dimension), shared vision and values among entrepreneurs and their potential funders (cognitive dimension), and the development of trustworthiness within the campaign (relational dimension) boost the probability of achieving the crowdfunding goal.

**Research limitations/implications** – The results inform researchers on how social capital is forged from social networks during a crowdfunding campaign. However, the method must be validated with other crowdfunding models and other social network platforms commonly used by campaign creators.

**Practical implications** – Contributions from this paper include tools (design model and evaluation method) associating theory with the crowdfunding mechanism, complementing previous work. Crowdfunding providers, as well as campaign creators, have now an approach to appraise social capital and obtain the desired goal.

**Originality/value** – In addition to providing much-needed research on the current state of crowdfunding, this paper analyzes the link between practice and theory, which can be valuable in confining the mechanism to an accurate theory and ensuring the theory's longevity.

**Keywords** Social capital, Social networks, Crowdfunding, Campaigns' outcome

**Paper type** Research paper

## 1. Introduction

In today's world, people interact with each other in a revolutionary way due to information and communication technologies (ICT). The Web 2.0 has empowered individuals to participate in other's businesses, tasks and activities (Hudson-Smith, 2009). These empowered individuals represent the crowd. The crowd has become a new partner that can invest in business ideas and projects initiated by entrepreneurs who lack the operating history and proven track records (Zheng *et al.*, 2014) necessary to obtain credit from traditional financing institutions.

In order to overcome the scarcity of traditional financial resources, creative founders are employing a new source of finance called crowdfunding (Bellefalmme *et al.*, 2014). Crowdfunding operates by eliminating the intermediation of traditional financing institutions.

**JEL Classification —** A14, C53, M21, N26, O32

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It takes place through digital businesses that connect people who need resources to carry out a project or an idea with those willing to anchor them to start a project or a business (Kraus, 2016). Campaign creators must exhibit their idea on a digital platform by posting a video and publishing a short essay about it; then they need to activate an online social network campaign and appeal for resources from the crowd using various social network communities (Mollick, 2014).

Ziegler *et al.* (2017) disclosed a volume growth of over 160 percent from 2014 to 2016, reaching a level of $22.6bn funded by the crowd[1] in this continent. Mexico is leading the effort in Latin America for the early adoption of this mechanism. However, it is at a much smaller scale than the current leaders – the USA and Canada. The mentioned industry review revealed that in the same period, the Mexican crowdfunding industry funded over $23.3m , growing 200 percent. Fondeadora.mx was the first reward-based Mexican platform and one of the four that represented 96 percent of the market. Fondeadora.mx accrued over $70m Mexican Pesos ($3.8m), and it successfully funded more than 1,000 projects, before becoming part of Kickstarter.

The factors associated with the success and failure of reward-based crowdfunding campaigns, varied from geographical concerns, to project quality and behavior patterns of the crowd (Müllerleile and Joenssen, 2015); but most of the time, the factors influencing funding success have, so far, been neglected in the context of crowdfunding so they are still of interest to a lot of researchers. Furthermore, research findings about success predictors have questioned the long-term ability of crowdfunding to aid projects that lack financial and personnel resources in order to achieve their goal (Hobbs *et al.*, 2016).

This research developed a theoretical model to study the associations between the social factors and how they promote the success of campaigns (Zheng *et al.*, 2014). The model was adapted from the studies of Tsai and Ghoshal (1998). It is a model whose inputs are direct data from the platforms that support the social networks used by the creators of the campaign. It is expected to be replicated on different crowdfunding platforms in a simple and consistent way.

The remainder of this paper is organized as follows: first, a literature review of current studies about crowdfunding aiming to determine the factors associated with campaign success is presented. Second, a description of the theoretical framework intended for this investigation is provided. Third, the research model is introduced and the construction of its corresponding hypotheses is revealed. In the concluding section, we present the empirical analysis and discuss the findings as well as their implications for future research.

## 2. Literature review

### *2.1 Factors associated with campaigns' outcomes*

There are three players involved in crowdfunding transactions: those who own the idea or project, for the purpose of this study, the entrepreneurs; those who decide to back the idea by providing financial resources, the funders; and the online business platforms offering crowdfunding services (Bellefalmme *et al.*, 2014; Mollick, 2014; Schwienbacher, 2018).

Around these three players, social networks represent an essential component in the transaction, as an open call is made and a social media campaign is launched in order to get potential funders to participate. Ethan Mollick gives this excellent prominent and scientific definition of reward-based crowdfunding: "Crowdfunding refers to the efforts by entrepreneurial individuals and groups – cultural, social, and for-profit – to fund their ventures by drawing on relatively small contributions from a relatively large number of individuals using the internet, without standard financial intermediaries" (Mollick, 2014).

This research focuses on the reward-based model of crowdfunding, which involves an open call through the internet, and the payback to the funders is with some form of gift or reward for supporting the entrepreneur's idea or initiative (Bellefalmme *et al.*, 2014).

The model has also been referred to as a pre-sales model, where future consumers of the entrepreneurs' product or service are willing to anticipate their purchase and therefore contribute to the entrepreneurs' business plan of production (Gerber and Hui, 2013; Kraus, 2016). The mechanism implies that entrepreneurs launch a strong online campaign that lasts between 30 and 90 days. They must achieve their goal in that time. If not, they are not able to retrieve any sum gathered. This is called the "all or nothing" model (Gerber and Hui, 2013; Cumming, 2014; Mollick, 2014).

The effect of "all or nothing" determines the importance of the campaign's outcome, which is limited to "success" or "failure." In other words, while some projects reach their goal, others fail in the attempt (Agrawal *et al.*, 2014). Therefore, entrepreneurs are interested in the factors that increase the probability of success, and an important number of studies analyze their impact on the campaign's outcome (Koch and Cheng, 2016). Normally, successful campaigns are arranged with reasonable goals, interesting projects, identified potential funders and a nice layout of diverse forms of communication (Riley-Huff, 2016) in order to reach the goal.

Some researchers consider the result to be explained by how the funders react to the actions of other funders (Agrawal *et al.*, 2014; Colombo, 2015); however, since not all projects are attractive to all potential funders, the nature of the project also plays an important role (Mollick, 2014). Other researchers have confirmed that high goals are generally more difficult to achieve because the scope of the campaign has to go beyond family and friends (Koch and Cheng, 2016; Robertson and Wooster, 2015; Mollick, 2014; Cumming, 2014). Nevertheless, there are campaigns that even surpass high goals, so this statement is not entirely convincing.

The duration of the campaign is another factor to be considered and has an inverse effect: a long duration involves less chance for success (Chan, 2017; Wang, 2017; Colombo, 2015; Lu *et al.*, 2014; Mollick, 2014). This has to do with the "momentum" of the project which, in heterogeneous and dynamic communities such as crowdfunding, tends to decrease as time passes (Frydrych *et al.*, 2014; Mollick, 2014).

On the other hand, active communication is also a notable factor influencing the outcome of a crowdfunding campaign. During the campaign, the entrepreneur must provide updated information, and it has been empirically verified that this has a positive impact (Simons, 2017; Wang, 2017; Schatz, 2019; Yin, 2017).

Additional studies have confirmed that success or failure also depends on the size and support given by the first social circle of entrepreneurs, that is, the number of friends and family they have. The reason is that these individuals have additional information about the project as well as effective ties that help them make positive decisions about their contribution (Agrawal *et al.*, 2014). The friends and family group normally makes contributions during the first week of the campaign, and people less familiar with the project make their contributions later, responding to the amounts contributed by the first anchors (Koch and Cheng, 2016; Colombo, 2015; Agrawal *et al.*, 2014; Lu *et al.*, 2014; Mollick, 2014; Moisseyev, 2013).

Studies have shown that the result can also be related to entrepreneurs' experience in the crowdfunding platform (Butticè *et al.*, 2017; Lei, 2017; Moradi, 2017; Simons, 2017; Zvilichovsky *et al.*, 2015). Founders who have achieved success in the past are more likely to succeed for a second or a third time, i.e. the ties and relationships developed during the first campaign benefit the process of subsequent ones, creating a reputation for entrepreneurs in the community (Skirnevskiy, 2017; Ryu and Kim, 2016; Zheng *et al.*, 2014; Nahapiet and Ghosal, 1998; Youndt, 2004).

Factors associated with success that inspired this work are the ones related to the dynamics of social networks and their impact on crowdfunding performance. These factors consider a community around the three players involved in a crowdfunding campaign and

exhibit the features necessary to develop social capital, fostering the use of social networks like Twitter and Facebook, as well as the chat tools provided by the platform (Lehner, 2012; Lu *et al.*, 2014; Zheng *et al.*, 2014).

### *2.2 Theoretical framework*

In business and management literature, Nahapiet and Ghosal (1998) define social capital as "the sum of the actual and potential resources embedded within, available through, and derived from the network of relationships possessed by an individual or social unit" (Nahapiet and Ghosal, 1998). They describe social capital in terms of three dimensions: structural, relational and cognitive. The "structural dimension" refers to the characteristics necessary for the development and use of social capital within social networks. The structural concept is used to describe the general pattern of connections that exist in the network, i.e., the number of nodes or links through which the content flows (Nahapiet and Ghosal, 1998; Tsai and Ghoshal, 1998).

The "relational dimension" refers to the capital that is obtained from reciprocal behavior within the network, derived from sentiments of trust, norms, identity and expectations (Nahapiet and Ghosal, 1998; Ye, 2016; Riley-Huff, 2016). The "cognitive dimension" refers to the development of social capital through shared language and narratives with affinity among individuals in a network (Chiu, 2006; Nahapiet and Ghosal, 1998; Riley-Huff, 2016).

There are two concepts that relate social capital to the crowdfunding mechanism. On the one hand, social capital plays an important role in financing efforts. When social networks are used between lenders and borrowers, more information is shared and known, thus lower rates of success are achieved (Uzzi, 1999). On the other hand, the online community within the crowdfunding platform represents people connected; either by a relationship or by something they share, creating a network as a suitable place for social capital to emerge (Smith, 2008).

Assorted studies analyze social capital as a factor that affects the outcome or performance of a crowdfunding campaign. Some focus on the relationships that entrepreneurs establish with potential anchors while others measure and place social capital within a theoretical model. Relationship-based studies are more commonly found in literature. For example, Liao *et al.* (2015) label social capital as internal and external. Internal social capital is gained through the social network in the platform, and external social capital is accomplished outside the platform network (Liao *et al.*, 2015). Other studies confirm the association between the quantity collected and the number of social networks nodes that entrepreneurs have. Considering network complexity, they confirm that a larger scale and a conglomerated network provide greater number of resources (Hui *et al.*, 2013; Lin *et al.*, 2013).

There are some studies that settle social capital in a theoretical model. These have more similarities with the present research proposal. One of them is of Zheng *et al.* (2014), which measure social capital for an American and a Chinese platform to determine which of the two provides the most potential to predict a crowdfunding campaign's performance. A second work, exploring social capital from a theoretical model point of view, is the one by Giudici *et al.* (2013). Their study confirms that the geographical location of the entrepreneur is relevant as long as a strong community with strong ties and reciprocity values prevails in the area. Finally, there is one study from Indonesia replicating Zheng *et al.*'s (2014) model. Three different approaches from the dimensions to the campaign's outcome were tested, but the relational dimension resulted having no significant impact on crowdfunding performance, in either of three models.

Unlike the studies described above, the present investigation measures, taking a broader approach, each of the dimensions and analyses the associations that exist among and the

effects of each on a campaigns' outcome. Adopting the multidimensional social capital theory to analyze these concepts, the study covers two social capital properties. First, crowdfunding campaigns are able to build capacities and construct an online community where the entrepreneur and potential sponsors take actions to collect resources. Second, crowdfunding campaigns also help the project to become a reality. Furthermore, the mechanism of crowdfunding involves social capital key factors: time, that is determined by the duration of the campaign; interaction, that occurs with the exchange of comments and updates; interdependence, that materializes within the entrepreneur, the platform, and the potential funders' connectivity; and proximity, that results from the ideas and projects that engage common interest among the individuals in the network (Nahapiet and Ghosal, 1998).

## 3. Research model and hypotheses

The research model proposed is a theoretical approximation of how social capital is built within a reward-based crowdfunding platform and how it contributes to the campaign's outcome. The methodology aims to measure social capital's dimensions with data from the entrepreneurs' social networks and the crowdfunding platform; it reveals the associations among the dimensions and, finally, determines their impact on crowdfunding success.

### *3.1 Association between cognitive and structural dimensions*

Tsai and Ghoshal's (1998) work relies on the premise that social interaction "plays a critical role in shaping a common set of goals and values and in the sharing of those goals and values among an organization's members." This means that the association is from the structural dimension to the cognitive dimension. Nevertheless, the hypothesis they proposed did not confirm a significant relationship in that direction. In order to contribute to literature, this study proposes an association in the opposite direction. Based on the practices of crowdfunding, where entrepreneurs must post videos, text and images before launching their campaign, social interaction comes after the narratives have been created. Therefore, narratives must be generated beforehand so that social interaction occurs in online networks.

It is expected that in order to create a strong social interaction, cognitive elements must be developed and then shared throughout the network. Accordingly, this research affirms:

*H1*. A common set of goals and values (cognitive dimension) developed by entrepreneurs before launching their campaigns will be positively associated with social interaction (structural dimension).

### *3.2 Association between structural and relational dimensions*

Social network literature endorses that strong ties and frequent interaction procure trusting relationships (Krackhardt, 2003). There are traditional relationships that demand face-to-face contact in order to preserve trust and trustworthiness (Urry, 2012; Chewar *et al.*, 2005), but online relationships lack face-to-face acquaintance, so they need to procure frequent interactions for the actors to know one another and shape trusting relationships (Wittel, 2001). Additionally, there are two types of relationships, those of strong ties that last longer and that involve frequent interaction, and those of weak bonds, which are mostly informal and uncommon (Granovetter, 1992). Strong ties generate a link between actors in a network; and weak bonds are considered to build a bridge between members. In crowdfunding, the digital platform where the mechanism occurs allows participants to reinforce both types of relationships. On the one hand, it strengthens those that already exist, and on the other hand, it helps develop new bonds as the campaign evolves exploiting ICTs to reach the goal.

This research model proposes that the structural dimension helps generate trustworthiness for entrepreneurs in their social networks. Hence, it is hypothesized that:

*H2.* Social interaction during the campaign (structural dimension) will be positively associated with the level of the project's perceived trustworthiness (relational dimension).

*3.3 Association between cognitive and relational dimensions*

Shared vision and values through the exchange of narratives represent the greatest manifestation of the cognitive dimension. The exchange of these elements promotes the development of trustworthiness, given by common goals between the members of a network (Nahapiet and Ghosal, 1998; Tsai and Ghoshal, 1998; Gulati, 1995). Different literature sources confirm this association. For example, studies about interpersonal relationships within an organization determine that confidence evolution is due to cognitive factors (McAllister, 1995). Cognitive interference can be identified when individuals choose whom, and under what circumstances, they trust (Lewis, 1985). In quantitative terms, the amount of knowledge necessary to trust lies between total knowledge and total ignorance. "If you have all the knowledge, there is no need to trust; and if everything is ignored, there is no reason why you could rely rationally" (McAllister, 1995, p. 26).

In a crowdfunding community, entrepreneurs share their idea through video, images and descriptive text, trying to attract members of their network who share the same values expressed in their contents; so, from a total knowledge point of view, they persuade potential funders to contribute. Hence, it is hypothesized that:

*H3.* The extent to which entrepreneurs share vision and values with potential funders (cognitive dimension) will be positively associated with the level of the project's perceived trustworthiness (relational dimension).

*3.4 Linking social interaction in a wide network with campaign's outcome*

Social interaction allows network actors to have access to the resources of other actors (Zheng *et al.*, 2014; Nahapiet and Ghosal, 1998; Tsai and Ghoshal, 1998; Chewar *et al.*, 2005), and this is possible within the network structure, so network size becomes an important factor in attaining the goal. Intra-organizational communication studies have documented the importance of interaction between different business units in order to exchange resources and knowledge inside an organization (Tsai and Ghoshal, 1998; Leonard-Barton, 1993).

In crowdfunding, Gerber and Hui (2013) studied the motivations of funders who venture into the mechanism and found out that this group could commit and contribute to the campaigns due to the social interaction that takes place once the campaign has been launched. They concluded that social interaction reveals and delineates the engagement of the entrepreneurs with their project; so potential funders convince themselves to contribute (Gerber and Hui, 2013). Along with this, the link between social network size and the result of a campaign has always been a practical recommendation from crowdfunding providers: "the more contacts you have, the greater your chances of reaching the amount you need" (Zheng *et al.*, 2014). Mollick (2014) reinforces the conclusion that entrepreneurs' social network size is important to accomplish their goal. Therefore, the two main characteristics of the structural dimension – social interaction and size of the network – are important for the positive campaign's outcome. Hence, it is hypothesized that:

*H4.* Social interaction within a wide social network (structural dimension) will be positively associated with a campaign's outcome.

*3.5 Linking trustworthiness with campaign's outcome*

Relational dimension expresses the ability to rely on something or someone truthful through three principal aspects: trust, norms and obligation (Moran, 2005; Nahapiet and Ghosal, 1998;

Tsai and Ghoshal, 1998). Trust is defined as the expectation that decreases the possibility of fraud or opportunistic behavior (Bradach, 1989). On the other hand, norms help regulate the dynamics of participation and collaboration (Nahapiet and Ghosal, 1998; Tsai and Ghoshal, 1998). In addition, obligation has to do with reciprocity, that is, the commitment of actors within a network to future actions toward other members. "If individual A does something for individual B and trusts B to reciprocate in the future, this develops an expectation in A and an obligation in B" (Coleman, 1994).

Crowdfunding, unlike other online markets, contains features that make it more vulnerable to the lack of the conditions mentioned since there is no guarantee that the project is going to be completed (Kim *et al.*, 2017). For the purpose of this study, trust, norms and obligation will construct project's perceived trustworthiness in the relational dimension. It will be measured through data from the crowdfunding platform such as updates, comments and the contribution made by entrepreneurs to other projects. When members of the network manage to collaborate with trustworthiness, resources are easier to access. Hence, it is hypothesized that:

*H5.* The level of a project's perceived trustworthiness (relational dimension) will be positively associated with campaign's outcome.

### *3.6 Linking shared vision and values with campaign's outcome*

Cognitive dimension integrates all collective goals and aspirations of the social network members. It also allows them to interact with each other with full understanding and communication, promoting the exchange of resources and information (Nahapiet and Ghosal, 1998; Tsai and Ghoshal, 1998). As a result, network members will be willing to become partners. According to organizational capital studies, collective goals can keep together remote systems in an organization, encouraging the integration of the whole enterprise (Orton, 1990).

Communication theory maintains that cognitive elements are disclosed when information is exchanged so that individuals can understand each other better (Zheng *et al.*, 2014; Hazleton and Kennan, 2000). This understanding comes in two forms. The first one is through shared language and vocabulary, as basic communication tools. The second one is related to shared narratives, such as stories, metaphors and myths that promote social capital growth (Nahapiet and Ghosal, 1998; Coleman, 1988).

In reward-based crowdfunding, entrepreneurs describe their project through a short text and images that help explain its purpose and how it will be achieved. These narratives and images are then posted and spread in social media platforms (Zheng *et al.*, 2014). Sharing these contents with potential funders is sharing values and points of view with them, in a way that can convince them to contribute (Zheng *et al.*, 2014; Gerber and Hui, 2013). Hence, it is hypothesized that:

*H6.* Shared vision and values (cognitive dimension) will be positively associated with a campaign's outcome.

*Campaign's duration*. In a reward-based crowdfunding mechanism, chances of success decline as a campaign's duration increases. According to literature, this inverse relationship is given because a long-lasting campaign is a sign of entrepreneur's lack of confidence in his own project. Funders perceive that the need for longer time is due to the shortage of elements to convince members of their network that the project is reliable and viable (Butticè *et al.*, 2017; Dey *et al.*, 2017; Kunz, 2017; Skirnevskiy, 2017; Vismara, 2016; Colombo, 2015; Mollick, 2014).

Campaign duration can be selected freely by entrepreneurs (Cumming, 2014). One of the important features of duration is that it represents an element in the mechanism that cannot

be altered once the campaign is launched on the platform (Viotto da Cruz, 2015). So, as in other studies (Colombo, 2015; Cumming, 2014; Mollick, 2014; Zheng *et al.*, 2014), it will be considered as a control variable in order to fix its impact on the crowdfunding campaign's outcome and be able to reflect only the effects of social capital.

## 4. Method

### *4.1 Measures*

*Campaign's outcome*. The dependent variable is given by the campaign's outcome: success or failure. Considering that the platform providing the data operates the "all or nothing" approach, the variable was measured in a dichotomous form, meaning that it takes the value of "1" if the funding ratio is 100 percent or more, indicating "success"; and value "0" if the funding achieved is less than 100 percent, indicating "failure." Certain studies use the result of the campaign as a dichotomous dependent variable (Butticè *et al.*, 2017; Colombo, 2015; Cumming, 2014).

*Structural dimension*. Social interaction and social network size are two expressions of structural dimension. Social interaction is considered as the process through which two or more people connect and build ties (Nahapiet and Ghosal, 1998; Tsai and Ghoshal, 1998; Granovetter, 1973). On the other hand, social network size refers to the number of links that allow access to resources (Zheng *et al.*, 2014). Favorably, social media presents an interesting line of work that has to do with predicting future events based on social media data, as it has been seen in other disciplines (e.g. finance, marketing, health, etc.) (Schoen *et al.*, 2013).

Additionally, there is a disagreement in literature on the structure of social networks and its impact on benefits obtained from it. For example, Ron Burt (1992) considers that benefits are more efficiently attained from networks with less connected structures that have non-redundant ties. Another ruling is of Coleman's (1988), which argues that the power of social capital comes from heavily connected and closed social networks, where redundant information flows. His theory infers that networks with these characteristics incite collectivity.

In reward-based crowdfunding, entrepreneurs connect with the potential funders mainly through their social networks. According to Wu *et al.*, 2016, social networks enable social capital by enhancing performance. So, for the purpose of this research, both networks, Facebook and Twitter, will be considered as a part of the structural dimension, covering both theories that were mentioned. Facebook is presented as a closed and redundant information social network, and Twitter as a scope and non-redundant flow network. Facebook elements contemplated for the present study are:

- Facebook likes – They express the total amount of "Likes" granted by potential funders to the project's URL posted on the entrepreneur's Facebook profile. A "Like" is interpreted as a "one click interaction" and a positive expression toward published content, meaning that the viewers intend to learn more about it (Burke and Kraut, 2014; Wallace, 2014; Cvijikj, 2013; Kosinski *et al.*, 2013).
- Facebook comments – Unlike Facebook likes, Facebook comments require additional actions and greater cognitive effort. They are used to achieve a two-way communication. They must be issued as long as the messages include logical and objective content that urges response. Part of its purpose is to generate feedback that allows self-evaluation from entrepreneurs with regard to their idea (Kim and Yang, 2017).
- Facebook shares – They have the greatest weight within Facebook behaviors due to the fact that their content is recorded in the person's profile, modifying his or her image and presentation (Kim and Yang, 2017). Therefore, they are valued as a

behavior that requires a cognitive element greater than that of a Facebook comment or Facebook like. Through them, users reveal their highest interest in the content, revealing it to their contacts and followers (Cha, 2010).

Twitter is a social network characterized by its high popularity and internationality. It allows messages of no more than 140 characters, which inhibits emotional communication. Moreover, the network operates at low cost, making it more attractive to users. The combination of its popularity, internationality and low cost, allows users to transcend distance in dissemination (Takhteyev, 2012). Twitter elements include:

- Twitter reach is the metric that naturally measures the scope of the communication. Twitter reach is the sum of all the followers of each Twitter account that contributed to the dissemination of the message, plus its own followers. In other words, it not only measures the followers with whom entrepreneurs are connected, but also those ties around their followers and other people that saw the project (Takhteyev, 2012).
- Twitter impact strengthens the structural dimension with the user's ability to cause an effect on others (Cha, 2010). The user might affect others in three ways: publishing interesting information for others; retweeting that information received from followers; and responding to comments made by others, a process known as "mentioning" (Cha, 2010). Therefore, Twitter impact is the sum of all three ways: followers, retweets and mentions.
- Twitter tweets represent the tweets posted by entrepreneurs about their projects. A tweet is a short but noisy text sent on some current topic. Its short extension forces users to be creative in order to communicate in time and form what they want. Acronyms and other restriction mechanisms are used to achieve this. However, tweets can also be rich in information because users tend to package a fundamental meaning in a short space (Paul, 2011).

*Cognitive dimension*. Cognitive dimension suggests building social capital through an exchange of language in order to share narratives and identify affinity (Chiu, 2006; Inkpen, 2005; Nahapiet and Ghosal, 1998; Tsai and Ghoshal, 1998). "Crowdfunding is a co-creation and co-production process" (Zheng *et al.*, 2014, p. 491); so, in order for it to be successful, it is necessary for creators to develop a clear description of their project and share it on the platform through diverse forms of descriptions (Mollick, 2014; Zheng *et al.*, 2014).

Text is the first way to communicate with potential funders, and it is done through a project description with the aspiration to convince them about the relevance, viability and credibility of the project. Text information shared today on the web is so vast that messages are usually filtered with deceit, generating distrust (Zhou, 2004). Therefore, researchers are concerned about understanding and detecting deceptions in digital based communication (Shafqat, 2016; Toma, 2012; Zhou, 2004). There are studies in crowdfunding dealing with fraudulent and non-fraudulent campaigns. Results have indicated that deceptions are revealed in texts when little information is given about the project or when they are written in a more formal and careful way. Deceivers generally use fewer words, fewer verbs and fewer sentences in their descriptions; they also make fewer typographical errors and express fewer feelings (Shafqat, 2016). Variables to measure text in this research are the following:

- Number of words or linguistic units counted from the project text description using the software "Text Analyzer."
- Number of adjectives or qualifiers counted from the project text description using the software "Text Analyzer."

- Number of sentences or sequences of words delimited by pauses counted from the project text description using the software "Text Analyzer."

Images are another form of communication used by entrepreneurs in crowdfunding. They have a persuasive effect especially on online platforms where asynchronous communication shows up (Anderson, 2016; Zhou, 2004). As for crowdfunding, previous research has shown that the use of images or photographs has a persuasive effect on the contributions specifically from two approaches. The first one has to do with the creator's personal photographs, whose effects are self-presentation and first impressions, providing valuable information about who is presenting the project (Rui, 2013). The second one has to do with the presentation of images on the project or product that is being posted, which is considered soft information that adds to the narratives for building social capital (Cumming, 2014). Variables to measure images in this research are as follows:

- Number of images posted or graphic representation of something counted from the project text description.

*Relational dimension*. There are two perspectives for the analysis of relational dimension. The first one has to do with sharing values and vision through clear rules. For this purpose, the chat tools provided by the crowdfunding platforms help entrepreneurs and potential funders to generate them (Zheng *et al.*, 2014). Therefore, for the purpose of this research, comments and updates posted and exchanged through these platform gadgets were counted in order to cover the way values and vision can be generated in a crowdfunding community.

The second perspective touches upon the element of reciprocity or obligation among the network members. That is, if an individual does something for the other, the latter must correspond at some point, generating future expectations (Zheng *et al.*, 2014; Coleman, 1988). Normally, this reciprocity responds to a pattern of behavior of people acting in favor of others in a friendly way, without expecting anything in return (Dellarocas *et al.*, 2004). In the dynamics of crowdfunding, recent studies reveal that reciprocity can be found in the crowdfunding platform when creators decide to support projects of other entrepreneurs (Zvilichovsky *et al.*, 2015; Zheng *et al.*, 2014). Data items used to measure cognitive dimension are these:

- Updates or the number of times the entrepreneur posted additional information about the project on the platform. It can be about project progress and modifications.
- Comments as a feedback tool that accounts for the total number of comments posted during the campaign.
- Number of projects funded by the entrepreneur as an evidence of reciprocity and obligation within the reward-based crowdfunding community.

*Campaign duration*. Measured as the number of days during which the campaign was active on the platform.

### *4.2 Data collection*

Data were obtained from Fondeadora.mx (https://fondeadora.mx). When data were collected, Fondeadora was one of the largest crowdfunding websites in Mexico, more than 137,000 individuals have participated on the site, pledging more than $158m Mexican pesos (over $8.63m)[2] with a success rate of 54 percent. It was launched as a crowdfunding platform in 2011, and its mission was to endorse talent, innovation and creativity through the promotion and funding of projects from different industries such as art and culture, creative industries, technology, entrepreneurship, social enterprises, personal projects, environment, and education among others. As of November 15, 2016, the Mexican company

was acquired by Kickstarter, and they decided to send all art, culture, entrepreneurship and technology projects to Kickstarter-México.

The database provides details about the crowdfunding projects and the entrepreneurs who initiated these projects.

The database consisted of 737 projects from two categories: creative industries and cultural arts. Campaigns were completed between January 20, 2015 and January 20, 2016. The categories were chosen because they represented 65 percent of the total amount of funding during the mentioned period, and their Facebook and Twitter data were updated and available. In order to eliminate outliers, we removed several projects whose goals were less than $1,000 pesos ($54.61) and greater than 1,000,000 pesos ($54,614.96). We also identified and removed some projects that were not published on the platform anymore. There were a total of 536 crowdfunding projects in the sample.

For the 536 projects, data from Facebook and Twitter were retrieved to measure the entrepreneurs' social network. Facebook data were collected using the web tool called "Shared Count" (https://www.sharedcount.com). Twitter data were compiled using software provided by Sinnia, a Latin American organization that integrates a Full Archive Search and longtime Gnip API customer. The software allows an analysis of all the public tweets of any theme and on any given date[3].

Additional data about the projects were obtained from the crowdfunding platform with the help of two evaluators. Measurements obtained by one evaluator were compared with the other, and average results were used in the model. The variables built by this procedure were the number of words, the number of adjectives, the number of sentences and the number of images, all of them taken from the project's description.

## 5. Results

Structural equation modeling techniques with partial least squares approach were applied to test the hypothesis (PLS–SEM). SmartPLS software was employed in order to test the validity of the constructs and model estimation (Ringle *et al.*, 2015). The approach facilitated a comprehensive and confirmatory assessment of all the constructs to understand if the theoretical concepts proposed in the research are correctly measured by the variables observed. In addition, as for the model estimation, relationships between the variables were appraised to determine if they have the magnitude and the load necessary to test the hypothesis (Hair *et al.*, 2017).

### *5.1 Measurement results*

Social capital dimensions were formulated using observed indicators from the operating social networks with reflective associations, so their reliability and validity were examined performing three tests: outer loadings, average variance extracted (AVE) and composite reliability (Table I).

Outer loadings for all of the latent constructs are above the minimum threshold of 0.5, which means that they provide what is necessary in order to explain all dimensions accurately. AVE also confirms it with 50 percent of the variance reached; and, for the composite reliability, all constructs have scales higher than 0.7; therefore, evidence of its reliability confirms effectiveness in the results.

The first discriminant validity test is the Fornell_Lacker test, which proves the extent to which a construct is different from the others. The test shows the way in which cognitive dimension has a discriminant validity with the rest of the constructs by revealing weak correlations between them. The second test for assessing discriminant validity is heterotrait-monotrait ratio of correlations, which outperforms classic approaches to discriminant validity assessment such as Fornell–Larcker criterion. Results show that no value is above 0.85 and 0.90 indicating that there is a discriminating validity between the constructs.

| Construct | Item | Loading | AVE | Composite reliability |
|---|---|---|---|---|
| Structural dimension of Facebook | Facebook likes | 0.933 | 0.804 | 0.924 |
| | Facebook comments | 0.944 | | |
| | Facebook shares | 0.807 | | |
| Structural dimension of Twitter | Twitter reach | 0.941 | 0.896 | 0.963 |
| | Twitter impact | 0.964 | | |
| | Twitter tweets | 0.934 | | |
| Cognitive dimension | Words | 0.842 | 0.598 | 0.855 |
| | Adjectives | 0.766 | | |
| | Sentences | 0.837 | | |
| | Images | 0.630 | | |
| Relational dimension | Updates | 0.642 | 0.509 | 0.755 |
| | Comments | 0.702 | | |
| | Projects funded by entrepreneurs | 0.789 | | |

**Table I.**
Measurement model results

*5.2 Model estimation*

Through model estimation, the hypothesis can be confirmed. Validation is performed with the Consistent PLS method that executes a correlation of reflective constructs' correlations to make results consistent with the model (Figure 1).

The inner model results are shown in Figure 2. The $R^2$ is 0.157 for structural dimension, 0.352 for relational dimension and 0.376 for campaign's outcome. It means that Twitter and Facebook explain the 15.7 percent of structural dimension; cognitive dimension and structural dimension explain 35.2 percent of relational dimension; and all those constructs explain 37.6 percent of campaign's outcome. A consistent PLS bootstrapping procedure with 5,000 resamples confirms the structural model's reliability. The bootstrapping procedure with a number of resamples high enough (5000) serves to calculate standard errors and values of the *p*-value (Chin, 1998).

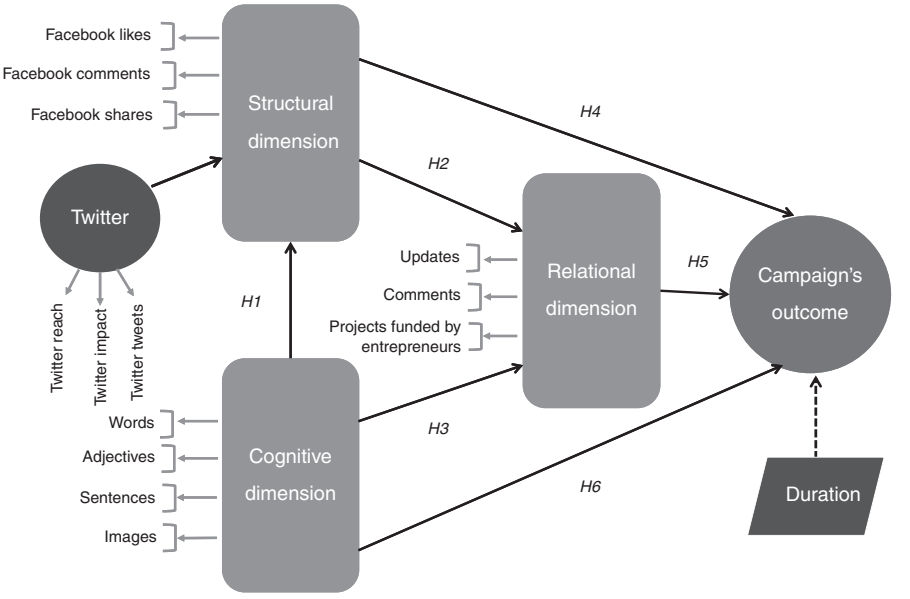


**Figure 1.**
Theoretical model

**Source:** Adapted from Tsai and Ghoshal (1998)

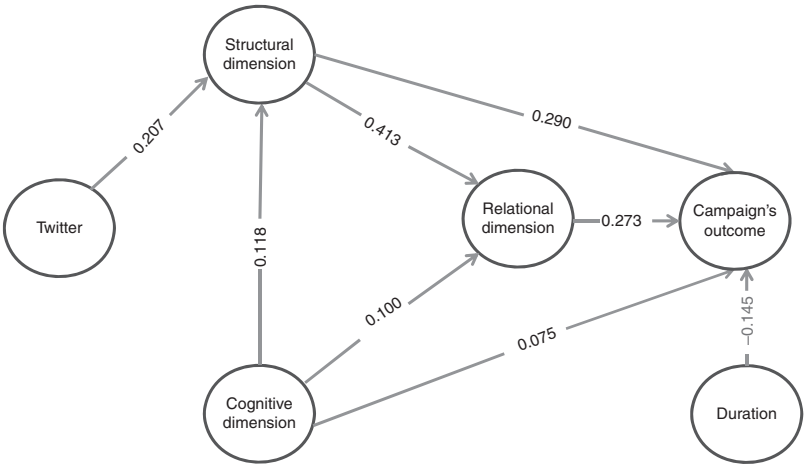


**Figure 2.**
Structural model results

*H1–H6* are supported showing path coefficients with a significant and positive effect (Table II). Duration's fallout has an inverse impact on campaign's outcome (– 0.145), just as the literature confirmed. The strongest association is between the structural and relational dimensions (0.413). The affinity among these two dimensions and the outcome of the campaign is equally important (0.290 and 0.273). Cognitive and relational association is less forceful (0.100) as well as cognitive and its effect on campaign's outcome (0.075). Additionally, the path from Twitter to structural dimension (0.207) showed a contribution from this platform over structural dimension. Therefore, all the hypothesized path relationships produced statistically significant results using the bootstrapping procedure (5,000 subsamples).

$f2$ measures the strength of each predictor variable in explaining endogenous variables. According to Chin (1998), f2 results for this model represent weak to moderate effects. $Q^2$ is the predictive relevance of the structural model for predicting the indicators of endogenous constructs. Blindfolding procedure was used to estimate these values. The model reveals predictive relevance, as all $Q^2$ values are greater than 0.

Models analyzed under the PLS methodology did not tend to have goodness-of-fit methods due to their characteristics, because most of these are based on covariance. Due to various criticisms, Henseler (2014) introduced the standardized root mean square residual (SRMR) as a measure of goodness of fit. The objective of using it is to avoid the lack of specification of the models analyzed under PLS–SEM.

| Path relation | Original sample | Sample mean | SD | *p*-value |
|---|---|---|---|---|
| Cognitive dimension → Structural dimension | 0.118 | 0.121 | 0.052 | 0.023 |
| Cognitive dimension → Relational dimension | 0.100 | 0.116 | 0.055 | 0.009 |
| Cognitive dimension → Campaign's outcome | 0.075 | 0.066 | 0.041 | 0.026 |
| Structural dimension → Relational dimension | 0.413 | 0.401 | 0.136 | 0.002 |
| Structural dimension → Campaign's outcome | 0.290 | 0.304 | 0.045 | 0.000 |
| Relational dimension → Campaign's outcome | 0.273 | 0.288 | 0.069 | 0.000 |
| Duration → Campaign's outcome | −0.145 | −0.143 | 0.036 | 0.000 |
| Twitter → Structural dimension | 0.207 | 0.260 | 0.124 | 0.035 |

**Notes:** Consistent PLS boostrapping 5,000 subsamples. Sig. (*p*-value)

**Table II.**
Path model results

SRMR is an adjustment measure developed by Hu and Bentler in 1999. It is defined as the difference between the observed correlation and the implicit correlation matrix of the model (Hu, 1998). Thus, it allows evaluating the average magnitude of the discrepancies between the observed and expected correlations as an absolute measure of the model's adjustment criterion. The value recommended is SRMR $\leqslant$ 0.08. SRMR value for the present model was 0.073.



## 6. Discussion

New ways of collaborating through the social web such as crowdfunding not only represent a vehicle for obtaining resources but also an opportunity to modernize societies that face economic and social gaps such as Mexico. Moreover, this disruptive mechanism boasts of generating a community that, through the exchange of values such as reciprocity, trust and norms, enables goal accomplishments. Nonetheless, the ways of collaborating require robust theoretical frameworks that support and legitimize them. So, researchers persist in deepening their gears to determine whether crowdfunding will continue over time.

The present investigation, based on a social theory, has pondered the fundamentals underpinning the outcome of the campaigns. The multidimensional social capital theory allows the insertion of all aspects that social capital needs in order to deploy and grow in a virtual community. A model was designed to verify that social capital is effectively outlined from three dimensions – structural, relational and cognitive – and these in turn, influence the outcome of a campaign.

Expeditious results from the present research meet around three conclusive lines. The first line has to do with the coexistence of the two most important social networks, Facebook and Twitter. The model confirms that these two have different purposes, so they should not be considered at the same level. On the one hand, Twitter is a good ally to expand the number of network contacts generating traffic. On the other hand, Facebook is a network that allows people to maintain lasting relationships; so, it is the network that covers most of the structural dimension for the model. Sharing information through Facebook is more likely to nourish knowledge and concede resources to flow when individuals are exposed to signals about the sharing behavior of friends and when stronger ties between individuals are developed. However, it is important to acknowledge that crowdfunding campaigns suffer from time restrictions (Lu *et al.*, 2014).

As for Twitter, its total impact represents an assertive data item to measure social network influence because retweets are a new form of information dissemination; they are an effective way to reach out to people outside the entrepreneurs' closest social circle. No matter how many followers one has, once the information is spread via retweets, it becomes influential, and through influential retweets, one can get collectivity knowledge (Cha, 2010).

The second conclusive line of this work is the contribution to literature on the associations between the social capital dimensions that sustain the possibility to fulfill the crowdfunding goal. These associations confirmed the hypothesis, as they turned out positive and significant. They demonstrated that elements such as values, information and resources support social capital computation in a virtual community. Just as Tsai and Ghoshal (1998) proposed, the trustworthiness of the project is significantly associated with structural and cognitive dimensions; and contrary to their findings, cognitive dimension resulted in a positive and significant impact on structural dimension, which means that in a crowdfunding campaign, it is necessary to have all materials (images and text) ready in order to disseminate them on the entrepreneurs and platform's social networks.

Finally, the third conclusive line refers to the opportunity that societies from emerging economies such as Mexico have in promoting virtual communities living and collaborating within an environment where values of trust, reciprocity and norms prevail. Regarding Fondeadora's crowdfunding community, it was demonstrated that social interaction through a wide social network (structural dimension), shared vision and values between

entrepreneurs and their potential funders (cognitive dimension), and the development of trustworthiness within the campaign (relational dimension) boost the probability of achieving the crowdfunding goal.

## 7. Research contributions and limitations

The present study has contributed to the development of a predictive model for a Mexican platform of crowdfunding. Unlike other studies that have attempted to reveal the impact of social capital on crowdfunding performance, it provides an integrated approach to measure social capital from the two most important social networks used by entrepreneurs in the mechanism: the entrepreneurs' personal social networks, and the platform's network. Furthermore, associations among the dimensions and with the campaign's outcome are considered. PLS–SEM was proposed as a new method for analyzing the present state of the art in crowdfunding, since it represents a predictive proposition that captures all relationships coexisting within the model. Finally, the model's design could be adapted and tested in other online businesses whose mechanisms rely on trust – e.g. sharing economy and financial technologies.

There are several limitations in this study. First, we only used two categories from the platform — creative industries and cultural arts. Even though these two categories represent the majority of the operations on the platform, future research can find it relevant to test the model on some others. Second, all the projects in our database had a video associated with them, but we did not analyze how the video affected crowdfunding success. As Mollick (2014) underscored, video's impact might not be in terms of social capital but in terms of project quality signing. And finally, the results inform researchers how social capital is forged from social networks during a crowdfunding campaign. However, the method must be validated with other crowdfunding models and other social network platforms commonly used by campaign creators.

## 8. Practical implications

Practical implications from this paper include tools (design model and evaluation method) associating theory with the crowdfunding mechanism, complementing previous work. Crowdfunding providers, as well as campaign creators, have now an approach to predict the outcomes of campaigns based on their social network magnitude, as well as on their shared meaning and trustworthiness stakes.

To summarize, we have studied multidimensional social capital theory on the crowdfunding mechanism and provided a broader approach to the evidence demonstrating that crowdfunding can be elucidated from a social capital theory, covering most of its mechanism's components.

### Notes

1. www.jbs.cam.ac.uk/fileadmin/user_upload/research/centres/alternative-finance/downloads/2017-05-americas-alternative-finance-industry-report.pdf
2. Data obtained from www.fondeadora.mx (accessed July 14, 2016). We used an exchange rate of $18.31 MX pesos/dollar; this information corresponds to the fix exchange rate from: www.banxico.gob.mx/dyn/portal-mercado-cambiario/index.html
3. www.sinnia.com

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# Dealing with initial success versus failure in crowdfunding market

## Serial crowdfunding, changing strategies, and funding performance

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### Abstract

**Purpose** – Serial crowdfunding is becoming a common phenomenon as entrepreneurs repeatedly return to online crowdfunding to raise capital. In this study, the authors focus attention on serial crowdfunders, that is, entrepreneurs who experience launching more than one crowdfunding project. The purpose of this paper is to investigate the role of past experience on subsequent crowdfunding performance. This study also examines whether initial success vs initial failure leads serial crowdfunders to engage in more explorative behaviors (i.e. switching industry) and to take exploitative actions (i.e. adjusting campaign strategies in terms of goal setting and funding option).

**Design/methodology/approach** – Data on serial crowdfunding projects was retrieved from Indiegogo platform. The logistic regression models are estimated to assess the impact of past entrepreneurial experience on subsequent crowdfunding decisions, and to estimate the effects of the three strategies on subsequent funding performance.

**Findings** – The results show that serial creators who experienced successful initial crowdfunding are more likely to explore a new industry or product category in the crowdfunding market and to set a higher target capital for the subsequent campaign when they change a project category.

**Originality/value** – Despite the fact that there are a considerably large number of serial crowdfunders in crowdfunding market, relatively little research has been conducted to investigate the presence of learning benefits from a previous to a subsequent crowdfunding project. Two competing hypotheses, drawn from the attribution theory and hubris theory of entrepreneurship, were tested in this study to determine the impact of prior success vs failure experience on both subsequent crowdfunding decisions and funding performance.

**Keywords** Hubris, Entrepreneurship, Experience, Crowdfunding, Attribution, Serial crowdfunding

**Paper type** Research paper

### 1. Introduction

The advancement of Web 2.0 and financial technologies has profoundly transformed the entrepreneurial financing. IT-enabled crowdfunding enables the financing of entrepreneurial innovations (Belleflamme *et al.*, 2014; Mollick, 2014). Crowdfunding represents a collective financing mechanism over the internet to directly fund early stage ventures (Kuppuswamy and Bayus, 2017). It has the potential to democratize access to capital since its idea is to assemble small investments from a large group of individuals. In addition, crowdfunding not only facilitates information flow and transactions (Mollick, 2014) but also transforms the fundraising process by overcoming offline barriers to financial transactions (Agrawal *et al.*, 2011). The number of crowdfunding platforms has increased rapidly, and more than 1,000 platforms exist worldwide presently (Massolution, 2015). Such significant growth in the crowdfunding platform indicates that crowdfunding assists entrepreneurs in transforming innovations into economically viable products, projects or ventures.

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Crowdfunding is a two-sided market where both entrepreneurs and contributors play a crucial role in contributing to such economic growth. Hence, it is vital to explore factors that have a considerable impact on the success of crowdfunding projects initiated by entrepreneurs or crowdfunding creators.

As for the significant economic impact of crowdfunding, the existing literature has focused on examining what factors contribute to successful crowdfunding projects (i.e., campaign) (Agrawal *et al.*, 2011; Mollick, 2014). Prior research has addressed success factors related to project quality (Mollick, 2014), updates (Belleflamme *et al.*, 2014), funding option (Cumming *et al.*, 2015) and entrepreneur's social capital (Colombo *et al.*, 2015). These studies may shed light on the factors that drive the success of a crowdfunding project initiated by novice entrepreneurs or first-time crowdfunding creators. Recent years witnessed that many entrepreneurs repeatedly turn to crowdfunding to fund their ventures, indicating that there is a visible increase in the number of serial entrepreneurs in crowdfunding (Butticè *et al.*, 2017; Gallagher and Salfen, 2015; Skirnevskiy *et al.*, 2017; Yang and Hahn, 2015). In Kickstarter, the largest crowdfunding platform, serial entrepreneurs secured nearly one-third of all the money pledged on the platform as of March 2015 (Gallagher and Salfen, 2015). As entrepreneurs continue to utilize crowdfunding repeatedly, it becomes essential to understand dynamics aspects of entrepreneurship learning and behavioral decision making from serial entrepreneurs' perspective.

Existing entrepreneurship literature suggests that serial entrepreneurs differ from novice or inexperienced entrepreneurs (Westhead and Wright, 1998). Entrepreneurs can accumulate experience if they develop their idea, share it and communicate it with various people for crowdfunding. Such experience may bring a variety of assets, which may include founding knowledge and campaign management skills as well as social contacts that can be utilized in subsequent projects (Gruber *et al.*, 2008). As the number of crowdfunding platforms has grown exponentially, serial crowdfunding has become a common phenomenon. In the crowdfunding context, those serial creators learn from their earlier experience (Butticè *et al.*, 2017; Yang and Hahn, 2015). However, it remains unclear whether serial creators benefit equally from both prior success and failure experience and how such experience translates into greater subsequent performance.

Although a large body of literature on serial entrepreneurship has documented the factors driving the success of serial entrepreneurs and associated entrepreneurial learning process (Minniti and Bygrave, 2001; Westhead and Wright, 1998), the documented knowledge cannot be directly applied to the serial creators in the crowdfunding market. The extant research on entrepreneurial learning highlights that higher-level learning process is usually triggered by failure than a successful experience. Eventually, those learning outcomes offer entrepreneurs with invaluable insights into the entrepreneurial process, leading to an improvement of subsequent venture performance (Cope, 2011; Edmondson, 2011; Shepherd, 2003). However, there is little research in IS addressing serial crowdfunding. One exception is a recent study by Yang and Hahn (2015) that investigates the impacts of prior experience from serial crowdfunders' perspective, using data from three crowdfunding categories including games, technology and design. Yang and Hahn (2015) find positive effects of both direct and indirect learnings, and also suggest that successful crowdfunding experience may have a detrimental effect on subsequent success. Although such findings demonstrate again that serial crowdfunders do not learn and benefit equally from prior failure vs success crowdfunding experience, their research has not properly accounted for strategic and behavioral changes occurring between initial and successive crowdfunding projects. We suggest that such strategic decisions made by serial creators after initial success or failure may have dramatic effects on subsequent crowdfunding performance. Therefore, inspired by the prior work and motivated by an interest in analyzing learning from successful vs failed crowdfunding crowdfunders, we examine the following questions: do all serial crowdfunding creators learn

and benefit equally from their initial experience? Do initial failure or success experience affect their decision on industry switch or project category and campaign launch strategies in the successive projects? And how do such changes in industry and campaign launch influence the funding outcomes of subsequent crowdfunding projects?

The findings from our study show that initial failure decreases the likelihood that a serial crowdfunder will make a category change as compared to initial success. In fact, initial success experience leads serial crowdfunders to take an explorative action by changing categories for their subsequent crowdfunding projects. Also, initial failure does not force them to change their funding options. However, after an initial failure, serial crowdfunders revise their goal-setting strategies by setting a target capital lower than that in the past. Additionally, our findings indicated that initial failure reduces the likelihood of success of subsequent crowdfunding projects. Our findings also indicate that a change in campaign strategies regarding funding option does help serial creators to increase the chances of funding performance of subsequent projects. Finally, results from our study indicate that change in goals does not help serial creators to increase the chances of funding performance of subsequent projects.

Our study contributes to the literature on crowdfunding by investigating the lesser known issues surrounding serial crowdfunders. Specifically, this study contributes to the literature on serial crowdfunding, entrepreneurial hubris and entrepreneurial learning. First, in terms of serial crowdfunding, we identify significant performance differences for serial creators depending on whether initial crowdfunding campaign succeeded or failed. We also extend some of the findings from the entrepreneurship literature to the context of crowdfunding by investigating the effect of the change of campaign strategies. Second, in terms of serial entrepreneurial learning, our study extends knowledge about the potential learning benefits of serial entrepreneurship in the context of online crowdfunding market by emphasizing that learning is different across success and failure experience. Our findings suggest that successful initial crowdfunders that venture into new industry achieve a consistent performance gain for their subsequent ventures, suggesting that initial entrepreneurial success vs failure leads to differentiated learning and in-depth knowledge of crowdfunding practices. Third, in terms of entrepreneurial hubris, our study shows additional evidence of entrepreneurs' behavioral responses to success and highlight how hubris exert a differential effect on explorative and exploitative behaviors. Consistent with the hubris perspective on entrepreneurial behavioral decision and sense-making, our results suggest that in crowdfunding marketplace hubris plays a significant role in decisions into market exploitation.

The rest of the paper is organized as follows: Section 2 will focus on the theoretical background followed by the hypotheses development in Section 3. The research method deployed to test the hypotheses is discussed in Section 4, followed by the results and discussion in Sections 5 and 6.

## 2. Related literature

### *2.1 Prior research on serial entrepreneurship in crowdfunding*

Serial entrepreneurs are repeat business starters who launch business sequentially. Serial entrepreneurs are common, and their contributions to entrepreneurial activity are significant (Parker, 2018). Nearly 30 percent of entrepreneurs in Europe and 13 percent in the USA are serial (Plehn-Dujowich, 2010). A large strand of literature on serial entrepreneurship focuses on similarities and differences between novice, serial and portfolio entrepreneurs, suggesting that they mainly differ with respect to experience, risk perception, decisions and performance (Westhead and Wright, 1998). Scholarly investigations have shown that serial entrepreneurs are more likely to succeed in their ventures than novice entrepreneurs who have no previous entrepreneurial experience, since they have more experience and a track record of identifying the right opportunities

(Gompers *et al.*, 2006; Zhang, 2011). Zhang (2011) suggests that serial entrepreneurs would be more skilled and more socially connected than novice entrepreneurs and such experience increases the likelihood of receiving subsequent funding.

A small body of serial crowdfunding literature has examined the potential motivational factors driving an entrepreneur to launch subsequent projects, as well as investigated success factors for serial crowdfunding (Butticè *et al.*, 2017; Skirnevskiy *et al.*, 2017). For instance, Butticè *et al.* (2017) find that internal social capital, defined as prior followed backers within the platform which is not available to first-time crowdfunders, makes serial crowdfunders' campaigns more successful than those launched by novice ones. However, there is little research in IS addressing serial crowdfunding from entrepreneurial learning perspectives. One exception is a recent study by Yang and Hahn (2015) that investigates the impacts of prior experience from serial crowdfunders' perspective, using data from three crowdfunding categories including games, technology and design. Yang and Hahn (2015) find positive effects of direct learnings, and also suggest that successful crowdfunding experience may have a detrimental effect on subsequent success. The number of previously successful campaigns is another essential indicator for investigating the success of the subsequent campaign. Usually, the serial crowdfunders with a higher number of previously successful campaigns they launched are more likely to achieve a higher rate of success (Courtney *et al.*, 2017). In addition, the raised fund amount (Skirnevskiy *et al.*, 2017) and indirect experience (Yang and Hahn (2015) have a positive impact on subsequent crowdfunding project success.

### *2.2 Serial entrepreneurship and entrepreneurial learning*

As entrepreneurial experience enhances accumulated knowledge and skills (Wright *et al.*, 1998), the serial entrepreneurship literature naturally bears on the link between experience, learning and performance. Scholars explain serial entrepreneurs' high performance by grounding in theory of entrepreneurial learning by doing (Cope, 2005). Entrepreneurial learning refers to the process of making sense out of entrepreneurial experience (Rae, 2000) and critically reflecting on past activities and events (Cope, 2005). It is fundamental to the understanding of how entrepreneurs accumulate and update knowledge over time and how acquired entrepreneurial experience affects decision marking and hence enhances the performance of subsequent ventures. Previous studies suggest that serial entrepreneurs are likely to have accumulated knowledge about customers demand, suppliers and marker-specific information (Ucbasaran *et al.*, 2008). Also, experiential learning has been found to enhance the development of a variety of skills such as assembling financial and social resources and developing managerial skills (Gompers *et al.*, 2006; Sarasvathy *et al.*, 2013). Entrepreneurs develop networks of social contacts over time that lead to competitive advantage, and then eventually help improved performance in subsequent ventures (Butticè *et al.*, 2017).

Given that the significance of learning in serial entrepreneurship, scholars have increasingly questioned whether there is differential learning between successful and failed entrepreneurial experience and how such learning is associated with the behavioral decision and performance of subsequent ventures (Cope, 2011; Madsen and Desai, 2010; Parker, 2013). There are two popular but contrasting perspectives about the entrepreneurial learning dynamics. The first perspective, which is informed by theories of behavioral learning and entrepreneurial learning by doing, explains that successful entrepreneurial experience has a higher value concerning learning than failures (Ellis *et al.*, 2006). As achieving success are considered relatively rare events (Lampel *et al.*, 2009), successful outcomes result in increased repeated efforts, thereby stimulating learning. Successful experience additionally gives entrepreneurs the confidence or often overconfidence to recognize and explore new venture opportunities (Baron and Ensley, 2006). The second

perspective, which is informed by theory of vicarious learning from failure asserts, in contrast, that failure is praised as a fundamental learning experience (Kim and Miner, 2007; Madsen and Desai, 2010). Failure is more important than success for learning, since learning from the loss of venture is more practical and constructive (Deichmann and Ende, 2013; Parker, 2013; Shepherd *et al.*, 2003). For instance, when facing failures, entrepreneurs are inclined to seek feedback, and such feedback then stimulates active learning (Edmondson, 2011; Madsen and Desai, 2010).

To date, research has not revealed conclusive evidence on which perspectives most closely accord with reality. Although there are mixed results on the magnitude of learning, an existing body of entrepreneurship literature highlighted that entrepreneurs' ability of critically reflecting on past activities and acting on feedback from the market determines the amount and quality of learning that takes place (Cope, 2005; Politis, 2005; Rae, 2000). Entrepreneurs who mindlessly replicate successful experience from initial to subsequent ventures or who are reluctant to embrace failure as part of learning and build resilience for future venturing efforts are likely to fail.

Furthermore, the two perspectives imply that behavioral responses to failure vs success of their initial entrepreneurial activities may lead to a different learning process, eventually yielding different behavioral patterns. In terms of the vicarious learning from failure, some empirical evidence implies that fruitful vicarious learning may not take place unless accurate cause attribution process is carried out (Denrell, 2003; Kim and Miner, 2007). That is, the result of vicarious learning is dependent on cause attribution. According to the attribution theory, people are inclined to accept responsibility or credits for successes than for failures and hence they find it difficult to learn from failure when they attribute the cause to an external factor. In terms of the entrepreneurial learning by doing, initial success may lead to hubris, consequently stimulating learning process (Hayward *et al.*, 2006). Hubristic entrepreneurs are more likely to be optimistic about the subsequent venture performance.

### *2.3 Attribution*

The attribution theory posits that people search for the causes of successful and failed events or situations based on the dimensions of locus (internal vs external), stability (stable vs unstable) and controllability (controllable vs uncontrollable) (Weiner, 1985). By definition, the locus of causality is internal or external; internal attribution refers to attributing the causes to internal or dispositional factors, while external attribution to attributing the causes to external factors. The stability dimension captures whether causes persist over time or not and controllability captures whether factors are under or beyond control of individuals.

In the context of entrepreneurship, an external attribution would mean that an individual tends to blame factors that are beyond her control for failure, while internal attribution explains controllable factors such as leadership and management styles. As Kelley and Michela (1980) stated that "attributions for success are usually relatively internal, and attributions for failure are usually relatively external," numerous scholarly investigations on attributions for success and failure have demonstrated that blame for failure be placed on external factors, instead of being turned internally to credit successes (Campbell and Sedikides, 1999; Dixon *et al.*, 2001; Kelley and Michela, 1980; Mantere *et al.*, 2013; Weiner, 1985; Zuckerman, 1979).

Research has examined the link between attribution and learning, findings generally suggesting those entrepreneurs' attributions for venturing failure influence their behavioral response to failure and such response lead to differential entrepreneurial learning from failure (Eggers and Song, 2015; Mantere *et al.*, 2013; Shepherd *et al.*, 2003). Entrepreneurs' sense-making through understanding, processing and reacting to their entrepreneurial failure experience is a critical step, since accurately identifying

entrepreneurs' attributions for the failure can affect entrepreneurs' learning process (Mantere *et al.*, 2013). Cope (2011) suggests that internal attribution leads to more reflective thinking, which results in more effective learning. That is, if the causal attribution is internal, entrepreneurs tend to engage in the sense-making process actively, hence leading to enhance learning from failure. In contrast, if the attribution is external, reflective thinking will be constrained. In other words, the external attribution is more likely to affect the learning from failure adversely. For instance, by integrating behavioral concept on attrition and learning from failure, Eggers and Song (2015) show that serial entrepreneurs whose initial venture has failed are considerably inclined to change an external factor such as the industry when restarting a successive venture.

### *2.4 Hubris*

A large body of literature has documented cognitive biases exhibited by entrepreneurs (Busenitz and Barney, 1997; Forbes, 2005; Keh *et al.*, 2002; Simon *et al.*, 2000). Prominent among these is hubris (Chatterjee and Hambrick, 2007; Hayward *et al.*, 2010; Moore and Healy, 2008). Hubris generally defined as an entrepreneur's exaggerated self-confidence or pride (Kahneman and Lovallo, 1993; Li and Tang, 2010). Hubris occurs, for example, when entrepreneurs overvalue the validity of their judgment or hold a biased perception of the expected outcomes. As Moore and Healy (2008) suggest, hubris leads to "the overestimation of one's actual ability, performance, level of control, or chance of success." For example, a research by Busenitz and Barney (1997) demonstrates that entrepreneurs overvalue the validity of their judgments than managers of large firms. In addition, Li and Tang (2010) find that entrepreneurs tend to hold high levels of optimism and exaggerate self-confidence regardless of how prepared they are to lead their ventures. Also, Hayward *et al.* (2010) suggest that hubristic entrepreneurs develop emotional, cognitive and financial resilience, even to their failure venturing experience.

Scholarly investigations have focused on the relationships among executive hubris, firm decisions and firm performance. Their findings show that executive hubris – defined as corporate executive extreme self-confidence (Hayward *et al.*, 2006) – can significantly affect managerial risk taking (Li and Tang, 2010), merger-and-acquisition activities (Malmendier and Tate, 2008) and firm acquisition premium (Hayward *et al.*, 2010). The results from this extant research highlight the potential costs of executive hubris for firms (Hayward *et al.*, 2006). Another strand of research has explored potential benefits that executive hubris may generate (Bollaert and Petit, 2010; Galasso and Simcoe, 2011). As a recent paper published in *Nature* stated, hubris or overconfidence is "advantageous because it serves to increase ambition, morale, resolve, persistence or the credibility of bluffing, generating a self-fulfilling prophecy in which exaggerated confidence actually increases the probability of success" (Johnson and Fowler, 2011). For instance, Galasso and Simcoe (2011) find that executive hubris positively influences firm innovation, leading to an increase in product market competition. Hubristic executives are inclined to become aggressive in initiating a radical change in their firm's innovation strategy.

The entrepreneurship literature asserts that hubris influences decision-making process and outcomes (Chatterjee and Hambrick, 2007; Hayward *et al.*, 2010). Prior research shows that entrepreneurs' hubris is positively associated with entry and re-entry into entrepreneurship. For instance, Camerer and Lovallo (1999) suggest that hubris plays a crucial role in actual entry decisions into entrepreneurship. Their findings further show that hubristic entrepreneurs are relatively insensitive to risk and hence hubris will lead them to explore new market or industry. Further, Chatterjee and Hambrick (2007) propose an operative mechanism that links hubris to risk taking, which suggests that hubris allows entrepreneurs to interpret situations surrounding as less risky than they actually are, and hence willing to take more risk.

## 3. Hypotheses development

### *3.1 Hubris, attribution and industry change*

Based on the idea that failure will lead serial entrepreneurs to make changes between the initial and successive ventures, we focus on the role of attribution of the cause of failure to understand what they may change for their subsequent venture. According to the attribution theory, when an individual face a failure, her causal attribution will be either internal or external (Zuckerman, 1979). A significant body of attribution research has demonstrated that entrepreneurs are inclined to blame their failures on external factors, while they take credit for their successes (Campbell, 1990; Campbell and Sedikides, 1999; Weiner, 1985; Zuckerman, 1979).

Furthermore, the current research in the area of learning from failure suggests that entrepreneurs' causal attribution plays an imperative role on their sense-making of failure (Gioia and Chittipeddi, 1991; Shepherd, 2003) as well as entrepreneurial learning (Mantere *et al.*, 2013; Rae, 2000; Zuckerman, 1979). As Mantere *et al.* (2013) stated, "attribution of failure is important for entrepreneurship because failures represent a potential source for learning and the outright denial of responsibility can inhibit learning from failure." Following this line of reasoning, the external attribution negatively affects the learning from failure, since entrepreneurs' tendency of attributing causes to situational factors shows the reluctance to engage in reflective thinking internally, consequently leading to impeding the learning process. For instance, Dixon *et al.* (2001) find that if individuals make external attributions for failure, then they are likely to attempt to avoid similar situations. In contrast, they find that individuals' internal attribution is more likely to lead them to plans to change strategy in similar situations.

For serial entrepreneurs, the attributional perspective posits that failed entrepreneurs are likely to blame uncontrollable external factors such as market slow down and competitors. Moreover, entrepreneurs' attributions in explaining their failure will determine their future effort, strategies and courses of action (Weiner, 1985). If failure is attributed to external attributions such as market conditions, then serial entrepreneurs are more likely to plan to avoid similar market situations. A recent empirical study by Eggers and Song (2015) also shows that serial entrepreneurs who previously experience failed venture tend to make an external attribution to their failure and consequently switch industries for their subsequent venture. Taken together, we, based on the external attribute of failure, argue that in crowdfunding, serial crowdfunders, if faced with initial failure, are inclined to blame market conditions, funder behaviors and environmental conditions than themselves. Therefore, they could change their strategies and move to a new industry or crowdfunding category. As such, we expect serial crowdfunders with initial failure to change their project category from the previous and subsequent project:

*H1a.* Among serial creators, those with initial failure are more likely to change crowdfunding category between the initial and successive crowdfunding project, compared to the serial creator with initial success.

Conversely, based on the ideas that success will lead serial entrepreneurs to switch industry between the initial and successive ventures, we focus on the role of hubris on market exploration to understand entrepreneurs' explorative behavior. Hubris is the commonly observed characteristics among entrepreneurs (Chatterjee and Hambrick, 2007; Hayward *et al.*, 2010; Moore and Healy, 2008). According to the hubris theory of entrepreneurship, entrepreneurs are inclined to overestimate their likelihood of success while underestimating uncertainties (Hayward *et al.*, 2006; Kahneman and Lovallo, 1993). Successful experience of new venture developments, especially early success, provides serial entrepreneurs with a greater optimism to explore new challenges or start more ambitious projects (Hayward *et al.*, 2006). Hubris may lead experienced serial entrepreneurs to venture into a territory where they have limited knowledge.

The literature on organizational learning by doing highlights the value of learning from success (Ellis and Davidi, 2005), suggesting that entrepreneurs can accumulate knowledge and skills. Because successes are rare events and confirm prior expectancies, they tend to increase confidence (Hayward *et al.*, 2006; Hmieleski and Baron, 2009; Li and Tang, 2010). For serial entrepreneurs, the learning perspective suggests that successful experience of new venture developments, especially early success, provides serial entrepreneurs with a greater optimism to explore new challenges or start more ambitious projects (Hayward *et al.*, 2006).

Furthermore, hubris influences decision-making process (Chatterjee and Hambrick, 2007; Hayward *et al.*, 2010). For instance, in analyzing factors driving entrepreneurs' market entry, previous research has demonstrated that hubris plays a vital role in actual market entry decision by entrepreneurs (Camerer and Lovallo, 1999). In addition, substantial research has shown that hubris influences entrepreneurs' strategic choices and risk attitude. Hubristic entrepreneurs are inclined to engage in risky initiatives (Li and Tang, 2010) and large-scale acquisitions (Chatterjee and Hambrick, 2007). Hubris has a predictable impact on core strategy outcomes, including entry into new markets (Hayward *et al.*, 2010). Li and Tang (2010) investigate the effect of entrepreneurs' hubris on risk-taking decisions and find that hubris encourages entrepreneurs to underestimate uncertainties and overestimate their capabilities, eventually leading to exploring a new market. In a similar vein, hubris may lead experienced serial entrepreneurs to venture into a territory.

Drawing on the hubris theory of entrepreneurship and entrepreneurial learning by doing, we argue that, in crowdfunding marketplaces, serial crowdfunders with initial success become highly confident and the crowdfunders' hubris leads to new crowdfunding category entry, although the target crowdfunding category is different from the category for which the project was initially created. Summing both perspectives, we arrive at the following hypothesis:

*H1b.* Among serial creators, those with initial success are more likely to change project category between the initial and successive crowdfunding project, compared to the serial creator with initial failure.

### *3.2 Hubris, attribution and campaign launch strategies*

Prior experience (failure or success) is likely to affect a serial creator's behavior (Rerup, 2005). In this study, we hypothesize a change in a serial creator's behavior with regard to funding options and goals. There are different kinds of funding options, but for this study, we focus on the reward-based crowdfunding option which has two models: flexible funding (i.e. "keep-it-all" model) and the fixed funding (i.e. "all-or-nothing" model) (Cumming *et al.*, 2015; Mollick, 2014). The flexible funding model involves setting a fundraising goal and keeping the pledged amount whether the goal is met or not. In contrast, the fixed model involves setting a fundraising goal and keeping nothing till the goal is met. In the flexible funding, the risk is allocated to the crowd and in fixed funding, the risk is transferred to the serial creator (Cumming *et al.*, 2015). Prior studies have used organizational learning theories to suggest that prior failure may make a serial crowdfunder abandon their old behaviors and mental models (Rerup, 2005). Thus, initially failed campaigns may motivate serial creators to look up new ideas regarding funding options, thereby opening up to experimentation. Similarly, we hypothesize that failures could lead to serial creators revising their prior funding options for the new campaign. Initial failure of a campaign could force a serial creator to experiment and shift strategies for the next campaign from the flexible funding to the fixed funding so as to signal the shift of risk from the crowd to the creator and build trust and ensure success.

This change in a serial creator's behavior should also apply when applied to goals concerning the raising of target capital. Prior research reports that increasing goal size or

using stretch (difficult to attain) goals is negatively associated with success (Eggers and Song, 2015; Mollick, 2014). Therefore, an initial failure could push the serial crowdfunders to change their behavior and experiment by lowering their goal pertaining to the raising of target capital in the new campaign. This should act as a signal to the crowd about the lower risk. As prior research has noted, the use of stretch goals significantly increases a project's likelihood of delivery delay and therefore lower goals also signal that the serial creator can complete the product delivery in a timely manner thereby ensuring success of the new campaign. Thus, we hypothesize that:

*H2.* Among serial creators, those with initial success are more likely to take risk by setting higher goal amounts and by opting for fixed funding model, compared to the serial creator with initial failure.

*3.3 The effect of changing crowdfunding categories and campaign launch strategies*

Serial entrepreneurs' switching from one industry to another has a critical implication from the entrepreneurial learning perspective. Prior studies have explored the importance of entrepreneurial skills and knowledge that are specific to particular industries, and much of those research works have highlighted that industry-specific skill may constitute an essential component of entrepreneurial capabilities (Kor *et al.*, 2007; Neal, 1995; Unger *et al.*, 2011). For instance, all ventures in the gaming industry may value a common set of entrepreneurial skills that are vital to the gaming production. However, these same skills might not be valued by other industries. Unger *et al.* (2011) find that human capital criteria, such as industry-specific knowledge and skills, are a vital resource for early stage venture success. Similarly, Kor *et al.* (2007) show that subjective entrepreneurial knowledge is more significant than broader knowledge bases and originates typically from entrepreneurial experience within a specific industry, where experience involves interactions with customers, and suppliers. Such experience-based knowledge of the industry can be useful for discovery and evaluation of entrepreneurial opportunities for subsequent ventures.

Theories of behavioral learning also highlight that experience of founding new ventures experience, either failure or success, may lead to a valuable entrepreneurial learning opportunity (Cope, 2011; Mueller and Shepherd, 2016). Serial entrepreneurs, when staying in a specific industry, can accumulate knowledge about how an industry works and this industry-specific entrepreneurial learning enables them to more easily acquire required resources for subsequent ventures (Davidsson and Honig, 2003). Furthermore, empirical studies that comply with this logic show a lower mortality rate for venture founded by entrepreneurs with experience within the same industry (Cooper *et al.*, 1994). Past entrepreneurial experience builds context-specific or industry-specific competence and learning that could be translated into the subsequent venture if they remain in the same industry. For instance, entrepreneurs learn what works and does not work with the same industry over time, and such industry learning experience enables facilitating more accumulation of industry specific than accumulation of entrepreneurial experience, eventually leading to improved venture performance (Chatterji, 2009).

Given the significance of industry-specific entrepreneurial learning by doing and their impacts on subsequent venture performance, serial entrepreneurs who switch industries from initial to subsequent venture lose cumulative learning benefits by abandoning industry-specific knowledge and skills gained from their previous industry (Eggers and Song, 2015; Shepherd *et al.*, 2003; Ucbasaran *et al.*, 2008). For instance, Eggers and Song (2015) find that regardless of the success or failure of initial ventures, switching industries has a negative impact on subsequent venture performance – results from both Chinese and US data show a slower growth and a significant decline of value creation. In a similar vein, when switching categories on crowdfunding, serial entrepreneurs could not leverage their context-specific

knowledge from a specific project category or industry for their new venture. Moreover, when a serial creator changes his crowdfunding category, the perception of risk could go up for funders because the cumulative learning and knowledge of the serial creators in a known domain could be rendered useless or ineffective in a new and perhaps unrelated domain wherein the learning curve could be steep. In other words, the benefits of cumulative learning could be lost increasing the chances of failure. Therefore, we hypothesize that a change in the business domain may result in reduced funding and state it as follows:

*H3.* Change in crowdfunding category will reduce the funding performance of the subsequent projects.

We hypothesized that serial entrepreneurs whose initial crowdfunding projects resulted in success are more likely to take a risk by setting higher goal amounts and by opting for a fixed funding model. The existing literature suggests that entrepreneurs who experience early success exhibit higher overconfidence and such hubris mitigates risk aversion (Hayward *et al.*, 2010). As a result, entrepreneurs who irrationally optimistic in their estimates of success are inclined to be less risk aversion but adopt a higher risk appetite. There are significant implications of these campaign launch strategies in terms of funding performance of successive ventures. The literature on crowdfunding has documented that crowdfunding project with a higher goal amount is less successful and thus setting appropriate funding goals is paramount to having successful crowdfunding campaigns (Agrawal *et al.*, 2011; Belleflamme *et al.*, 2014; Frydrych *et al.*, 2014; Kuppuswamy and Bayus, 2017). For instance, Agrawal *et al.* (2011) find that in reward-based crowdfunding, projects with unreasonable funding target are most likely to fail; average target capital for unsuccessful projects is almost three times the goal amount for successful projects. Frydrych *et al.* (2014) suggest that lower funding goals signal legitimacy by setting proper expectations; conversely, higher funding goals decrease legitimacy without rational justification.

A higher target capital represents a higher level of risk (Mollick, 2014), so serial creators who initially experienced failure adjust their goal setting strategies as a response to the previously failed projects (Parker, 2013). Thus, we expect that serial creators with initial failure might blame their failure to external factors such as goal setting exercise, and adjust their goal downward. Such a decision on lowering the stated goal amount is expected to increase the funding outcome of a subsequent crowdfunding project. In contrast, serial creators who initially experienced success may be highly optimistic in their estimates of future demand for their products (Hayward *et al.*, 2006). Such hubris, thus, may lead them to overestimate the accuracy of their information (Hayward *et al.*, 2010; Li and Tang, 2010), eventually setting a higher campaign goal amount for the successive projects. As a result, the higher campaign goal amount negatively affects the likelihood of campaign success:

*H4.* Change of campaign strategy in setting higher goal amounts will reduce the funding performance of the subsequent projects.

In analyzing factor driving crowdfunding success, the crowdfunding literature has also pointed to the importance of a funding model to increase the odds of success (Cumming *et al.*, 2015). The choice of a funding model represents a risk-return trade-off; opting for flexible funding not only represents less risk but also lower returns concerning funding size, while the fixed funding represents more risk. If a serial crowfunder makes a move from the flexible model to the fixed, it could signal the shift of risk from the crowd to the serial creator. Empirical studies show that the fixed funding scheme presents a significantly higher risk for the entrepreneurs. Furthermore, Cumming *et al.* (2015) support the view that entrepreneurs are willing to reduce their own risk by selecting a flexible model at the expense of attaining higher funding amounts. Selecting a fixed

funding scheme represents a higher risk for entrepreneurs, so fixed campaigns are expected to attract more funders. Hence, such entrepreneurs' decision on opting for fixed funding is likely to increase the likelihood of success of the subsequent campaign. Taken together, we, therefore, expect that entrepreneurs' risk taking by opting for a fixed funding model increases the odds of success for the subsequent crowdfunding projects:

*H5.* Change of campaign strategy by opting for fixed funding model will improve the funding performance of the subsequent projects.

## 4. Research method

### *4.1 Research context*

We collected data from Indiegogo.com, one of the largest crowdfunding platforms. Established in 2008, Indiegogo is a rewards-based crowdfunding platform where project creators publish their innovative projects, which, in turn, are funded by crowds. According to the website, Indiegogo had raised more than 1bn since the beginning of its operations in 2008. Also, more than 2.5m individuals from 226 countries and territories contributed to more than 200,000 campaigns that had launched from 2008 to 2016. Those crowdfunding projects range from innovative technology to entertainment, to social enterprise.

At Indiegogo, the project initiators are required to specify campaign information, including project type, description, target amount, campaign duration and reward options. Additionally, they can post a video, picture and links to their company websites. Further, Indiegogo also makes all funding transactions from individual funders publicly available. Detailed data on these activities, including funders, funding timing and amount, are available to potential consumers.

Indiegogo offers two options for project financing, fixed and flexible funding mechanisms. In a fixed funding campaign, the project succeeds only if its pledges to surpass the stated funding goal within the funding duration. In a flexible funding project, the project creators keep all capital raised, regardless of whether the campaign exceeds the stated funding goal.

### *4.2 Data collection and sampling*

We developed a software application to gather the data on projects launched from 2008 to 2015. We scraped 141,127 projects for a variety of product categories: over 23,000 projects for film, 13,005 for music, 13,054 projects for education, 20,975 projects for community, 4,095 projects for writing and 5,306 projects for art. Projects launched between 2008 and 2011 were excluded since Indiegogo started to offer both flexible and fixed funding options in December 2011. Out of these, 11,910 projects are serial. Projects with a target capital of $5,000 or below are considered to be insignificant and following previous research by Mollick (2014), we used this lower bound of $5,000 to avoid projects that mostly rely on funding from family and friends. Our sampling method is consistent with the previous approach by Mollick (2014). We excluded projects with a target capital of $5,000 or below. Of those projects, duplicated or canceled projects as well as projects having a goal amount set above $1m were excluded from the sample. Our primary objective is to explore how initial crowdfunding experience affects behavioral decision making for the subsequent project. Thus, if a serial crowdfunder has more than two projects, then only the first and second projects are included in our sample. That left us with 5,208 projects initiated by 2,604 serial creators from Indiegogo.

Table I reports the summary statistics for the variables. There are 5,208 projects within 24 project categories. The success rate for the first campaigns is 23.9 percent and that for the second is 26.8 percent. The average target capital for the first campaigns is $25,369, whereas that for the second is $18,901.

| | First campaigns | | | Second campaigns | | |
|---|---|---|---|---|---|---|
| | Obs | Mean | SD | Obs | Mean | SD |
| Funding success | 2,604 | 0.239 | 0.426 | 2,604 | 0.268 | 0.443 |
| Pledge/Goal ratio | 2,604 | 0.479 | 0.903 | 2,604 | 0.530 | 0.851 |
| Target capital | 2,604 | 25,369 | 39,696 | 2,604 | 18,901 | 43,001 |
| Total pledge | 2,604 | 8,751 | 33,960 | 2,604 | 5,446 | 13,216 |
| Update | 2,604 | 8.00 | 13.50 | 2,604 | 5.23 | 10.90 |
| Comment | 2,604 | 40.05 | 134.25 | 2,604 | 18.72 | 73.78 |
| Gallery | 2,604 | 8.79 | 12.85 | 2,604 | 6.02 | 11.00 |
| Backer | 2,604 | 103.98 | 437.57 | 2,604 | 70.70 | 200.39 |

**Table I.** Summary statistics

### *4.3 Variables*

Our study includes a series of dependent variables that measure the impact of initial crowdfunding success/failure on subsequent decisions regarding the change in project category and the change in campaign launch strategies. First, we operationalize industry change by measuring change from one crowdfunding category to another. We utilize a measure of industry change, ΔCategory is a dummy variable equal to 1 if the categories of the initial and subsequent crowdfunding campaign differ, and 0 otherwise. Table II reports a full transition matrix between the first and the second crowdfunding categories and shows a large variety of transitions. For instance, 52 percent of those who launched community crowdfunding campaigns stayed in that category for the subsequent campaign, while 17 percent switch to education category and 18 percent to either art or film. Second, concerning the change in campaign launch strategies, we create two dummy variables ΔFunding Option and ΔGoal Setting. ΔFunding Option equals to 1 if the creator changes their flexible funding option of the initial campaign to the fixed option of the subsequent campaign, and 0 otherwise. ΔGoal Setting equals to 1 if the creator increases their goal amount from the initial campaign to the subsequent campaign, and 0 otherwise.

To test our hypotheses regarding the effects of the changing crowdfunding category on the funding performance of subsequent crowdfunding projects, we operationalize funding performance by measuring the total amount of money pledged (in dollars) to a focal crowdfunding project. The log-transformed funding is our dependent variable, and three dependent variables used in *H1* and *H2* become key independent variables in *H3–H5*.

Another key independent variable in our analysis is crowdfunding success. Following Mollick (2014), we measure the success of crowdfunding by a campaign meeting the funding goal set for the project. Initial Failure is equal to 1 if the campaign's funding pledged do not exceed the target amount set at the beginning of the campaign.

In addition to the variables of interest, it is imperative to control for relevant popularity and quality aspects of crowdfunding project as well as for other factors that may influence funding performance of the subsequent projects. First, we use the cumulative number of funders in a project to account for the popularity of the project. Second, we include target capital or goal amount set by crowdfunding creators. Third, we measure the funding ratio between the pledge amount and the funding goal of the project. Fourth, in line with the previous literature (Mollick, 2014), we include the number of comments, number of galleries and number of updates (Table III).

### *4.4 Analytical method*

Since our dependent variables are dichotomous, we use logit regression models for our primary results. To assess the impact of initial crowdfunding failure vs success on subsequent crowdfunding decisions, we use logit for the dichotomous dependent variables −ΔCategory, ΔFunding Option and ΔGoal Setting. Also, to examine the impact of both

**Table II.**
Transition matrix for first and second crowdfunding campaigns

| Project category | Animals | Art | Comic | Community | Dance | Design | Education | Environment | Fashion | Film | Food | Gaming | Health |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Animals | 20 | | | 3 | | 1 | | 2 | | | 2 | | 1 |
| Art | | 42 | | 12 | | | 5 | | | 7 | 1 | | 2 |
| Comic | | 1 | 11 | 1 | | | | | | 1 | | | |
| Community | 4 | 11 | | 127 | 1 | | 21 | 4 | 2 | 11 | 1 | | 10 |
| Dance | | | | 3 | 16 | | | | | 2 | | | |
| Design | | 2 | | 1 | | 6 | 2 | 1 | 2 | 1 | 1 | | 1 |
| Education | 3 | 4 | | 25 | 1 | 2 | 100 | 3 | | 10 | | | 10 |
| Environment | 5 | | | 5 | | 1 | 3 | 25 | 1 | 4 | | | 1 |
| Fashion | | 1 | | 2 | | | 1 | 1 | 12 | | | | 1 |
| Film | 4 | 5 | 1 | 26 | 3 | | 16 | 4 | | 770 | | 2 | 2 |
| Food | | | | 12 | | 1 | 2 | | | 1 | 21 | | 3 |
| Gaming | | 1 | 1 | | | | | | | 2 | | 19 | |
| Health | | 1 | | 13 | | 2 | 9 | 1 | | 3 | 1 | | 77 |
| Music | 1 | 3 | | 6 | 1 | | 2 | 2 | 2 | 15 | 2 | 1 | |
| Photography | | 2 | | 2 | | | | | | 3 | | | 1 |
| Politics | 1 | | | 2 | | | 4 | | | 1 | | | 1 |
| Religion | | | | 1 | | | | | | | | | |
| Small business | 1 | 4 | | 16 | 1 | 1 | 5 | | 1 | 5 | 3 | | 4 |
| Sports | | 1 | | 1 | 1 | | 2 | | 1 | 2 | 1 | | 1 |
| technology | 1 | 1 | | 4 | 2 | 4 | 5 | 3 | 1 | 3 | 1 | | 6 |
| Theater | | 1 | | 8 | 4 | | 2 | 2 | | 12 | 1 | | 1 |
| Transmedia | | | | 1 | 2 | | 1 | 1 | | 2 | | | |
| Video/Web | 1 | | 2 | 6 | | 1 | 1 | | 1 | 33 | | | |
| Writing | | 1 | | 3 | | | 2 | 2 | | 2 | | | 1 |
| Grand total | 41 | 81 | 15 | 280 | 32 | 19 | 183 | 51 | 23 | 890 | 35 | 22 | 123 |

(*continued*)

| Project category | Music | Photography | Politics | Religion | Small Business | Sports | Technology | Theater | Transmedia | Video / Web | Writing | Grand Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Animals | | 1 | | | | 1 | | | | | | 31 |
| Art | 4 | 1 | | | 2 | | 1 | 2 | 1 | 1 | 1 | 82 |
| Comic | | | | | | | | 1 | | | 1 | 16 |
| Community | 2 | 2 | 5 | 1 | 2 | 4 | 1 | 4 | 1 | | 1 | 215 |
| Dance | 2 | 1 | | | 2 | | | 4 | | | | 30 |
| Design | 1 | | | | 2 | | 6 | | | | | 26 |
| Education | 1 | | 2 | | 3 | 3 | 5 | 3 | | | 4 | 179 |
| Environment | 1 | 1 | 1 | | 1 | | | | | 1 | | 50 |
| Fashion | | | | | | | 2 | | | | | 20 |
| Film | 24 | 2 | 2 | 1 | 5 | 3 | 3 | 31 | 3 | 43 | 5 | 955 |
| Food | 1 | | | | 4 | 1 | 2 | | | | | 48 |
| Gaming | | | | | 1 | 1 | 1 | | | | | 26 |
| Health | 3 | 1 | | 1 | 3 | 2 | 3 | 1 | | 2 | 3 | 126 |
| Music | 124 | | | 1 | 1 | | 1 | 7 | | 2 | 2 | 173 |
| Photography | | 15 | | | | 1 | | | | | 1 | 25 |
| Politics | | | 15 | | | | | 1 | | | | 24 |
| Religion | 1 | | | 8 | | | | | | | | 11 |
| Small business | 4 | 1 | | | 36 | 1 | 3 | 3 | 1 | 3 | 2 | 95 |
| Sports | | | | | 1 | 31 | | | | | 1 | 43 |
| Technology | 2 | | 2 | 1 | 3 | 2 | 54 | 1 | | | 2 | 98 |
| Theater | 6 | 1 | | | 3 | | | 124 | 1 | 4 | 2 | 172 |
| Transmedia | 1 | | | | | | | 2 | 2 | | 1 | 13 |
| Video/Web | 3 | | | 2 | 1 | 1 | 1 | 12 | | 42 | 2 | 109 |
| Writing | 4 | | | 1 | | | 1 | | 1 | 1 | 18 | 37 |
| Grand total | 184 | 26 | 27 | 16 | 70 | 51 | 84 | 196 | 10 | 99 | 46 | 2,604 |

**Table II.**

initial failure and changing strategies on funding outcomes, we use logit for the dichotomous dependent variables Funding Success. Our models use robust standard errors since each crowdfunding project is not independent of past project, generating a potential source of heteroscedasticity.

## 5. Results

In *H1a* and *H1b*, we suggest that in crowdfunding market, the failure vs success of an initial project would lead the serial crowdfunders to change category for a subsequent project. The empirical results of the research models evaluating these effects are presented in Table IV. In Model 1, we include seven independent variables and the dependent variable (ΔCategory) testing whether the serial creator change crowdfunding categories from initial or success project to the next. In contrary to *H1a*, the result shows that initial failure reduces the likelihood of changing categories compared to initial success. Rather, initial success leads to more category changes for the serial crowdfunders in crowdfunding markets. Thus, *H1b* is supported as the coefficient of Initial Success is positive and statically significant ($\beta = 0.474$, $p < 0.001$). Two competing hypotheses – drawn from theories of attribution and hubris – offer competing predicts about the effect of initial failure vs initial success experience on behavioral decisions and funding performance of subsequent crowdfunding projects. Consistent with the notion of entrepreneurs' hubris (Hayward *et al.*, 2006, 2010), the hubris hypothesis predicts that serial crowdfunders with initial success are more likely to take an explorative action by entering a new market. Furthermore, based on the emerging literature on crowdfunding, there are three lines of reasoning for this relationship. First, initial failure may trigger strong motivations for crowdfunders to engage in more exploitative behavior, suggesting that

**Table III.**
Pairwise correlations for key variables

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|
| 1. Pledge/Goal Ratio | 1 | | | | | | | | |
| 2. Initial failure | −0.22 | 1 | | | | | | | |
| 3. ΔCategory | 0.00 | 0 | 1 | | | | | | |
| 4. ΔFunding Option | 0.10 | −0.06 | 0.07 | 1 | | | | | |
| 5. ΔGoal | −0.17 | −0.14 | 0.07 | 0 | 1 | | | | |
| 6. Update | 0.28 | −0.10 | 0.00 | 0.01 | 0.12 | 1 | | | |
| 7. Comment | 0.41 | −0.15 | 0.02 | 0.03 | 0.18 | 0.50 | 1 | | |
| 8. Gallery | 0.08 | −0.03 | 0.01 | 0.00 | 0.10 | 0.47 | 0.33 | 1 | |
| 9. Target capital | −0.40 | −0.04 | 0.05 | 0.03 | 0.58 | 0.13 | 0.18 | 0.12 | 1 |

**Table IV.**
Initial failure/success and change in category, funding option and target capital

| | (1) ΔCategory | (2) ΔFunding Option | (3) ΔGoal Setting |
|---|---|---|---|
| Initial success | 0.474*** (0.144) | 0.450*** (0.127) | 0.945*** (0.091) |
| Goal amount | 0.137* (0.058) | 0.141 (0.109) | −0.676*** (0.052) |
| Ratio | −0.167* (0.083) | −0.033 (0.106) | 0.038 (0.059) |
| Update | 0.024 (0.059) | 0.250** (0.079) | −0.022 (0.043) |
| Comment | −0.001 (0.065) | 0.254 (0.219) | 0.211*** (0.063) |
| Gallery | −0.011 (0.030) | −0.230 (0.156) | 0.064 (0.036) |
| Funding amount | −0.153 (0.114) | −0.236 (0.117) | −0.111 (0.088) |
| Funder | 0.124 (0.135) | 0.180 (0.274) | 0.099 (0.129) |
| Obs | 2,604 | 2,604 | 2,604 |
| Pseudo $R^2$ | 0.006 | 0.044 | 0.059 |

**Notes:** Standard errors in parentheses. *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$

crowdfunders tend to launch a new campaign in the same category rather than launch a new project in a different one. Second, the serial crowdfunders who experience initial failure may find specific excuses with campaign strategies. They are more likely to correct or modify old plans and launch a new campaign with similar ideas. Third, crowdfunders who experienced initial success tend to leverage their experience gained from the same industry or category, eventually attempting to build their reputation in another industry.

In *H2*, we suggest that initial success would lead the serial crowdfunders to take more risk when choosing their campaign launch strategies such as funding option and goal setting. With respect to the change in funding option, we hypothesize that initial success would lead the serial crowdfunders to change their funding option from the flexible funding to the fixed funding as part of the critical campaign launch strategies for a subsequent project. Model 2 shown in Table IV indicates that the relationship between previous success and the likelihood of change in funding option is significant ($\beta = 0.450$, $p < 0.001$). Our results show that inefficient learning from initial failure can lead to fixating their strategies on previously failed ones, rather than refining their campaign strategy by adjusting funding options given the emergent context. Our finding supports evidence that learning from failure is difficult and entrepreneurs do not gain the same learning benefits from failure as from success (Baumard and Starbuck, 2005; Eggers and Song, 2015). Instead, the effect of success on the change in funding option implies that serial creators may gain experience on the differences of two distinct funding mechanisms. Thus, the serial creators understand how two types of funding mechanism influence outcomes of the crowdfunding campaign and adjust by switching from a flexible option to a fixed one. Prior research has shown that the fixed funding or all-or-nothing model serve as a more credible signal to potential funders, so the fixed funding model can increase the likelihood of successful funding in the reward-based crowdfunding marketplace (Cumming *et al.*, 2015).

We also suggest that initial success would have the effect on goal-setting strategy for a subsequent campaign. Model 3 evaluates whether initial success leads the serial creator to set the goal higher than the goal of the initial campaign. The results show that initial success has a significant relationship with change in goal-setting strategies ($\beta = 0.945$, $p < 0.001$), and it is consistent with our hypothesis. Serial creators with initial success are more likely to modify their goal-setting strategies by setting a target capital higher than that in the past.

In Table V, we turn our attention to the performance implication of both initial failure or success and changing strategies in terms of category switch, funding option and goal setting. We include the number of the updates, number of comments and target capital as control variables. Initial failure would lead to the decrease the odds of funding success of subsequent projects. Conversely, initial success would lead to increase the odds of funding success of subsequent projects. The outcome measure for Models 1–4 is the success of the

| | DV: success of subsequent project | | | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| Initial failure | −0.634** (0.117) | −0.636** (0.117) | −0.643** (0.117) | −0.654*** (0.118) |
| ΔCategory | | 0.216* (0.107) | 0.214* (0.108) | 0.215* (0.108) |
| ΔFunding Option | | | 0.791* (0.241) | 0.792* (0.241) |
| ΔGoal Setting | | | | −0.119 (0.164) |
| Update | 0.374*** (0.057) | 0.375*** (0.057) | 0.367*** (0.058) | 0.368*** (0.058) |
| Comment | 0.995*** (0.064) | 0.996*** (0.064) | 1.003*** (0.065) | 1.005*** (0.065) |
| Goal | −0.979*** (0.059) | −0.980*** (0.059) | −0.987*** (0.060) | −0.964*** (0.067) |
| Obs | 2,604 | 2,604 | 2,604 | 2,604 |
| Pseudo $R^2$ | 0.2346 | 0.2361 | 0.2385 | 0.2389 |

**Notes:** Standard errors in parentheses. *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$

**Table V.** Performance implications of initial failure/success and change in category, goal setting and funding option

subsequent crowdfunding projects, which is equal to 1 if a focal serial crowdfunding project acquires the desired target goal amount, and 0 otherwise. Model 1 first tests the effect of initial failure/success on funding performance, and shows that the estimated coefficient is negative and statistically significant ($\beta = -0.634$, $p < 0.01$), suggesting that initial failure decreases the likelihood of success of the subsequent crowdfunding project. This finding implies that the serial creator who experienced an initially failed crowdfunding cannot convert their direction for the subsequent project. Thus, initial failure is detrimental to funding success of the subsequent project.

In *H3*, with respect to the change in category, we hypothesize that serial crowdfunders' decisions of category change have a negative effect on funding performance of the subsequent project in crowdfunding market. However, contrary to our expectation, the coefficient of ΔCategory in Model 2 is positive and significant ($\beta = 0.216$, $p < 0.1$), suggesting that the change of category has a positive impact on subsequent project performance.

Model 4 evaluates whether increasing the target capital of subsequent campaign could decrease the odds of funding success of subsequent projects. The coefficient of ΔGoal Setting in Model 4 is negative but not statistically significant, suggesting that change in goal setting does not necessarily decrease their chance of subsequent project performance. Thus, *H4* is not supported.

In *H5*, we suggest that change in funding option from a flexible model to fixed has a positive effect on funding outcome. Model 4 indicates that the relationship between ΔFunding Option and the likelihood of subsequent project success is significant ($\beta = 0.792$, $p < 0.05$), and it is consistent with our hypothesis.

## 6. Discussion and conclusion

The purpose of this study is to investigate how serial crowdfunders develop different strategic responses to initial failure vs success of their crowdfunding campaign. Dawning on the hubris theory of entrepreneurship and entrepreneurial learning theory, we find that serial creators who experienced the initial success are likely to engage more in explorative behavior by entering a new market. Switching industry is generally considered risk-taking action but hubris leads serial crowdfunders to change categories between their first and second crowdfunding projects. We show that serial crowdfunders with initial failure are less likely to attribute the failure of their initial crowdfunding to external factors such as crowdfunding category and therefore serial crowdfunders who experienced the initial failure are less likely to change categories between their first and second crowdfunding projects. In contrast, our results show that serial creators with initial success are more likely to explore a new market or a new crowdfunding category. Our hubris or overconfidence hypothesis is supported, suggesting that serial creators who experience prior successful crowdfunding projects are highly confident and such hubris motivates them to launch a subsequent project in a new category. We thus conclude that success of initial crowdfunding leads to increased likelihood of changing categories. That is, serial creators with successful initial experience in crowdfunding market become confident enough to enter a different market or crowdfunding category. Previous research on entrepreneurship literature posits that experienced, successful entrepreneurs are more likely to be overconfident (Denrell, 2003; Shepherd *et al.*, 2003). Similarly, in crowdfunding market serial creators with initial success develop competence, leading to change in funding option, from the flexible funding to the fixed. Such behavioral response to initial success implies that successful serial creators exploit opportunities by being more adaptive, eventually willing to change direction and modify strategies as the real opportunity evolves. This is consistent with the hubris theory of entrepreneurship highlighting how hubris encourages entrepreneurs to start-up venture in the new industry but to also pursue growth strategies (Hayward *et al.*, 2006). In crowdfunding market, hubristic serial crowdfunders

overestimate the probability of a positive outcome when launching a campaign in new crowdfunding category.

On the contrary, our findings show that serial creators who experienced the initial failure are less likely to change categories, and are more likely to lower the target capital for the subsequent crowdfunding campaign. Parker (2013) examining serial entrepreneurs' performance supports the notion of "success breeding success" or "failure breeding failure." In crowdfunding market, serial creators tend not to change their responses to their initial failure, implying that they are not adaptive and thus are reluctant to modify strategy in response to initial failure.

In this study, we identify significant performance differences for serial crowdfunders depending on whether initial crowdfunding campaign succeeded or failed. Previous research on entrepreneurial learning literature supports the notion that initial success breeds subsequent success (Parker, 2013). Consistent with Parker (2013), our findings show that the crowdfunding serial crowdfunders perform better after initial success, but importantly find that they are more likely to have subsequent campaign success in a new crowdfunding category. Also, they become adaptive to modify their campaign launch strategy. Specifically, they learned from their initial campaign experience that changing funding option to the fixed one could be a credible signal to prospective funders, increasing the probability of funding success.

However, extant research on traditional entrepreneurial literature has focused on the importance of industry domain experience or knowledge (Chatterji, 2009; Eggers and Song, 2015; West and Noel, 2009; Westhead and Wright, 1998). Eggers and Song (2015) find that entrepreneurs' decisions on industry change have a negative effect on their subsequent venture performance because industry change lessens potential benefits from industry-specific knowledge, eventually decreasing the odds of success of venture firms. Our research shows that decisions to change categories for subsequent crowdfunding project are not tied to initial failure but rather are tied to initial success. The effects of both initial success and category change increase the probability of funding success for subsequent projects. These results suggest that serial crowdfunders who gained industry-specific knowledge from their initial crowdfunding project can increase the success rate across crowdfunding category. That is, the crowdfunders who experienced the initial success in a small business category are more likely to succeed with community crowdfunding project even though their prior experience was unrelated to a community project.

### *6.1 Theoretical implications*

Findings from our study contribute to the limited theory on serial crowdfunders in the context of crowdfunding and add to the crowdfunding literature at large. Literature from the entrepreneurship area indicates that serial entrepreneurs are different from novice entrepreneurs, highlighting a need for a greater examination. We extend this to the limited research on serial crowdfunding by investigating the effects of serial crowdfunders' initial performance on subsequent projects and whether a change in industry and campaign strategies would lead to success. Results from our study help to identify new areas of research on serial creators within the domain of crowdfunding. For example, future studies in crowdfunding could test whether the effect of successes or failures extends for the third and more campaigns and across different categories. Future research studies could also look at other factors such as trust in the context of serial crowdfunding.

This study also contributes by applying and testing attribution and hubris theories. Findings suggested that serial creators who experience prior successful are highly confident and that such hubris motivates them to launch a subsequent project in a new category thereby lending support to the hubris theory. Thus, our study contributes to the literature on the learning and hubris theories by extending them to crowdfunding. Additional studies

could investigate if the implications of attribution and hubris effects on serial creators across cultures differ.

Extant literature on entrepreneurship has investigated entrepreneurial learning effects and suggests that learning would be similar for successful and failed entrepreneurs. Our results show that in online crowdfunding marketplaces, entrepreneurs who experience initially failed projects tend to engage in more exploitative decision making, while entrepreneurs who experience initially successful projects are more inclined to exercise explorative decision making. Thus, our study adds to the theory in the domain of entrepreneurship by showing that in crowdfunding marketplaces not all past entrepreneurial experiences are equally adept at facilitating learning. As our two competing hypotheses – drawn from theories of attribution and hubris – offered competing predictions about the effect of initial experience on behavioral decisions, both success and failure exert differential learning. Consistent with work suggesting that experiential learning, from either failure or success experience, accumulates skills and knowledge in entrepreneurship over time projects (Hayward *et al.*, 2006), our perspective suggests that successful initial crowdfunding experience is more likely to stimulate learning about market exploration while failed one leads to learning about market exploitation.

### *6.2 Practical implications*

The findings have important implications for both novice entrepreneurs who are planning to campaign their first project and serial entrepreneurs who have experienced their initial crowdfunding project. First, our findings suggest that a serial crowdfunder performs better not after initial failure but after initial success. Our results generally support the idea that success breeds success in crowdfunding marketplace, suggesting that the serial crowdfunders with an initial experience of failed crowdfunding are likely to have difficulties of overcoming the adverse effects of their initial failure. In other words, establishing a reputation initially through the first successful crowdfunding campaign is critical for funding outcome of a subsequent project. Thus, prospective crowdfunders should carefully design their first crowdfunding campaigns with a fixed funding option and appropriate goal setting to increase the odds of success. Second, our findings show that in the crowdfunding market the change in industry does not have a detrimental effect on subsequent success, but instead switching industry from the first venture to the next has positive impacts. Thus, the change in industry seems not to have the effect of eliminating any potential benefits from industry-specific experience or knowledge. Our finding suggests that especially if serial crowdfunders who have experienced initial failure launch the second campaign in a new category, they are more likely to increase the odds of success for the subsequent crowdfunding campaigns. Serial crowdfunders will benefit from market exploration behavior by entering into a new industry.

### *6.3 Limitations and future studies*

There are some limitations in our study, which may, however, offer opportunities for future research. Perhaps, the most important limitation is that we measure category change using change from the first category of the initial project to the next. However, a serial creator might propose similar crowdfunding projects for the initial and subsequent campaigns. With a growing trend toward a big data text analytics, a sophisticated big data approach could be applied to examine category change using project descriptions between the first and second projects. Another limitation is that this study is based on the sample from one single crowdfunding platform and utilizes the first and second crowdfunding projects campaigned by the serial creators. We know that many crowdfunding platforms have different features that might affect entrepreneurial learning. Additional studies with serial

crowdfunding project collected from multiple platforms should hence be done to test the robustness of our results across platforms.

In this study, we have focused on first and second crowdfunding projects initiated by a focal serial creator; future studies may seek to investigate whether serial creators with more than two crowdfunding projects exhibit similar responses to their past success or failure. Furthermore, this study does not categorize 17 categories into a smaller set of categories. For example, a similar set of categories could be grouped together under one larger category and thus change in categories could be measured based on the similarity scores of different categories.

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# Internet Research

**Number 5**

## The Sharing Economy: Promises and Challenges

Guest Editors: Bo Xiao, Zach W.Y. Lee, Eric T.K. Lim and Chee-Wee Tan


993 Guest editorial

996 Sharing economy: seeing through the fog
Daniel Trabucchi, Laurent Muzellec and Sébastien Ronteau

1014 Collaborative innovation in the sharing economy: profiling social product development actors through classification modeling
Kaveh Abhari, Elizabeth J. Davidson and Bo Xiao

1040 Building customers' trust in the ridesharing platform with institutional mechanisms: an empirical study in China
Zhen Shao and Hao Yin

1064 Antecedents and role of individual sociability on participation in mobile collaborative consumption
Yicheng Zhang, Chee Wei Phang, Rui Gu and Chenghong Zhang

1090 The conditioning function of rating mechanisms for consumers in the sharing economy
Gemma Newlands, Christoph Lutz and Christian Fieseler

1109 The sharing economy ideal: implementing an organization-sponsored sharing platform as a CSR program
Anita D. Bhappu and Ulrike Schultze

1124 Policy compliance and deterrence mechanism in the sharing economy: accommodation sharing in Korea
Soo Kyung Park, Kyu Tae Kwak and Bong Gyou Lee

1149 Does more crowd participation bring more value to crowdfunding projects? The perspective of crowd capital
Chunxiao Yin, Libo Liu and Kristijian Mirkovski

1171 Analyzing campaign's outcome in reward-based crowdfunding: social capital as a determinant factor
Pilar Madrazo-Lemarroy, Karla Barajas-Portas and Maria Elena Labastida Tovar

1190 Dealing with initial success versus failure in crowdfunding market: serial crowdfunding, changing strategies, and funding performance
Chang Heon Lee and Ananth Chiravuri


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