

IT-based entrepreneurship in sharing economy: the mediating role of value expectancy in micro-entrepreneur's passion and persistence

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Abstract: Sharing economy brings opportunities for a generation of micro-entrepreneurs. Through internet platforms such as Uber, micro-entrepreneurs give each other a lift and provide rental services. The current study investigates micro-entrepreneur related entrepreneurial passion, persistence and other variables. In addition, we examine the value expectancy as the important mediator. The results demonstrate that entrepreneurial passion has a significant impact on persistence. Further, perceived economic benefits and sustainability mediate the relationship between entrepreneurial passion and persistence. Entrepreneurs with entrepreneurial passion are, therefore, more likely than others to recognize economic and ecological values engendered by the sharing activities. This further promotes continuous sharing behaviors. This study provides a starting point for investigating the anticipatory mechanism through which passion energizes persistence in micro-entrepreneurship in sharing economy. Finally, theoretical and practical implications are discussed.

Keywords: sharing economy; micro-entrepreneur; passion; value expectancy; persistence.

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1 Introduction

Triggered by the advancement of information technologies and the use of internet-facilitated sharing systems, a new business paradigm called sharing economy, has become a pervasive and increasingly important phenomenon (Belk, 2014). From the distribution perspective, the sharing economy provides a very direct way for individuals who have idle resources to start their own micro-businesses without changing their current lifestyles (Dredge and Gyimóthy, 2015; Zhu *et al.*, 2017). The sharing economy brings the romance of entrepreneurialism to the masses (Ravenelle, 2017). Airbnb, Uber, and TaskRabbit, which are prominent examples of the sharing economy, portray themselves as companies that are creating micro-entrepreneurs and expanding micro-enterprises (Kuhn and Maleki, 2017). For example, Uber describes its drivers as entrepreneurs “who do not work for Uber, but rather than with Uber” (Kuhn and Maleki, 2017). TaskRabbit paints itself as a platform through which Taskers can utilize their skills and free time to become micro-entrepreneurs and build their businesses (Ravenelle, 2017).

Compared with the traditional entrepreneurship, being one’s own boss in the context of sharing economy is a wise decision incurring little cost. Micro-business could be started without the need of investing a big amount of money, managing the back office, or quitting the current formal job (Ravenelle, 2017). The high level of autonomy and independence are the main characteristics of entrepreneurship in the context of sharing economy and also have been highlighted by platforms when convincing individuals to join. The low barriers to start or stop entrepreneurship and the freedom in the operating process are attractive for individuals who are curious about this new paradigm of business. But this flexibility creates a problem of randomness and brings a complication for keeping the micro-entrepreneurs active and persistent because micro-entrepreneurs at any time can choose to take other income-enhancement opportunities or simply stop utilizing the sharing platforms. Research on the rate of micro-entrepreneurs remaining active has revealed an increasingly falling trend and two-thirds drivers are inactive two years after starting on the Uber (Hall and Krueger, 2018). How to motivate micro-entrepreneurs to persist has become an important issue in the context of sharing economy.

Entrepreneurial passion can be defined as “consciously accessible, intense positive feelings experienced by engagement in entrepreneurial activities associated with roles that are meaningful and salient to the self-identity of the entrepreneur” (Cardon *et al.*, 2009, p.517). It has been suggested as a critical aspect of the entrepreneurial process since it can lead to many beneficial outcomes. Entrepreneurial passion can foster creativity (Cardon *et al.*, 2009), entrepreneurial efforts (Foo *et al.*, 2009), entrepreneurial intention (Biraglia and Kadile, 2017), and entrepreneurial efficacy (Murnieks *et al.*, 2014). More importantly, prior research has noted that entrepreneurial passion plays an important role in explaining why some entrepreneurs persist even when facing difficulties and setbacks (Cardon *et al.*, 2009; Utsch and Rauch, 2000). Cardon and Kirk (2015) have provided empirical evidence for the positive and significant effect of entrepreneurial passion on persistence. Despite the critical role of entrepreneurial passion in promoting persistence has been recognized, what occurs “in the middle” of the pathway through which passion influences persistence remains underexplored. Additionally, research has suggested that entrepreneurial behavior is a function of both feasibility and desirability (Fitzsimmons and Douglas, 2011), but most of the previous empirical studies concerning the mechanisms from entrepreneurial passion to behavior (Bao *et al.*, 2017; Biraglia and

Kadile, 2017; Cardon and Kirk, 2015; Murnieks *et al.*, 2014) (see Appendix) have focused on self-efficacy (Biraglia and Kadile, 2017; Murnieks *et al.*, 2014).

The question now is how the entrepreneurial passion ensures the continuous devotion to sharing-based micro-business. Despite the previous related studies bring several implications, they have not taken the characteristics of sharing economy into consideration. Past research on sharing economy mostly focuses on the demand side, exploring the customer's motivation of using the sharing service and its effect on behavioral intention (Barnes and Mattsson, 2017; Kuhn and Maleki, 2017; Mohlmann, 2015). Few have explored the behavioral process on the supply side and why individuals are motivated to share their properties. Research from the entrepreneurial perspective concerning why individuals intend to start their own micro-business on the sharing platforms is scarce. Hence, a more profound explanation of the mechanisms between passion and persistence in the context of sharing economy is of necessity.

This study, therefore, sets forth to investigate how entrepreneurial passion helps explain why micro-entrepreneurs persist even when they face various difficulties in the sharing economy context. Specifically, we integrate the social cognitive theory (SCT) (Bandura, 2012, 1986), and other extant entrepreneurial passion-related theoretical works (Bao *et al.*, 2017; Biraglia and Kadile, 2017; Cardon and Kirk, 2015; Cardon *et al.*, 2009; Drnovsek *et al.*, 2016; Mueller *et al.*, 2017; Murnieks *et al.*, 2014) to explore the facilitator of the relationship from entrepreneurial passion to persistence. According to SCT, outcome expectation is the factor that triggers a particular behavior. In the context of entrepreneurship, outcome expectation concerns with entrepreneur's value expectancy in the process of business creation. The level of expected value generated by the process influences the persistence of the entrepreneur.

To control the difference in research context, we focus on the P2P car-sharing scheme. P2P car-sharing has been touted as the most active and popular subset of sharing economy. This study provides important contributions to both the sharing economy and the entrepreneurship research. Specifically, it delves into the emerging stream of research concerning entrepreneurial passion and what acts as significant conduits of the entrepreneurial process. It develops a more intricate view of the triadic interactions among entrepreneurial passion, value expectancy, and entrepreneurial behavior. It also brings practical implications for managers or policymakers to motivate more individuals to share their properties with others.

The current study is structured as follows. The next section presents a theoretical framework extending the social cognitive theory. Next, hypotheses are formulated and a parsimonious conceptual model is proposed on the basis of the theoretical support of previous relevant literature. Then, the paper describes the research methodology and presents the results of measurement and structural model analyses. Finally, conclusions and discussion of findings are presented, followed by implications and limitations.

2 Theoretical background and hypotheses development

2.1 Social cognition theory and entrepreneurial behavior

Social cognition theory (SCT) provides a useful theoretical framework for understanding and predicting behavior (Bandura, 2012, 1986; Hmieleski and Baron, 2009; Zhu *et al.*, 2017). Based on SCT, human functioning has been depicted as a

product of the triadic bidirectional interaction of intrapersonal factors, individuals' behaviors, and the environmental inputs that affect them (Bandura, 2012). People as the subject of cognition and behavior are self-organizing, self-regulating, proactive and self-reflecting (Bandura, 1986). The human behavioral choice is a representation of an interplay among the intrapersonal factors, behavior, and environment.

Intrapersonal factors include emotions, expectations, beliefs, cognition competence, and physical characteristics, such as age, sex, education, and occupation (Biraglia and Kadile, 2017). They all play important roles in determining the behavioral decisions. According to Biraglia and Kadile (2017), entrepreneurial passion, as a kind of emotional state, is one of the intrapersonal factors within the SCT framework. Previous research has operationalized entrepreneurial passion into three components: (1) *passion for founding* that reflects the entrepreneur's passion for assembling the necessary resources to obtain a venture and establish the firm; (2) *passion for developing* that involves activities related to market nurturing; and (3) *passion for inventing* that concerns activities related to scanning, inventing, and exploring new development opportunities (Cardon *et al.*, 2009). In the context of P2P car sharing, customers are recommended by the platform to micro-entrepreneurs on the basis of the location and demand. Service process is relatively standardized resulting in entrepreneurial passions for developing and inventing are unessential. Therefore, our research focuses exclusively on the founding dimension and operationalizes "entrepreneurial passion" as "entrepreneurial passion for founding".

Moreover, outcome expectation has been verified as a relevant determinant for entrepreneurial decisions (Douglas and Shepherd, 2002; Holland, 2011). Based on SCT, outcome expectation, operationalized as value expectancy in this paper, is defined as the outcome that an individual expects engendered by particular actions (Compeau and Higgins, 1995). It indicates that individuals will perform specific acts if they are convinced that the actions can bring beneficial outcomes. In the context of sharing economy, research has found a wide range of motivations that drive individuals to make their possessions available for strangers. Individuals may be motivated by the economic benefits the sharing activities provide, including the monetary compensations when providing the sharing services, and reduced burden of ownership and the fixed carrying (Bucher *et al.*, 2016; Karlsson and Dolnicar, 2016). Starting micro-business on the sharing platform is deemed as beneficial to extend the social connections, which is often seen as an important motivation for individuals' sharing decisions (Bucher *et al.*, 2016). In addition, sharing solutions are generally believed to be advantageous to the environment because sharing helps maximize the usage of one single product entity (Botsman and Rogers, 2010a; Grybaitė and Stankevičienė, 2016; Lawson *et al.*, 2016; Mohlmann, 2015). Participation in sharing economy has been framed as a highly ecologically sustainable practice (Bardhi and Eckhardt, 2012; Botsman and Rogers, 2010a; Prothero *et al.*, 2011). In the current study, we suggest that the value expectancy brought by sharing activities will play an important motivational role in the micro-entrepreneurial process. The dimensions of value expectancy include perceived economic benefits, perceived social-hedonic benefits, and perceived sustainability (Bucher *et al.*, 2016; Hamari *et al.*, 2015).

Environmental inputs are external to the individual and can predict the behavior, including all the social and cultural related elements (Bandura, 1989). People interact themselves with the external world and be a part of the broader environment (Biraglia and Kadile, 2017). Social relationships are established as a result of exposure within a social setting, which are essential elements of the social environment in SCT (Bandura, 1991). When commercially sharing their possessions with others,

micro-entrepreneurs interact with the online platform and the customers directly. Boateng *et al.* (2016) note that trust is a critical issue when the social environment involving people and technology. Trust is a central determinant of individuals' entrepreneurial choices in sharing economy (Botsman and Rogers, 2010b). Furthermore, Barnett and Casper (2001) suggest that functioning infrastructure is an integral part of the social environment and it has an important effect on individuals' behavior. In this case, the sharing platform can be regarded as an essential component of the social environment. In light of the Technology Acceptance Model, ease of use of technology has a strong explanatory power in predicting users' intention to adopt the technology (Davis, 1989). In the current study, we suggest that the effort required by micro-entrepreneurs to use the sharing platform, namely technological ease of use, can affect their willingness to persist.

The behavioral component of the SCT involves the individuals' action or respond to the situation or object (Bandura, 1991). Research has indicated that persistence is a critical part of the entrepreneurial process and it deserves further examination (Shane *et al.*, 2003). We choose to follow previous scholarly studies in looking at entrepreneurial persistence as a complex behavioral decision that is driven by personal and environmental factors (Adomako *et al.*, 2016; Holland and Shepherd, 2013). It occurs when the micro-entrepreneurs continue sharing regardless of difficulties or impediments.

2.2 Hypotheses development

The literature on entrepreneurial passion has identified passion as a critical factor affecting the individuals' entrepreneurial behavior or decisions (Bao *et al.*, 2017; Collewaert *et al.*, 2016; Ma *et al.*, 2017; Murnieks *et al.*, 2014), such as enhancing entrepreneurs' belief in success (Murnieks *et al.*, 2014), and activating entrepreneurs' creative problem solving (Cardon *et al.*, 2009). Entrepreneurial persistence is a kind of behavior that is characterized by sustained goals pursuing. Prior research under firm context has suggested that entrepreneurial passion has a strong explanatory power for why entrepreneurs persist even when facing uncertainties (Cardon *et al.*, 2009). More recently, Cardon and Kirk (2015) provided empirical evidence for that entrepreneurial passion could improve entrepreneurs' persistence. Mueller *et al.* (2017) found that passion bore the strongest relevance to grit. But there is limited work to date directly verifying the link between passion for founding and entrepreneurial persistence in the context of sharing economy. The hypothesized positive effect of entrepreneurial passion on sharing persistence can be supported on the basis of the two dimensions of passion, including intense positive feelings and entrepreneurial role identities (Cardon and Kirk, 2015; Cardon *et al.*, 2009). First, passionate micro-entrepreneurs are more likely to continue their sharing activities because that individuals with a high level of positive affect associated with passion for founding are more perceptive toward positive information about the current entrepreneurial environment (Drnovsek *et al.*, 2016). The positive information conveyed through positive emotions facilitates behaviors such as engaging in self-development activities, capturing entrepreneurial opportunities, and spreading goodwill (Bao *et al.*, 2017; Forgas and George, 2001). Micro-entrepreneurs who experience positive affect when sharing idle resources are inclined to maintain their current state (Cardon and Kirk, 2015; Pham, 2004). They have no intention to change and thus more likely to share more. Second, previous research has noted that entrepreneurs tend to think about their role identity and act in ways to realize and protect their identity as an entrepreneur

(Cardon *et al.*, 2013; Gruber and Fauchart, 2011; Murnieks *et al.*, 2014). Individuals who attach importance to the founder identity of the micro-business show less behavioral randomness than those who are just curious about sharing economy. In this vein, when engagement in sharing activities invokes positive feelings and validates relevant self-identity, micro-entrepreneurs would tend to persist. On the basis of the above discourse, we propose the following hypothesis:

H1: Entrepreneurial passion is positively related to micro-entrepreneurs' persistence.

2.3 Passion-expectancy relationship

Based on *broaden-and-built theory* (Fredrickson, 1998), positive emotion, which associates with passion, expands the scope of ones' attention and cognition (Fredrickson and Branigan, 2005). Individuals who experience positive affect tend to notice a wider range of possibilities than those not experiencing (Baron *et al.*, 2012). They are more confident in obtaining beneficial outcomes even without visible path facilitating success, simply believing that expected outcomes would be worked out (Hmieleski and Baron, 2009). Thus, positive affect leads to more diverse, and favorable evaluations of objects or events than when in absence of such affect (Erez and Isen, 2002). This means that individuals are likely to evaluate expected outcomes more positively when they are immersed in positive feelings. Furthermore, the *feeling-as-information theory* can also pave foundations for the notion that entrepreneurial passion serves as an important antecedent of value expectancy (Schwarz and Clore, 2007). It indicates that individuals' judgments are congruent with feelings. For entrepreneurs, positive feelings may be interpreted as positive diagnostic information about the evaluation of starting a business and can result in spuriously positive judgments of their entrepreneurial ideas or activities. Therefore, we suggest that the cognitive context of sharing activities' beneficial outcomes would be perceived more favorable when individuals are passionate about starting micro-businesses through sharing platforms. Hence, we hypothesize:

H2a: Entrepreneurial passion is positively related to perceived economic benefits.

H2b: Entrepreneurial passion is positively related to perceived social-hedonic benefits.

H2c: Entrepreneurial passion is positively related to perceived sustainability.

2.4 Expectancy-persistence relationship

Research on entrepreneurship has provided various evidence for the impact of desirability or valence on entrepreneurial decisions (Krueger *et al.*, 2000). If individuals believe that their entrepreneurial activities can produce desirable outcomes, the likelihood of extending efforts will increase (Holland, 2011). Applying those conclusions to the persistence decision context, Holland (2011) found that perceived future financial returns, non-financial benefits, and switching costs had positive effects on the entrepreneurs' decisions to persist. Individuals may choose the actions on the basis of comparing the expected outcomes between an entrepreneurial opportunity and the next-best alternative option, abiding by the utility maximization principle. In the current study, we expect that micro-entrepreneurs would choose to persist with their micro-business when they believe that the sharing-based entrepreneurial activities would bring economic, social-hedonic, and ecological benefits. Therefore, we postulate the following hypotheses:

H3a: Perceived economic benefits is positively related to micro-entrepreneurs' persistence.

H3b: Perceived social-hedonic benefits is positively related to micro-entrepreneurs' persistence.

H3c: Perceived sustainability is positively related to micro-entrepreneurs' persistence.

2.5 Expectancy as a mediator in the passion-persistence relationship

Entrepreneurial research has proposed that the entrepreneurs' passion would lead to entrepreneurial behaviors through several mediators. Individuals who have a high level of passion about entrepreneurial activities may, or may not, start a business, depending on some facilitators or obstacles (Biraglia and Kadile, 2017). Bandura (1989) has suggested that the ability to envision future outcomes is an important way such that anticipatory mechanisms regulate actions and that individuals strive to obtain beneficial outcomes. Seo *et al.* (2004) also suggested that individuals in positive affective states are likely to make more favorable anticipatory judgments, which leads to a higher level of likelihood to sustain the current set of behavioral options. Accordingly, we suggest that micro-entrepreneurs' expected future beneficial outcomes from sharing activities would mediate the passion-to-persistence relationship. Passionate individuals are more likely than others to recognize the values generated by sharing activities, and ultimately, are more likely to persist. In this vein, we hypothesize:

H4a: Perceived economic benefits mediate the positive relationship between entrepreneurial passion and micro-entrepreneurs' persistence.

H4b: Perceived social-hedonic benefits mediate the positive relationship between entrepreneurial passion and micro-entrepreneurs' persistence.

H4c: Perceived sustainability mediates the positive relationship between entrepreneurial passion and micro-entrepreneurs' persistence.

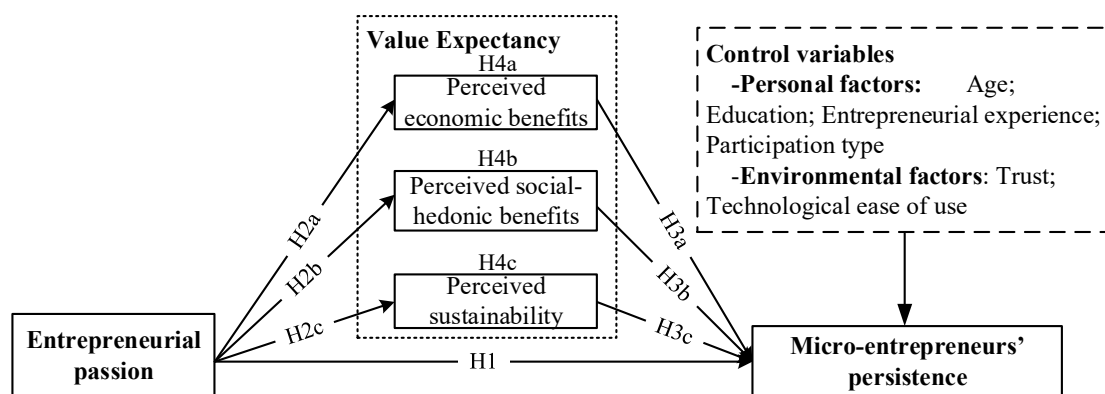
2.6 Control variables

The current study also includes a set of control variables to reduce the possible sources of variation and increase the explanatory power of the conceptual model. According to SCT, individuals' entrepreneurial choices are influenced by several personal and environmental factors (Biraglia and Kadile, 2017). In this context, we control for individual-level variables including age, level of education, entrepreneurial experience, and the participation type (full-time or part-time) of the micro-entrepreneur (Adomako *et al.*, 2016; Biraglia and Kadile, 2017; Fitzsimmons and Douglas, 2011). Age and level of education are controlled given that they are important indicators of one's cognitive resources which may affect entrepreneurial persistence (Adomako *et al.*, 2016; Cardon and Kirk, 2015). Entrepreneurial experience is included because that prior self-employment experience has been reported to positively relate with entrepreneurial intentions (Fitzsimmons and Douglas, 2011). Such experience has an effect on persistence decision since that experience in starting one's own business leads to a deeper understanding of the entrepreneurial process and experienced individuals are more capable in discerning whether to persist or not (Holland and Shepherd, 2013). Furthermore, in the context of sharing economy, individuals can get involved in a micro-business without having to quit the current jobs (Dredge and Gyimóthy, 2015). Some micro-entrepreneurs perform a full-time

participation, working more than 50 hours a week on the sharing platform, whereas others have professional jobs in addition to participating in sharing (Kuhn and Maleki, 2017). Such different types of participation represent different attitude toward and levels of effort injected into sharing-based entrepreneurial activities, which may influence the persistence decision. Environmental-level controlled variables include trust and technological ease of use, which have been discussed above.

On the basis of the theoretical framework and hypotheses discussed above, this paper proposes in Figure 1 a conceptual model to investigate the mediating role of value expectancy in the relationship between passion and persistence in the context of sharing economy.

Figure 1 Conceptual model and hypotheses



3 Methodology

3.1 Data Collection and Sample Description

We tested the hypotheses through the online survey method. All the measurement items were adapted from prior empirical studies and modified to match the sharing economy context. The level of agreement toward each item was rated on the basis of a 5-point Likert-type scale, ranging from 1 (strongly disagree) to 5 (strongly agree). We first designed the survey in English and then invited six doctoral and master students to do the work of translation and back-translation. After several rounds of comparison and modification, we designed the preliminary scale. Before the full-scale survey launch, two scholars specialized in entrepreneurship and five micro-entrepreneurs who had experience in commercially sharing their cars were invited to pretest the survey, evaluating both the content and language. According to the suggestions and remarks provided by the scholars and micro-entrepreneurs, we finalized the questionnaire.

For data collection, we chose DiDi platform (see www.didiglobal.com) as the SE context, specifically the services provided by DiDi Express, DiDi Premier, and DiDi Hitch. The reason for this selection is because DiDi is the world's leading mobile transportation platform and the most commonly used P2P car-sharing platform in China. Any private car owner who meets the qualifications specified by DiDi could

register to provide commercial sharing services with his or her own car via the DiDi platform. In order to recruit sufficient respondents, we joined multiple online communities of DiDi drivers on QQ (www.qq.com) and WeChat (www.wechat.com), and solicit their members to participate in a survey of providing car-sharing service with an invitation letter containing the website link of an online questionnaire. Both WeChat and QQ were selected because they are the largest two social network platforms in China, corresponding to Twitter in the US. With the automatic IP-checking feature, each respondent can only complete the questionnaire once at the same IP address.

At the front of the questionnaire, we asked each subject the number of times he or she have provided P2P car-sharing services during the past 6 months. The respondents were encouraged to fully complete the questionnaires with an incentive of 5 RMB. Those who did not meet the criterion of providing 6 times or more services, i.e., at least once a month, were disqualified from the survey. Over three weeks in December 2017, a total of 250 final usable questionnaires were collected.

The micro-entrepreneurs in this sample are mainly male (70%) due to the nature of the driving job. 54% of the participants are belonging to the age group ranging from 26 to 35 years and 34% are between 36 and 45. The highest educational degree held by respondents includes high school or less (N=70), 2-3 years of college (N=98), 4 years of college (N=81), and graduate school (N=1). Additionally, 14% of respondents have experience in owning his own business, and 19% participate in Didi as full-time workers.

3.2 Measures

Entrepreneurial passion. Items measuring entrepreneurial passion were adapted from Cardon *et al.* (2013). Micro-entrepreneurs were shown two subscales, consisting of 4 items. Positive feelings for sharing activities were measured using three items (i.e., Establishing micro-business through commercially sharing my car on Didi excites me; Owning my own micro-business through commercially sharing my car on Didi energizes me; Nurturing micro-business through commercially sharing my car on Didi is enjoyable). The identity centrality of the founder role of sharing-based micro-business was measured with one item such as “Being the founder of commercially sharing activities-based micro-business is an important part of who I want to be”.

Value expectancy. The items measuring value expectancy was designed based on the work of Compeau *et al.* (1999). Items measuring perceived economic and social-hedonic benefits were borrowed from Bucher *et al.* (2016) and Hamari *et al.* (2015). Our measure of perceived economic benefits included “[Commercially sharing a car on Didi will help to] earn extra money; supplement income; improve economic condition”. Perceived social-hedonic benefits were measured with three items (i.e., [Commercially sharing a car on Didi will help to] meet new people; meet like-minded people; gain fun). Perceived sustainability included three items from Hamari *et al.* (2015) and Lin and Hsu (2015), including “[Commercially sharing a car on Didi will help to] save natural resources; improve the efficiency of resource utilization; improve the current ecological situation”.

Micro-entrepreneurs’ persistence. Consistent with Adomako *et al.* (2016) and Cardon and Kirk (2015), persistence, in this context, was labeled as a variable

reflecting an individual's psychological tendency to persist. We used a measure of persistence as developed by Baum and Locke (2004). The measure consisted of three items, including "I'm intended to continue providing car-sharing services in Didi", "I can think of many times when I persist with sharing-based micro-business when others quit", and "I will not give up even when facing difficulties".

Control variables. Respondents were classified into four groups on the basis of age, 25 or younger, 26-35, 36-45, and 46 or older. Education was divided into four groups, high school or less, 2-3 years of college, 4 years of college, and graduate school. Following the prior research (Wu *et al.*, 2007), we coded, whether the micro-entrepreneurs had any previous experience in owning a business, whether they performed a full-time participation, as dichotomous with "1" as yes and "2" as no. Trust was measured using a scale adapted from Bhattacharjee (2002) and Chai *et al.* (2011), including three items (i.e., Didi provides a robust and safe environment in which I can provide the car-sharing services; The customers in Didi are truthful in dealing with one another; Overall, The platform and customers are trustworthy). We used a scale developed by Davis (1989) to measure technological ease of use. Respondents were shown three items, including "Learning to operate the Didi platform would be easy for me", "It would be easy for me to be skilled at using the Didi platform", and "I would find the Didi platform easy to use".

4 Results

According to the analysis procedure suggested by Anderson and Gerbing (1988), we tested the measurement model (reliability and validity) before examining the structural model (direct and indirect effects). Hypotheses were verified using the SmartPLS 3.0 software as well as the PROCESS macro in SPSS 20.0.

4.1 Measurement model

Reliability. We used Cronbach's alpha (α) and composite reliability (CR) to test the variables' reliability (Fornell and Larcker, 1981). As shown in Table 1, all the values of Cronbach's alpha are above the benchmark of 0.7. Composite reliability values range from 0.84 to 0.88, well above the cutoff value of 0.7. All these indicate that the measurement model in this context has a satisfactory internal reliability.

Convergent validity. We determined convergent validity through the average variance extracted (AVE) (Fornell and Larcker, 1981) and the factor loadings of the items (Anderson and Gerbing, 1988). The results (Table 1) validate that the AVE scores range from 0.61 to 0.72 and are greater than the threshold value of 0.5, and all the items loadings are higher than 0.6. Therefore, this context measurement model has an adequate convergent validity.

Discriminant validity. Hair *et al.* (2014) suggested that discriminant validity could be achieved if the measurable item's outer loading on its attributed construct is higher than all the loadings on other factors. Inspection of the results of cross-loadings (Table 1) shows that all the indicators load higher on their associated variables than on other constructs, exhibiting an acceptable discriminant validity.

Table 1 Reliability, convergent validity, and discriminant validity

Construct	Items	α	CR	AVE	1	2	3	4	5	6	7
1. Entrepreneurial passion	EP1				0.76	0.56	0.54	0.50	0.58	0.41	0.55
	EP2	0.79	0.86	0.61	0.84	0.56	0.61	0.47	0.60	0.47	0.60
	EP3				0.83	0.57	0.70	0.50	0.58	0.54	0.67
	EP4				0.69	0.54	0.50	0.45	0.64	0.32	0.50
2. Perceived economic benefits	PEB1				0.54	0.81	0.49	0.52	0.60	0.53	0.53
	PEB2	0.78	0.87	0.69	0.64	0.81	0.72	0.60	0.66	0.62	0.72
	PEB3				0.59	0.88	0.58	0.62	0.68	0.57	0.54
3. Perceived social-hedonic benefits	PSB1				0.44	0.40	0.71	0.46	0.36	0.58	0.58
	PSB2	0.73	0.84	0.64	0.68	0.76	0.83	0.58	0.74	0.68	0.74
	PSB3				0.64	0.51	0.85	0.52	0.55	0.58	0.71
4. Perceived sustainability	PS1				0.47	0.56	0.45	0.83	0.52	0.37	0.36
	PS2	0.80	0.88	0.72	0.57	0.60	0.61	0.83	0.57	0.58	0.59
	PS3				0.52	0.62	0.58	0.88	0.57	0.57	0.51
5. Persistence	PER1				0.59	0.60	0.50	0.49	0.83	0.39	0.56
	PER2	0.80	0.88	0.72	0.68	0.68	0.76	0.61	0.82	0.56	0.71
	PER3				0.66	0.69	0.55	0.54	0.89	0.46	0.61
6. Trust	TR1				0.37	0.47	0.58	0.47	0.29	0.76	0.49
	TR2	0.76	0.86	0.66	0.46	0.58	0.59	0.48	0.55	0.81	0.58
	TR3				0.51	0.62	0.71	0.53	0.46	0.87	0.60
7. Technological ease of use	TEU1				0.54	0.45	0.65	0.41	0.51	0.48	0.76
	TEU2	0.71	0.84	0.63	0.62	0.64	0.66	0.47	0.63	0.58	0.78
	TEU3				0.62	0.61	0.73	0.50	0.62	0.57	0.84

4.2 Structural Model

For assessing the direct path relationships in the structural model (Figure 2), we examined the standard beta via a bootstrapping procedure. The result indicates that entrepreneurial passion is positively related to persistence ($\beta = 0.25, p < 0.05$), which confirms H1. In terms of the relationships between founder passion and value expectancy, results show that entrepreneurial passion has significant relationships with perceived economic benefits ($\beta = 0.71, p < 0.01$), perceived social-hedonic benefits ($\beta = 0.76, p < 0.01$), and perceived sustainability ($\beta = 0.62, p < 0.01$), supporting H2a, H2b, and H2c. Similarly, perceived economic benefits ($\beta = 0.39, p < 0.01$) and perceived sustainability ($\beta = 0.13, p < 0.01$) are also positively associated with persistence, supporting H3a and H3c. Perceived social-hedonic benefits exert no significant effect on persistence ($\beta = 0.08, p = 0.41$); thus, H3b is not supported.

For assessing the hypothesized mediation effects, we performed a bootstrapping

procedure suggested by Preacher and Hayes (2008). Table 2 shows that the total indirect effect of entrepreneurial passion on persistence is significantly positive ($\beta = 0.35, SE = 0.08, 95\% C.I.[0.196, 0.51]$). Perceived economic benefits significantly mediate the relationship between founder passion and persistence, and H4a is supported ($\beta = 0.20, SE = 0.05, 95\% C.I.[0.09, 0.31]$). H4c which states that perceived sustainability mediates the passion-persistence relationship is supported since that the indirect effect of founder passion on persistence through perceived sustainability is indeed significant and positive ($\beta = 0.14, SE = 0.04, 95\% C.I.[0.07, 0.24]$). Finally, because no significant direct effect of perceived social-hedonic benefits on persistence was found, the mediated path from passion to persistence through perceived social-hedonic benefits gains no empirical evidence, thereby H4b is not confirmed ($\beta = 0.01, SE = 0.05, 95\% C.I.[-0.10, 0.11]$). The indirect effect of perceived economic benefits is significantly higher than that of perceived social-hedonic benefits in the relationship from passion to persistence ($\beta_{diff} = 0.19, SE = 0.08, 95\% C.I.[0.04, 0.34]$).

Six control variables have also been included in the structural model. Four personal-level variables have no significant effects on persistence. The environmental-level variable, namely technological ease of use, is positively associated with persistence ($\beta = 0.24, p < 0.01$). Conversely, the effect of trust on persistence is significantly negative ($\beta = -0.15, p < 0.01$). Table 2 summarizes all the hypotheses and the test results.

Figure 2 Structural model

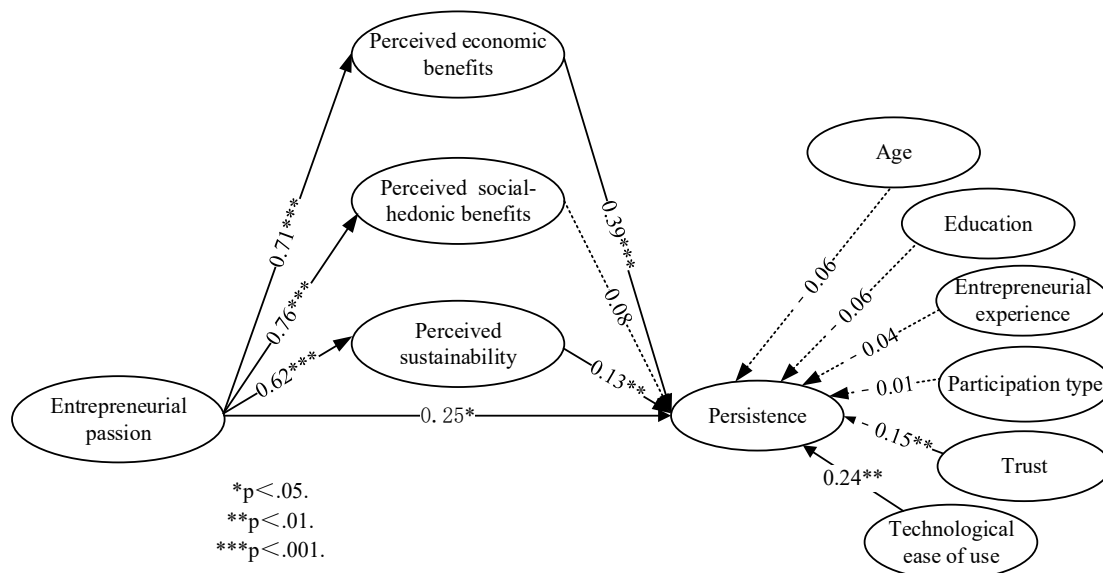


Table 2 Results of hypotheses testing and comparison of indirect effects

Hypotheses of Direct Effects		β	t-Value	p-Value
H1	Entrepreneurial passion → Persistence	0.25	2.48	0.014*

H2a	Entrepreneurial passion → Perceived economic benefits	0.71	13.89	0.000***	
H2b	Entrepreneurial passion → Perceived social-hedonic benefits	0.76	17.56	0.000***	
H2c	Entrepreneurial passion → Perceived sustainability	0.62	11.01	0.000***	
H3a	Perceived economic benefits → Persistence	0.39	5.24	0.000***	
H3b	Perceived social-hedonic benefits → Persistence	0.08	0.83	0.405	
H3c	Perceived sustainability → Persistence	0.13	2.84	0.005**	
Hypotheses of Indirect Effects		β	Boot SE	Boot LLCI	Boot ULCI
H4a	Entrepreneurial passion → Perceived economic benefits → Persistence	0.20	0.06	0.09	0.31
H4b	Entrepreneurial passion → Perceived social-hedonic benefits → Persistence	0.01	0.05	-0.10	0.11
H4c	Entrepreneurial passion → Perceived sustainability → Persistence	0.14	0.04	0.07	0.24
Total indirect effect		0.35	0.08	0.20	0.51
Comparison of Indirect Effects		β_{diff}	Boot SE	Boot LLCI	Boot ULCI
Path 1 verse Path 2		0.19	0.08	0.04	0.34
Path 1 verse Path 3		0.06	0.08	-0.10	0.20
Path 2 verse Path 3		0.13	0.07	-0.01	0.27

5 Conclusions and discussion

Although there is a growing focus on the role of entrepreneurial passion in the entrepreneurial process and the entrepreneurial passion has been recognized as a personal dimension construct (Biraglia and Kadile, 2017), there remain some underexplored questions concerning what role passion might play in the process of micro-entrepreneurship. Aiming to better understand the micro-entrepreneurs' continuous participation in sharing economy, the current study has limited the research context to P2P car sharing and examined the passion-based formation mechanism of entrepreneurial persistence under the framework of SCT. The findings have further confirmed the conclusions in previous studies and furnished strong evidence for new standpoints.

Regarding our hypothesis about the direct effect of entrepreneurial passion on persistence, the result supports the notion that individuals who are passionate about establishing their own micro-business are more likely to persist in sharing activities on sharing platforms. This finding is consistent with previous studies suggesting that passion plays an important role in motivating entrepreneurial intentions and behaviors (Bao *et al.*, 2017; Biraglia and Kadile, 2017; Murnieks *et al.*, 2014). Indeed, the firm-level conclusion from Cardon and Kirk (2015) indicates that there exists a significant relationship between passion for founding and behavioral persistence. In this study, we confirm the finding of this prior work in the context of sharing economy. We further validate the positive effect of passion on persistence in individual-level micro-entrepreneurship context. Passion can help to explain why micro-entrepreneurs persist even when there are fewer restrictive conditions that force them to persist, such as investing a lot of money in establishing a company or facing high opportunity costs like giving up a high-paying job. Being a participator in sharing economy, in which

there exists a wide array of opportunities to venture for profits, can help to transform the entrepreneurial passion into continuous sharing behaviors. Passion is an important indicator distinguishing individuals who decide to move ahead even when facing an immature sharing environment from those who are only curious about sharing economy (Cardon *et al.*, 2012; Cardon *et al.*, 2009; Thorgren and Wincent, 2013).

Regarding our hypotheses about the indirect effects of passion on entrepreneurial persistence, H2 and H4 are confirmed, and H3 is not. According to SCT, value expectancy plays an important role in shaping individuals' behavior (Bandura, 2012). The central role of goals which represent internal desired outcomes in the entrepreneurial process also has been well acknowledged (Austin and Vancouver, 1996). The mediating role of growth goals in the relationship from passion to venture's future growth has been examined in the work of Baum and Locke (2004). Drnovsek *et al.* (2016) focused on the level of goal challenge and commitment entrepreneurs have for different goals and found that goal commitment partially mediated the relationship between passion and venture growth. In the current study, we examine the mediation roles of micro-entrepreneurs' value expectancy for sharing activities, including perceived economic benefits, perceived social-hedonic benefits, and perceived sustainability. Results suggest that value expectancy for sharing activities serves as links connecting entrepreneurial passion and continuous sharing intention. Perceived economic benefits and sustainability are important aspects explain why passionate micro-entrepreneurs are more likely to persist in sharing with others. However, perceived social-hedonic benefits exert no mediation effect. Although passionate micro-entrepreneurs are more likely to perceive more social-hedonic benefits from sharing activities, this type of expectation might be ineffective in promoting persistence. This might be because that in the infancy of sharing economy, micro-entrepreneurs need more obvious benefits to gain more security when the market environment is problematic. Psychological social-hedonic satisfaction is not the main point for persistence at this stage.

Furthermore, this study has examined the relationships between two environmental variables (namely, technological ease of use and trust) and persistence. As expected, technological ease of use has a positive impact on micro-entrepreneurs' persistence in the context of sharing economy. Other studies focusing on different contexts have also verified the positive relationship between ease of use and individuals' technology adoption (Kim and Garrison, 2009; Sabah, 2016). This finding suggests that the provision of sharing technology in a convenient and user-friendly way is important to motivate micro-entrepreneurs to persist. Previous empirical evidence showed that trust was a critical concept in online business (Bashir and Madhavaiah, 2015). However, the result of the current study shows that the effect of trust on persistence turns out to be surprising. Although the t-value is significant, the standard beta comes out to be negative. The reason might be that micro-entrepreneurs do not have adequate trust in the car sharing platform and customers at this stage. Within P2P car sharing context, micro-entrepreneurs know little about the customers before, even after, providing the services. Few communications exist among them. Additionally, the operation rules of the platform are immature and changeable. All these might lead to relatively negative creditability judgment.

Furthermore, our findings are particularly important for researchers who study on entrepreneurship and sharing economy and managers of sharing platform and policymakers who are striving for incentivizing individuals to share their idle resources for ecological reason.

6 Practical and social implications

The explosion of sharing economy and its related interactive technologies have completely changed every aspect of our lives. It has transformed our way of consumption, offering opportunities for us to enjoy services without the burden of ownership. On the supply side, it makes individuals' sharing activities popular and every individual who has idle resources and the intention to share can act as micro-entrepreneurs to establish and run their own micro-business on sharing platforms. Through confirming the anticipatory mechanism of the entrepreneurial passion to persistence relationship, this study brings some practical implications. First, the mean of entrepreneurial passion (Mean=3.77) indicates that most of the individuals have a relatively high level of passion about establishing micro-business on sharing platforms. They hold a positive attitude toward sharing activities based micro-entrepreneurship. This helps to form an understanding of individuals' emotional reaction toward sharing economy on the distribution side across China recently.

Second, what this study has confirmed is that passionate micro-entrepreneurs are more likely to continue sharing activities, which brings implications for entrepreneurial educators, and managers of sharing platforms and the government policymakers. Educators should pay more attention to inducing micro-entrepreneurs to elicit their passion, or to discovering the aspects of sharing activities that would help individuals be more passionate toward establishing their own micro-businesses. Managers could identify the individuals who are passionate about entrepreneurial activities and recognize them as the lead participators in their sharing platforms.

Third, identifying the strong mediation dimensions of value expectancy might bring implications for managers or educators to design more effective incentives. Our results show that individuals with higher level of passion are more induced to recognize the economic and ecological values engendered by the sharing based entrepreneurial behaviors, which thereafter motivate persistence. And the economic expectancy is a relatively more important mechanism through which passion motivates persistence. That means managers should emphasize the economic value in the designed incentives and the entrepreneurial education in the context of sharing economy.

Finally, identifying that entrepreneurial passion and perceived economic and ecological value are important drivers for persistence in sharing activities affords micro-entrepreneurs opportunities to understand how to motivate themselves to continue their micro-businesses and make more contributions to the ecosystem through sharing more idle resources. It might be useful to nurture the positive feelings about micro-entrepreneurship; to enhance the perceived importance of being a micro-entrepreneur; and to consciously learn more about the economic and ecological benefits of sharing activities.

7 Limitations and future research

The current study has some limitations that offer recommendations for future research. From the perspective of methodology, there are two limitations. First, the sample is micro-entrepreneurs who have experience in providing P2P car sharing services in China and thus the conclusions may not be generalizable. The P2P car sharing activities based micro-entrepreneurship are different from the space-sharing based or

the traditional firm-based entrepreneurial behaviors. The proposed model and hypotheses could be empirically examined on other samples of entrepreneurs in other countries and contexts. Furthermore, the current study was conducted at the time that the China context of sharing economy was in its infancy. The conclusions serve to explain why micro-entrepreneurs are persisting even when they are performing in the immature environment. It would be beneficial to conduct ongoing studies to find out whether the reasons for persisting would change in a more mature market environment. Second, we labeled “persistence” as a psychological variable that assesses whether individuals has the personal inclination to persist through self-reporting. The actual persistence was not observed. Longitudinal research that takes this perspective into consideration would contribute to the reliability of research conclusions.

From the perspective of research boundary, there also exist some limitations. First, in the current study, we only focused on the relationship from passion for founding to persistence. The other two dimensions of entrepreneurial passion which were originally conceptualized by Cardon *et al.* (2013) have not been considered. Future research might extend these findings through examining how the other two dimensions relate to persistence in other contexts. For example, there are more possibilities for micro-entrepreneurs who act as hosts in Airbnb to perform the developer and inventor roles. An extended model could be examined with the Airbnb sample. And the mediation mechanism connecting passion and persistence might be different in the space-sharing context. The social-hedonic value may have more weight in this context. Second, this study looked solely at the direct and mediating effects in the passion-persistence relationship, leaving possible moderating effects unexplored. Future research might incorporate several moderating variables to examine moderated mediation effects on the relationship between passion and persistence, for example, the micro-entrepreneurs’ innovativeness, materialism, and altruistic and egoistic value orientations, among others. Third, possible antecedents of entrepreneurial passion also have not been considered in this study. Future studies could explore the formation mechanism of micro-entrepreneurs’ passion. Finally, this study confirmed the positive effect of passion on entrepreneurial behaviors. However, Baron *et al.* (2012) have noted that high level of passion might result in negative outcomes. A further study exploring the optimal level of entrepreneurial passion that provides positive behavioral outcomes is promising.

Despite these limitations, the present study remains one of the first to empirically examine the anticipatory mechanism in the pathway from passion to persistence under the context of sharing economy. Through testing the mediation effect of value expectancy on the passion-to-persistence relationship, this study may offer some insights into the effective ways of motivating passionate micro-entrepreneurs to persist in sharing economy.

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Appendix Summary of related empirical studies

Authors (year)	Sample (size) and method	Examined entrepreneurial passion-related path mechanisms
Bao <i>et al.</i> (2017)	Founders of new ventures in several software parks from China (195); Survey-based regression	Direct: Entrepreneurial passion->Entrepreneurial behaviors Indirect: Entrepreneurial passion->Opportunity recognition-> Entrepreneurial behaviors
Biraglia and Kadile (2017)	American Homebrewers (213); Survey-based structural equation modeling (SEM)	Direct: Entrepreneurial passion/Creativity-> Entrepreneurial intentions Indirect: Entrepreneurial passion/Creativity->self-efficiency->Entrepreneurial intentions
Mueller <i>et al.</i> (2017)	Entrepreneurs from a regional research university (204); Survey-based path analysis modeling	Indirect: Passion->Locomotion/Assessment->Grit->Performance
Drnovsek <i>et al.</i> (2016)	Founder CEOs of high technology manufacturing ventures in Midwestern U.S. states (122); Survey and archival-based path analysis	Direct: Passion for developing->Venture growth Indirect: Passion for developing->Goal commitment->Venture growth
Cardon and Kirk (2015)	Founder entrepreneurs from the Dun and Bradstreet Selectory database (129); Survey-based regression	Direct: Entrepreneurial self-efficacy->Entrepreneurial persistence Indirect: Entrepreneurial self-efficacy->Entrepreneurial passion for inventing /Entrepreneurial passion for founding -> Entrepreneurial persistence
Dalborg and Wincent (2014)	Business Partners of Swedish government-owned organization, Almi (103); Survey-based regression	Direct: Pull entrepreneurship->Self-efficacy Indirect: Pull entrepreneurship->Self-efficacy->Harmonious passion
Ma <i>et al.</i> (2017)	Entrepreneurs of new ventures from the Yangtze River Delta in China (154); Survey-based regression	Direct: Entrepreneurs' passion->New venture performance Indirect: Entrepreneurs' passion->Organizational innovation->New venture performance (This indirect effect is further moderated by entrepreneurs' Zhong-Yong thinking)
Murnieks <i>et al.</i> (2014)	Entrepreneurs in the field for a large metropolitan area in the Midwestern United States (221); Survey-based SEM	Direct: Entrepreneurial identity centrality->Entrepreneurs' passion; Entrepreneurs' passion->Entrepreneurial self-efficacy/Entrepreneurs' behavior