

**USER ENTREPRENEURS' MULTIPLE IDENTITIES AND CROWDFUNDING  
PERFORMANCE: EFFECTS THROUGH PRODUCT INNOVATIVENESS,  
PERCEIVED PASSION, AND NEED SIMILARITY**

Pyayt P. Oo<sup>1</sup>, Thomas H. Allison<sup>2\*</sup>, Arvin Sahaym<sup>2</sup>, Sakdipon Juasrikul<sup>3</sup>

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<sup>1</sup>Department of Entrepreneurship, College of Business Administration, Central Michigan University, Mt. Pleasant, MI 48859, United States

<sup>2</sup>Department of Management, Information Systems, and Entrepreneurship, Carson College of Business, Washington State University, Pullman, WA 99164, United States

<sup>3</sup>School of Business and College of Entrepreneurship, University of the Thai Chamber of Commerce, Din Daeng Bangkok 10400, Thailand

E-mail addresses: [oolp@cmich.edu](mailto:oolp@cmich.edu) (P.P. Oo), [thomas.allison@wsu.edu](mailto:thomas.allison@wsu.edu) (T. H. Allison), [arvin@wsu.edu](mailto:arvin@wsu.edu) (A. Sahaym), [sakdipon\\_jua@utcc.ac.th](mailto:sakdipon_jua@utcc.ac.th) (S. Juasrikul)

\*Corresponding author. Tel: +1 (509) 335-9807 Fax: +1 (509) 335-5339

## ABSTRACT

This study examines the performance of user entrepreneurs in acquiring financial resources via crowdfunding. User entrepreneurs are thought to have better performance than non-user entrepreneurs, but the theoretical underpinnings of these differences are unclear. We propose a baseline hypothesis that claims of user entrepreneurship serve as a signal of capability and commitment to potential backers. In addition, building on three distinct identities of user entrepreneurs, we argue that user entrepreneurs' perceived passion, product innovativeness, and need similarity with potential backers mediate the relationship between user entrepreneurship and crowdfunding performance. Our results from a field study using a sample of crowdfunded ventures support these assertions. We validate these results and measures using both survey and experimental methods. This is one of the first studies to develop a multi-theoretical framework for user entrepreneurship, and the first to provide an underlying theoretical explanation for the superior crowdfunding performance of user entrepreneurs.

*Keywords:* user entrepreneur; user innovator; crowdfunding; product innovation; identity theory; social identity theory; passion

*Dropbox was born out of personal frustration...I forgot my thumb drive  
... I was really just kind of sitting there sulking, and then I was like,  
alright, fine, I'm going to solve this problem for myself.  
- Drew Houston, Founder & CEO, Dropbox Inc.*

### 1. Executive Summary

User entrepreneurs start their entrepreneurial journey by solving their own problems, developing products in response to their own needs (Shah and Tripsas, 2007). User entrepreneurs seem to be more likely to succeed, however, we know very little about how ventures started by user entrepreneurs differ from those of non-user entrepreneurs. As most early-stage entrepreneurs have limited financial capital (Amit et al., 1990), one way to assess whether user entrepreneurs have different performance outcomes than non-user entrepreneurs is to examine differences in the financial resource acquisition performance between the two groups. In recent years, crowdfunding has emerged as an online platform that entrepreneurs can use to raise financial capital (McKenny et al., 2017). Given the growing importance of crowdfunding, we develop a model of how user entrepreneurship influences crowdfunding performance.

We suggest that user entrepreneurs' performance can be understood as the result of the expression of identity by user innovators who go on to become user entrepreneurs (e.g., Franke et al., 2006). This expression occurs through three complementary theoretical mechanisms: lead-user theory, identity theory, and social identity theory. The identity of a lead-user is that of an innovator, a pioneer (e.g., von Hippel, 2005). They are users that create innovations to solve personal needs. When these innovative solutions also prove to be valued by others, such that they form entrepreneurial opportunities, the salience of the entrepreneur's role identity as a user is increased, leading them to be more confident and passionate about their creation. Finally, identity also influences the user entrepreneur's embeddedness in a community. User innovators are by definition part of a community, fostering a group identity. This shared, social identity, in turn helps attract early supporters.

In our model, we suggest that user entrepreneurs will tend to be viewed as offering more innovative products, as more passionate about their venture, and as fulfilling unmet shared needs resulting in group-based identity. In a study of crowdfunded ventures that present a user identity versus those that do not, we find broad support for this model and these predictions. We supplement our data with a survey, as well as an experiment. Our results support our conceptual model that perceived entrepreneurial passion, product innovativeness, and need similarity complementarily mediate the relationship between identifying as a user entrepreneur and crowdfunding performance.

## **2. Introduction**

User entrepreneurs create and commercialize innovative products in response to their own needs (Shah and Tripsas, 2007). Ventures founded by user entrepreneurs number 10.7 percent of U.S. startups (Shah et al., 2012). Recent research suggests that innovation by users is

very common, with users increasingly becoming the creators of new products (Franke et al., 2016; Moreau et al., 2018). There are numerous examples of firms founded by user entrepreneurs: Dropbox Inc., the cloud storage service, emerged out of the frustration that its founder faced from forgetting a thumb drive with critical files (Houston, 2014). Similarly, Matt Mogol created Kid Lid initially for personal use – his young daughter was banging on his laptop keyboard while watching videos (Kid Lid, 2014). Though both these projects highlight the phenomenon of user entrepreneurship, there is a major difference in the way they sought funding for growth. Dropbox used the traditional “seed capital to venture capital funding” model, whereas Kid Lid raised financial capital through a crowdfunding campaign. This anecdote is representative of the increasing importance of crowdfunding as a source of financial capital (McKenny et al., 2017). In this study, we examine the relationships between user entrepreneurs’ unique attributes and capabilities and crowdfunding performance.

User entrepreneurship is a phenomenon where products initially developed for personal use are commercialized and offered to the market (Shah and Tripsas, 2012). Although user entrepreneurship has become an important source of entrepreneurship (Shah and Tripsas, 2007), research on the topic is still in its infancy. We know little about user entrepreneurs’ ventures, their performance, or the drivers of user entrepreneur-founded venture performance relative to those founded by non-user entrepreneurs. One prior study suggests that ventures founded by user entrepreneurs have a higher survival rate than ventures founded by non-user entrepreneurs (Shah et al., 2012). However, this result has not been followed-up on. More research on this phenomenon is needed (Shepherd et al., 2015; Shepherd and Patzelt, 2017).

To fill this gap, we examine the financial resource acquisition performance of user entrepreneurs in the growing phenomenon of crowdfunding (e.g. Allison et al., 2015; Short et al.,

2017). We examine whether user entrepreneurs are more successful in raising financial capital through crowdfunding than non-user entrepreneurs. We build on three unique identities of user entrepreneurs to develop a model of performance differences between user and non-user entrepreneurs. Our baseline hypothesis is that claiming to be a user entrepreneur may serve as a signal of quality (e.g., Connelly et al., 2011; Spence, 1973). We examine the entrepreneurial and venture differences that underlie this signal. Drawing on a complementary set of theoretical perspectives: lead-user, identity, and social identity theories, we identify three mechanisms as to why and how user entrepreneurs are more likely to be successful in crowdfunding. We test and find support for these three mediation relationships using field data from crowdfunding campaigns, complemented by a survey and an experiment.

We make three contributions. First, we provide evidence of the differences in quality that underlie and validate the value of an entrepreneur-claimed signal. Using multiple methods, we show that the signaling value of claiming to be a user entrepreneur is backed-up by apparent differences in innovativeness. We address the call by scholars to examine the phenomena of user entrepreneurship (Shah et al., 2012; Shepherd et al., 2015) and contribute to user innovation (e.g., Franke et al., 2010) and crowdfunding research streams. Second, we suggest that the better performance of user entrepreneurs is explained and predicted by three complementary theories, each of which is related through user entrepreneur identities. By explaining differences in the ability to discover opportunities, the innovativeness of developed solutions, and ability to acquire resources and orchestrate the venture (Shane and Venkataraman, 2000), these complementary theories provide a coherent explanation for superior performance. Through this contribution, we validate the premise that the use of multiple theoretical perspectives from other disciplines represents the most fruitful avenue to future crowdfunding research (McKenny et al., 2017).

Third, as a contribution to research on entrepreneurial passion (e.g., Murnieks et al., 2014), we show how perceived entrepreneurial passion may serve as a mediating mechanism in crowdfunding. In integrating social identity theory, we also suggest that an important motive for crowdfunding may be the desire to support a person who is in a shared social group.

### **3. User Entrepreneurship: Theoretical Background**

Individuals have different motivations for engaging in entrepreneurial activities (Birley and Westhead, 1994; Carter et al., 2003). In addition to the long-recognized motivators of opportunity and necessity, entrepreneurs can also be driven by their own personal need for a product or service (Shah et al., 2012). This phenomenon is known as user entrepreneurship (Shah and Tripsas, 2007, 2012). User entrepreneurship builds on the insight that users are prominent sources of innovation and improvement (Baldwin and von Hippel, 2011; von Hippel, 1986).

In user entrepreneurship, innovative users become entrepreneurs after seeing the potential of their innovation (Shah and Tripsas, 2007). Users play a critical role in innovations across industries, including sports equipment, software, medical devices, scientific instruments, software, and children's products (Shah and Tripsas, 2007, 2012; von Hippel, 2005). Prior research has acknowledged the role of users as innovators who contribute to or modify a commercial product (Bogers et al., 2010; Schilling and Hill, 1998). User innovators often become user entrepreneurs when a solution to a need-based problem is recognized as an opportunity based on signals of interest from other users (e.g., Shah and Tripsas, 2007). Recent work has suggested that users not only contribute innovations, but also engage in opportunity recognition and opportunity exploitation (e.g., Baldwin et al., 2006; Franke and Shah, 2003).

In addition to contributing to the recognition of user entrepreneurship as a phenomenon, this insight also suggests a definition for user entrepreneurship: "*the commercialization of a new*

*product and/or service by an individual or groups of individuals who are also innovative users of that product and/or service”* (Shah and Tripsas, 2007). This definition serves to distinguish user innovation from the distinct phenomenon of user entrepreneurship. It also distinguishes user entrepreneurs from non-user entrepreneurs on the basis of whether the opportunity exploited is discovered through personal need and then subsequently commercialized for use by others<sup>1</sup>.

Prior research has suggested that user entrepreneurs may have performance advantages over non-user entrepreneurs (e.g., Shah et al., 2012). Yet, the reasons why this would be are not clear. Below, we consider and develop potential predictive frameworks for explaining resource acquisition performance differences between user and non-user entrepreneurs in the novel context of crowdfunding. We start with a theoretical explanation on why being seen as a user entrepreneur has an important influence on funding performance. Then, we explore theoretical mechanisms that explain how and why user entrepreneurs raise more money.

## **4. Hypothesis Development**

### **4.1. Claims of User Entrepreneurship as Signal**

Claiming to be a user entrepreneur, like other human capital attributes, may serve as a signal of venture quality (e.g., Plummer et al., 2016). Our assertion is based on three arguments. First, ventures founded by user entrepreneurs have lead user attributes. Entrepreneurs with lead user attributes are better in opportunity evaluation for their entrepreneur action (Autio et al., 2013). Such ventures are more likely to succeed, because the user entrepreneurial process starts with users trying to meet specific unmet needs and deliberating on recombinations that could

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<sup>1</sup> Non-user entrepreneurs may eventually use their product. Indeed, as founders/managers they almost certainly will do so in their role as their venture’s chief salesperson and exponent. The pivotal difference between user and non-user entrepreneurs is in the locus of the opportunity, **as reflected in the entrepreneurial narrative**. Were they primarily trying to solve a personal problem through developing the product for their own use and then saw an opportunity to serve others? Or, did they first see a market opportunity to serve others, and only later adopt the product/service while they worked to develop and sell the product?

help meet their needs (Shah and Tripsas, 2007). Users frequently interact and share knowledge with communities of other users who have similar needs and face similar issues with existing products. The result is a credible signal that user entrepreneurs' new innovative products have been tested with actual users before being commercially launched, reducing uncertainty. Second, user entrepreneurs possess a unique and private knowledge of the market and its needs (Shah and Tripsas, 2012). They are more likely to understand the needs of users as they themselves began as users. This unique knowledge of needs is tacit, which is "sticky" and difficult to transfer, as well as costly to engage and use (von Hippel, 2005). Third, user entrepreneurs generally target niche market segments and enter an industry "under the radar" of incumbent firms (Haefliger et al., 2010). Altogether, to claim that one is a user entrepreneur is to claim that you are embedded in a market, possesses some unique knowledge, and have greater access to valuable information and resources. Thus, entrepreneurs who signal user entrepreneurship on their crowdfunding campaign page are more likely to be funded. Consequently, we use the direct effect of signaling as a baseline hypothesis. Formally:

*Baseline Hypothesis.* Entrepreneurs who describe themselves as user entrepreneurs signal quality, resulting in greater crowdfunding performance.

#### **4.2. Mediating Mechanisms**

The user entrepreneurship process starts from unmet needs (Shah and Tripsas, 2007). This process imbues those driven by the quest to solve a personal problem with a product and fulfill users' personal needs with positive feelings such as meaning and enjoyment, as they produce *innovative* products which are central to their "*self*" (Stock et al., 2014) and their *community* (Ranfagni and Runfola, 2018). Because of their unique entrepreneurial process, user entrepreneurs have diverse identities that other entrepreneurs do not usually possess. Prior



literature on user innovation and entrepreneurship also collectively suggests users' entrepreneurial process is tied to three identities – innovator (Bogers et al., 2010), user (Shah and Tripsas, 2007), and community member (Ranfagni and Runfola, 2018) surrounding the product that they invent. Thus, user entrepreneurs' performance can be understood as the result of the expression of identity by user innovators who go on to become user entrepreneurs. If the entrepreneur proceeds along an entrepreneurial path, their role identity as a user may make them uniquely passionate about their innovation. Their shared group identity with other users in the community may help them gather backers. Indeed, a recent study that analyzed Italian food bloggers argues that user entrepreneurs develop innovative products with passion and willingness to share their innovation within the community (Cuomo et al., 2017).

To date, no single existing theory can adequately explain the superior performance of user entrepreneurs in crowdfunding. However, there is a set of complementary theories that are all linked by identity. Lead user theory supports user entrepreneurs' identity as an innovator; role identity theory supports user entrepreneurs' passionate desire to solve their self-needs and to use the product as a user; social identity theory supports user entrepreneurs' connective identity as a community member. The integration of theories helps us explain how the user entrepreneurship process drives individuals to focus on certain innovations in view of their role and group identities associated with the project. As we develop arguments delineating mediation mechanisms, we go into the details of how these manifest in the project: user's creative development of a product that starts meeting individual needs is seen as user innovation, role identity is reflected in entrepreneurial passion toward that product, and group identity is visible in shared needs with potential funders. In short, we propose a theoretical model that product innovativeness, perceived entrepreneurial passion, and need similarity serve as mechanisms in

the relationship between user entrepreneurship and crowdfunding performance. As we shall see, it is these effects of actually being a user entrepreneur which give the signal of claiming to be a user entrepreneur positive value.

#### **4.2.1. Product Innovativeness and Lead-User Theory**

User entrepreneurship is a phenomenon that grew out of the user innovation literature (Agarwal and Shah, 2014). Users have become a major source of innovation for business (von Hippel, 1986). Frustration with their problems, and the need for tailored products, motivate users to engage in innovation (von Hippel, 2005). User innovators are ahead of the market trend, since they have a high personal need for innovations that also have high value to others (cf. von Hippel, 1986). Based on lead-user theory and the prior user innovation literature (Franke et al., 2006b; Urban and von Hippel, 1988), we propose that user entrepreneurs will tend to develop more innovative products than those developed by non-user entrepreneurs. This tends to occur because of better problem-solution alignment and greater community embeddedness.

First, product innovation is associated with both ‘need knowledge’ and ‘solution knowledge’ (Poetz and Schreier, 2012). User entrepreneurs have unique knowledge about the need for a product. They are also knowledgeable of potential solutions (Lüthje et al., 2005). In contrast, non-users may not identify the problem/need (Smith and Shah, 2013). Because of this unique knowledge, user entrepreneurs tend to identify more innovative market opportunities, which are nevertheless strongly aligned with customers’ needs (Prandelli et al., 2016). Indeed, users generate more novel product ideas, with higher use values, compared to those generated by traditional manufacturers (i.e., non-user entrepreneurs; Magnusson, 2009; Magnusson et al., 2003). Overall, lead-user theory suggests that it takes a knowledge of both need and solution to develop innovative products (cf. Schweisfurth, 2017).

Second, unlike non-user entrepreneurs, most users are embedded in a community of other users, with a shared identity (Shah and Tripsas, 2007). As a result, user entrepreneurs are able to benefit from other users in the community when seeking to implement their ideas into new products. This cooperative effort, in which the heterogeneous knowledge of the user entrepreneur and the user community is combined, allows the community of users to provide innovation-related assistance; the result of this assistance tends to be the addition of innovative new features (Frank and Shah, 2003). Embeddedness in a user community is a distinct characteristic which sets user entrepreneurs apart from non-user entrepreneurs. Non-user entrepreneurs usually do not have community embeddedness and limited access to diverse variety of information from the user community than user entrepreneurs do (Katila et al., 2017). Since innovative ideas often emerge from a collative work from diverse inputs (Shah and Tripsas, 2007), non-user entrepreneurs' product would be less innovative compared to user entrepreneurs' product. Therefore, building on prior literature in user innovation and using lead-user theory, we propose that the user entrepreneurs develop more innovative products compared to the non-user entrepreneurs. Formally:

*Hypothesis 1a.* User entrepreneurship is positively associated with product innovativeness.

#### **4.2.2. Product Innovativeness and Crowdfunding Performance**

Investors have long prized startups for their ability to innovate (e.g., Baum and Silverman, 2004). In ventures funded by traditional investors, angels and venture capitalists judge whether an innovation is substantial enough to overcome adoption hurdles and whether the technology underlying the innovation is strong enough to be delivered to customers in volume without mistakes that might damage or destroy the startup (e.g., Baum and Silverman, 2004). We

suggest that crowdfunding backers will, like traditional investors, be more likely to fund the development of higher innovation products, relative to lower innovation products.

Like traditional investors, crowdfunding backers stand to lose if they personally fund products that are not innovative enough to overcome adoption hurdles. The chance of crowdfunding success for less innovative products would be low since the premise of crowdfunding is to support creativity and innovation (Kuppuswamy and Bayus, 2018). They also stand to lose if they fund innovative products where the technology is not developed or mature enough to work outside the lab. This occurs because in the most widespread model of crowdfunding, rewards-based crowdfunding, funders are purchasing the innovative product itself as a part of the crowdfunding campaign (Short et al., 2017). Indeed, the literature suggests that one of the key attributes crowdfunding backers look for is product creativity (e.g., Davis et al., 2017; Lukkarinen et al., 2016). One key reason for this is that such products are more likely to be worth the risk the backer is taking. While crowdfunding backers take risks that are smaller than those undertaken by traditional investors, an effect should remain, even if it is smaller in magnitude. Since the majority of crowdfunding backers receive a reward, this suggests product innovativeness will be positively related to funding performance, among all crowdfunding campaigns that offer such rewards.

Even for campaigns without rewards, however, backers may still prize innovative ideas. According to Kickstarter, one of the largest crowdfunding websites, many crowdfunders support a project explicitly because they are inspired by an innovative idea. This parallels earlier research on traditional investors. That work suggested that some investors fund innovative new ventures out of a sense of excitement for new technologies (Sullivan and Miller, 1996). These investors want to help bring an exciting idea to fruition. We propose that the same dynamic occurs with

crowdfunding backers, who want to see an innovative new product created. Thus, product innovativeness will be positively related to funding performance. Formally:

*Hypothesis 1b.* Product innovativeness is positively associated with crowdfunding performance.

#### **4.2.3. Indirect Effect of Product Innovativeness**

So far, we have hypothesized that user entrepreneurs tend to develop more innovative products, and that product innovativeness is positively related to fundraising performance. We also laid out a baseline hypothesis that user entrepreneurship signals quality, resulting in greater fundraising performance. In addition to these relationships, we suggest that user entrepreneurship also has an indirect positive effect on fundraising performance via innovativeness. We expect this mediating effect because all honest signals of quality have a basis in the actual quality of the signaler (e.g., Busenitz et al., 2005). Quality signals refer “to the underlying, unobservable ability of the signaler to fulfill the needs or demands of an outsider observing the signal.” (Connelly et al., 2011). One way in which user entrepreneurs fulfill the needs of their crowdfunding backers is through greater innovativeness. Drawing on lead-user theory, a long tradition of literature on user innovation asserts that users develop innovative products (Franke et al., 2008; Franke and Piller, 2004; Urban and von Hippel, 1988). Indeed, users develop about 80 percent of the most innovative scientific instruments (von Hippel, 1976). In contrast, restricted access and lack of unique knowledge from a system-of-use perspective often limits non-user entrepreneurs’ innovativeness.

From the lead-user perspective, there are three theoretical reasons why user entrepreneurs’ products are more innovative products than those introduced by non-user entrepreneurs (e.g., Franke et al., 2008). First, user entrepreneurs have a high personal need for

innovation. Since they are personally frustrated with their own problems, they have the capability and the desire to develop novel solutions (Franke et al., 2008). Second, they are ahead of the market trend. They face personal needs and solve the problem earlier than other average users of the product (Schreier and Prugl, 2008). Thus, their innovative product can capture other users' attention before non-user entrepreneurs could even identify the opportunity. Third, since user entrepreneurs are surrounded by other users in the community (Shah and Tripsas, 2007), the user community can support their innovative activities (Franke et al., 2008; Franke and Shah, 2003). Therefore, user entrepreneurs can take advantage of other user's knowledge even in the stage of early product development, get feedback on their early prototype, and modify it to meet the needs of their customers. This will result in more innovative products. These more innovative products tend to be more attractive to crowdfunding backers because they generate more community excitement, and offer greater utility (e.g., Davis et al., 2017; Lukkarinen et al., 2016; Short et al., 2017). As such, product innovativeness mediates the relationship between user entrepreneurship and crowdfunding performance. Formally:

*Hypothesis 1c.* Product innovativeness mediates the relationship between user entrepreneurship and crowdfunding performance.

#### **4.2.4. Perceived Passion and Identity Theory: Role-Based Identities**

The literature suggests that user entrepreneurs display features different from those seen in non-user entrepreneurs (e.g., Shah and Tripsas, 2012). In addition to greater innovation, user entrepreneurs also tend to display excitement and experience enjoyment as they create innovative products inspired by personal experience (Stock et al., 2014). Theory – identity theory – suggests that this is the result of such individuals finding meaning and strong fulfillment in a role identity (Burke, 2006; Stryker and Burke, 2000).

Passion “is aroused not because some entrepreneurs are inherently disposed to such feelings but, rather, because they are engaged in something that relates to a meaningful and salient self-identity for them.” (Cardon et al., 2009b). Individuals are more passionate when they are performing roles with which they identify (Murnieks et al., 2014). This is the concept of role-based identity (Stets and Burke, 2000). These role-based identities are acquired through the process of *identification* (McCall and Simmons, 1978).

The process of identification results in role-based identity when an individual finds self-meaning in a role, such as that of inventor, founder, or developer (Cardon et al., 2009b). When the attributes of that role are sufficiently meaningful to the individual, the person may come to view that role identity as important, perhaps central, to their self (Stryker and Burke, 2000). Role identities are pluralistic; people serve in multiple socially defined roles simultaneously (parent, child, partner; teacher, engineer, entrepreneur; client, patient, prisoner; see Burke and Stets, 2009). Given this, those roles that a person views as most salient and central can be expected to have special influence in that person’s actions (Cardon et al., 2009b).

“Identities are a source of motivation for actions that result in social validation of self-meaning... [t]his distinctive and salient role identity motivates entrepreneurs to engage in certain activities (and disengage from others) and explains the affective experience that this engagement invokes.” (Cardon et al., 2009b). These affect experiences are positive, because action that validates a salient identity results in positive emotions (Burke and Reitzes, 1991). It is in this way that entrepreneurial passion arises: “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., 2009b).

As discussed in section 4.2.1, user entrepreneurs are innovators and inventors (e.g., Magnusson et al., 2003). Thus, we can conceptualize the entrepreneurial passion experienced by user entrepreneurs as arising from the inventor role identity described by Cardon and colleagues (2009b). The products invented by user entrepreneurs have a central role in their lives, as the product is developed to solve a problem encountered by the person in some other meaningful role they play in life. Thus, in the venture of a user entrepreneur, there is an intersection between two meaningful identity – the role-based identity in which they identified the problem, and the inventor/entrepreneur identity in which they solved the problem. With user entrepreneurs, the intersection of these identities is harmonious and constructive, because actions taken will tend to be congruent with both identities (Cardon et al., 2009b). Combinations of positively-interacting identities may result in more harmonious passion (Cardon et al., 2009b). This intersection of roles creates the potential for greater satisfaction and commitment in each role identity.

The positive emotions that result in entrepreneurial passion that can be perceived by others arise when a person's actions support and develop their role-based identity: "activities are tagged with positive emotions, motivational resources are bolstered, and these associative links are stored in memory for later retrieval," (Cardon et al., 2009b). The reverse is also true – which is why some entrepreneurs like to found ventures, then quickly lose interest; others invent, but fail to marshal personal interest into commercializing the idea (Cardon et al., 2009b). The same should be assumed among user entrepreneurs. Because they are involved in work that validates and burnishes their role identity, they will tend to display passion about their user-developed innovation. Although non-user entrepreneurs may also have passion, their narrative does not originate from their role identities which will result in lower passion, since passion reflects the



identity of the entrepreneur (Murnieks et al., 2016). Thus, non-user entrepreneurs display lower passion versus user entrepreneurs. Formally:

*Hypothesis 2a.* User entrepreneurs are perceived to have higher levels of entrepreneurial passion.

#### **4.2.5. Perceived Entrepreneurial Passion and Crowdfunding**

Passionate people love to pursue their own dreams; thus, passion plays a key role in entrepreneurship (Smilor, 1997). Social psychologists describe passion as a motivational construct and categorize passion as affective, cognitive, or behavioral (Chen et al., 2009). Passion is linked to opportunity recognition and exploitation (Shane et al., 2003).

Entrepreneurs seeking funds through crowdfunding typically post a videotaped funding pitch. This video plays a critical role. We suggest that a video gives entrepreneurs an opportunity to demonstrate passion to funders. Using the persuasion process from the social psychology literature as the theoretical argument, prior work has determined that perceived entrepreneurial passion improves entrepreneurial resource acquisition from angel investors (Mittens et al., 2012) – but not, however, from venture capitalists (Chen et al., 2009). While investors in more formalized contexts, such as venture capital, do not tend to be moved by passion, less formal and earlier-stage investors – such as angels – may become influenced by perceived entrepreneurial passion. In contrast, displaying a lower degree of passion implies less confidence and effort (Murnieks et al., 2016), which may unsettle potential funders. Taking these effects into consideration, along with the fact that funders on crowdfunding platforms are non-expert “laypeople,” we expect that displays of entrepreneurial passion will be associated with better crowdfunding performance. Formally:

*Hypothesis 2b.* A creator's perceived entrepreneurial passion is positively associated with the project's crowdfunding performance.

#### **4.2.6. Role-based Identities: The Indirect Effect of Perceived Entrepreneurial Passion**

Passion is profoundly rooted in the practice of entrepreneurship (Cardon et al., 2013). Among the layperson funders found in crowdfunding, perceived entrepreneurial passion leads to greater success in raising financial capital (cf. Mitteness et al., 2012). When entrepreneurs do not demonstrate such passion, it is difficult to attract crowdfunding's attention, as they would not be confident in or convinced of the entrepreneurs' motivation, persistence, commitment and success potential. Integrating the literatures on user entrepreneurship and entrepreneurial passion, we believe that user entrepreneurs are likely to be perceived as more passionate by potential funders because of their intrinsic motivation and self-identification, which enables them to "tell the story" of their venture in a compelling and enthusiastic manner (Martens et al., 2007).

Intrinsically motivated user entrepreneurs find "meaning" for themselves in their projects and closely identify with their innovations. Both the identification with "self" and intrinsic motivation create positive feelings such as happiness, joy, enjoyment, and excitement from developing a new product that suits their personal needs (Hienerth, 2006; von Hippel et al., 2012). Intrinsic motivation relates to passion (Smilor, 1997), since passion is also a positive and intense feeling that entrepreneurs experience when engaging in entrepreneurial activities that are important to their self-identity (Cardon et al., 2009b). Therefore, as outlined in Hypothesis 2a, we expect that user entrepreneurs will display a higher level of entrepreneurial passion than non-user entrepreneurs. We build our logic as a mediation relationship because these funding outcomes can be traced to user entrepreneurs' identities.

Role identities are the font of user entrepreneurs' motivation for "actions that result in social validation of self-meaning" (Cardon et al., 2009b). As a result, user entrepreneurs are motivated to engage in entrepreneurial action that advances their user entrepreneur role-based identity, as well as their related role-based identity to which the user-produced innovation pertains (such related roles might include parent, software developer, pilot, etc.). This advantageous alignment between roles results in a more cohesive and harmonious identity. The actions taken to advance these twin role-based identities produces positive affect, because the actions are validating a salient, perhaps core, identity of the user entrepreneur. These positive emotions are felt by the entrepreneur, and tend to be perceptible as passion when the entrepreneur is pitching for or discussing their user-developed invention (cf. Cardon et al., 2009b). A lack of the role-based identity arising from solving one's own problem results in displaying lower passion among non-user entrepreneurs. In contrast, the products invented by user entrepreneurs have a central role in their lives. This is so because the product often solves a problem they experienced in some other salient role-identity. We assert that the second role identity is salient because of the fact that the user entrepreneur felt it was important enough that it had to be solved (cf. Cardon et al., 2009b). Both emerge from doing meaningful and enjoyable activities (Lafreniere et al., 2008). Thus, we expect entrepreneurial passion will mediate the relationship between user entrepreneurship and crowdfunding performance. Formally:

*Hypothesis 2c.* Perceived entrepreneurial passion mediates the relationship between user entrepreneurship and crowdfunding performance.

#### **4.2.7. Social Identity Theory: Group-Based Identities, Group-Based Needs**

In the preceding sections, we drew upon identity theory. Identity theory is a microsociological theory that explains how the process of identification results in individuals'

self-assigning role identities (Burke and Reitzes, 1981, 1991; Burke and Stets, 2009). The distinct and complementary *social* identity theory does the same for group-based identities (e.g., Stets and Burke, 2000; Hogg et al., 1995; cf. Ashforth and Mael, 1989). User entrepreneurs have a unique connection with a community whose members have similar needs; this relationship has benefits for the development of projects (Shah and Tripsas, 2007). Borrowing a definition from social psychology literature, need similarity means that both entrepreneurs and potential funders have a similar need of the product for their own use (cf. Rychlak, 1965). User entrepreneurs can reach out to people in their community, ask them to test prototypes, and seek their opinions on the product in different stages of the development cycle. These interactions between user entrepreneurs and the community mean that more potential funders become cognitively interested in the venture and become part of its user community (e.g., Bogers et al., 2010).

As people become embedded in a community of users, the community's degree of shared beliefs, norms, and need for the product increases, which leads to further escalated involvement (e.g., Bogers et al., 2010). This process results in greater need similarity between entrepreneur and funders. Through the in-group favoritism effect of social identity theory, user entrepreneurs develop a pool of potential funders that, as a group, will be more likely to want to own the product that they have helped develop, thus giving an observable outcome of the degree to which they share the entrepreneurs' interests. This process reinforces the relationship between user entrepreneurship and need similarity among entrepreneur and funders. Claiming the identity of user entrepreneur in crowdfunding narratives results in the entrepreneur being perceived as a member of a particular group. When an entrepreneur is clearly a member of a particular group, a potential funder viewing the crowdfunding appeal can quickly identify with him or her if the funder also identifies with that group. Whether a fellow nerd or a fellow parent, a potential

funder instantly recognizes a similar need shared with the entrepreneur. Since non-user entrepreneurs typically lack this strong interest group affiliation in their narratives with respect to the need for the product, they lack the capacity to develop a need similarity as strong as the need similarity developed by user entrepreneurs. Formally:

*Hypothesis 3a:* User entrepreneurs are associated with higher levels of need similarity between the entrepreneur and funders.

#### **4.2.8. Need Similarity and Crowdfunding Performance**

Social identity theory predicts the phenomenon of in-group favoritism (Tajfel, 2010) wherein people evaluate their own groups more positively (Tajfel, 1978). For example, Franke and colleagues (2006a) note that venture capitalists respond favorably to startup teams who are similar to themselves in terms of educational background and professional experience. In addition, Seyfried and Hendrick (1973) also mention that people became attracted to a stranger solely on the basis of need similarity. Building on social identity theory, we argue that entrepreneurs who have need similarity with a specific community or crowd and have interacted with them benefit from the effects of self-categorization through in-group favoritism. We suggest that funders will evaluate entrepreneurs with whom they share a connection more positively (cf. Stets and Burke, 2000). Given the robustness of the in-group phenomena predicted by social identity theory, need similarity between entrepreneur and funders will be enough to create an in-group bias in favor of the entrepreneur. Just as participants in an experiment are more likely to give money to in-group members, so, too, will crowdfunders be more likely to fund an entrepreneur they view as being a member of a shared group, by virtue of similar need (e.g., Billig and Tajfel, 1973). Crowdfunding campaigns revolve around creating new products or services. Given this, the central interest that entrepreneurs and potential funders are likely to

share is in an activity related to the product. For example, a crowdfunding campaign for dog clothing by a dog owner who personally needs the product relates to the activity of being a dog lover quite strongly – a high need similarity, and, thus, high in-group favoritism. In comparison, entrepreneurs with low need similarity are unlikely to benefit from in-group favoritism, in turn harming their ability to raise funds. Formally:

*Hypothesis 3b:* Need similarity between the creator and funders is positively associated with the project's crowdfunding performance.

#### **4.2.9. Indirect Effect of Need Similarity**

We again draw on social identity theory and propose that similarity between the entrepreneur and potential funders with respect to the need for a product mediates the relationship between user entrepreneurship and crowdfunding performance. One of the key differences between user entrepreneurs and non-user entrepreneurs is that user entrepreneurs start a venture based on their own needs, while non-user entrepreneurs start a venture based on opportunity identification (Shah and Tripsas, 2007). Unlike non-user entrepreneurs, user entrepreneurs have a distinct and unique identity given their embeddedness in the user community, which consists of their potential customers who also share similar frustrations and product needs (Shah and Tripsas, 2007). Therefore, a similar identity will often exist between user entrepreneurs and potential funders with respect to the need for the product. However, non-user entrepreneurs cannot share need similarity because their crowdfunding project is based on opportunity identification. They have not been confronted with a sense of need, which is a critical factor for truly understanding the customer. Higher need similarity will create in-group favoritism. Community members start identifying with the entrepreneur and their efforts to develop solutions and become cognitively invested in the project (Bogers et al., 2010).

Consistent with social identity theory, user entrepreneurs can reap benefits from need similarity and from developing solutions to community-specific problems, as their solutions address problems faced by a community (cf. Stets and Burke, 2000). Overall, we propose that need similarity between the entrepreneur and crowdfunders, with respect to the need for the product, mediates the relationship between user entrepreneurship and crowdfunding performance:

*Hypothesis 3c.* Need similarity mediates the relationship between user entrepreneurship and crowdfunding performance.

Figure 1, our hypothesized research model, shows the three mediating relationships we predict influence user entrepreneurs' crowdfunding performance, along with the intermediate and baseline hypotheses.

'Insert figure 1 about here'

## **5. Methods**

### **5.1. Data**

#### **5.1.1. Sampling Frame**

To test our hypotheses, we collected data about entrepreneurs who raised capital for their new ventures on the Kickstarter crowdfunding platform. We limited the sample to projects launched between January 1 and December 31, 2014 to minimize economic or year effects; to eliminate institutional and other country-specific effects, we limited the sample to projects from the United States. As our focus is *user entrepreneurship*, only projects raising money for developing a new product for a new venture or an existing business were included. All projects had to include a video, which was necessary for coding passion, while also eliminating a potential confound. Similarly, differences in the rewards offered to crowdfunders can influence crowdfunding success (e.g., Allison et al., 2017). Thus, only projects that offer a product/service reward to crowdfunders were included. Next, our research question seeks to understand

performance *differences* between user and non-user entrepreneurs, not base-rates of occurrence in a random sample. A sample with roughly equal numbers of user and non-user entrepreneurs maximizes the power of our analyses, increasing confidence in our results. Thus, we chose a proportionate stratified design, targeting an approximately even split between user and non-user entrepreneurs. This approach is consistent with other studies in which random sampling would skew toward one category (e.g., Dai et al., 2014).

### **5.1.2. Sample Characteristics and Coding Procedure**

User entrepreneurship is not an attribute that crowdfunding platforms collect. Thus, it was coded by two independent raters. The definition of user entrepreneurship makes clear that user entrepreneurs are initially solving a personal problem (Shah and Tripsas, 2007). To the extent this can act as a signal, it must be embedded in the entrepreneur's crowdfunding entrepreneurial narrative. Moreover, as user entrepreneurship is an exogenous variable, we can stratify on user entrepreneurship while preserving it as a predictor variable. To reduce the risk of coder fatigue, as a preliminary step, we identified projects where the entrepreneur discusses solving a problem. These were randomized, and after coding, our sample consisted of 148 projects by user entrepreneurs and 152 by non-user entrepreneurs (N = 300). Similar to success rates in prior work, 47.7% of campaigns in the sample were successfully funded. A comparison with population statistics found no significant differences between sample and population.

Following development of a codebook and the completion of coder training, we coded the data for all independent, mediating, control, and dependent variables. Textual data (crowdfunding entrepreneurial narratives) and video data (crowdfunding pitch videos) were downloaded from each project's crowdfunding appeal webpage. Numeric data, including the project outcome (success/failure), was downloaded separately. Coders were blinded as to the



project outcome. To verify coder training and ensure adherence to the codebook, coding results were compared after each coder had coded 20 projects. Disagreements were examined and discussed. Then, both coders coded all remaining projects in the sample. To calculate inter-rater reliability, we used Krippendorff's alpha (e.g., Chan and Park, 2014). Reliability statistics for each variable are reported below as we describe each measure.

## **5.2. Measures**

### **5.2.1. Independent Variable**

To identify a user entrepreneur, we first developed a codebook that includes the definition of a user entrepreneur and the model of the user entrepreneurial process developed by Shah and Tripsas (2007). Then, we followed the approach of Tuggle and Colleagues (2010) to develop a list of words and phrases likely to be associated with user entrepreneurs. To develop the list of words and phrases, we relied on the user entrepreneurship literature. Following the approach of Tuggle and Colleagues (2010), we performed pilot coding of non-sample projects and employed an iterative process until we identified no new keywords. The user entrepreneurial process starts with unmet needs and a willingness to solve his/her frustration or problem (Shah and Tripsas, 2012). Examples of words and phrases include: 1) frustration, 2) necessity, 3) solve my problem, and 4) born. Next, two independent coders were instructed to code each project with a 1 if they identified the key words/phrases likely to be related to user entrepreneurs as being used in context in the sentences surrounding these words/phrases. After the training, coders were instructed to code projects in our sample. To check coder training and ensure adherence to the codebook, coding results were compared after each coder had coded 20 projects. Disagreements were examined and discussed. Then, both coders coded all remaining projects in the sample. Krippendorff's alpha was 0.92.

We validated our approach with an established survey scale developed by Shah et al., (2012). We sent out a survey, asking whether an entrepreneur developed a product or service because he or she needed it for personal use or for use at a job/business. The question was directly adapted from Shah and colleagues' study. 25 Kickstarter entrepreneurs agreed to participate and 24 completed the survey. Blinded to the responses, our coders were instructed to code the user entrepreneur variable from the narratives of the 24 responders. Between these two measures of the same variable, we found a high correlation ( $r = 0.83$ ), suggesting validity for our coding-based approach. While we find that claims are highly correlated with being a user entrepreneur, our measure focuses on claims of user entrepreneurship in the narrative. Below is an example of a crowdfunding entrepreneurial narrative funding appeal by a user entrepreneur:

*I'm a proud father to a lively tot. We're a young family and we're always on-the-go. Sometimes, I'll queue up her favorite Mickey Mouse video on my laptop. The only problem is that often she'll get very excited and bang on the keys, accidentally ending the video. Or worse, she'll pick off an individual key, creating a potential choking hazard. So, with the help of a laser cutter, remnant plastic, and an elastic band - the Kid Lid was born. We took our homemade Kid Lid everywhere and others were constantly asking us where they could purchase the product. After many requests, we patented the idea, starting a company focused on creating simple and innovative solutions that don't force us to tell our daughter "no" when excitedly interacting with technology.*

### **5.2.2. Mediating Variables**

We propose three mediators – product innovativeness, perceived entrepreneurial passion, and need similarity between entrepreneurs and funders. For product innovativeness, we coded using the four-item scale developed by Plambeck (2012). Two coders rated each of the four items on a five-point Likert scale. Cronbach's alpha was acceptable (0.85), which is close to Plambeck's 0.86 for the product innovativeness scale. Inter-rater reliability was also high (Krippendorff's alpha = 0.88). Thus, we averaged two coding values of product innovativeness.

The second mediator, perceived passion, also described by Cardon and colleagues as enthusiasm (displayed affective passion) (2009a), was measured using the six-item scale

developed by Chen and colleagues (2009). Two recent crowdfunding studies also used the same scale to measure perceived entrepreneurial passion (Chan and Parhankangas, 2017; Davis et al., 2017). After viewing each crowdfunding pitch video, two coders rated each of the six items on a five-point Likert scale. These scores were summed. Cronbach's alpha was acceptable (0.88), compared to Chen and colleagues' 0.95. Inter-rater reliability was high (Krippendorff's alpha = 0.89). Given these indicators of validity and reliability, the summed scores from each of the two coders were averaged to yield the final perceived entrepreneurial passion measure (cf. Chan and Park, 2014). We also conducted a supplementary study, in which we measured perceived entrepreneurial passion with a two-item scale adapted from Mitteness et al. (2012). Their study also used pitch presentations to measure passion as perceived by angel investors. In our supplementary study, we found a high correlation coefficient between the accepted psychometric entrepreneurial passion measure and our coder-derived measures ( $r = .82$ ). Thus, we found evidence to suggest that our measure of entrepreneurial passion is not episodic, nor short-term, suggesting that what is perceived by crowdfunders and our raters is indeed consciously experienced by the entrepreneur.

For our third mediator, need similarity between entrepreneurs and funders, we adopted a proxy measure. On rewards-based crowdfunding platforms such as Kickstarter, backers contribute during the project campaign period and, in turn, they can receive the product they are helping to fund as a reward. In addition, they can also choose to receive a non-product reward, such as a thank-you, or they can simply make a donation. The choice of a product reward indicates that the funder wants the product, as they are choosing to acquire the product the entrepreneur is making. In contrast, those opting for a thank-you or simply making a donation do not need the product. They may still have some interest in the product, but the fact that they are

not choosing to acquire it makes it more likely that their interest is less central to their identity. Funders only making a donation or getting a thank you may simply think the proposed idea is attractively novel – that is, “cool” – and wish to support the entrepreneur, even though they do not engage in the activity the product is marketed for, and thus have no need for the product. To validate this assumption, we conducted an experiment with participants recruited through Amazon’s Mechanical Turk service. 75% had experience in supporting crowdfunding campaigns. Although 25% of participants did not have crowdfunding experience, 69% of funders on Kickstarter itself have no prior experience in crowdfunding (Davis et al., 2017). The demographic composition of our participants is also comparable to that of Kickstarter funders.

We showed a pitch, reward levels, and the minimum financial contributions for each level of reward to participants. We first captured need similarity by asking participants whether the product was one that he or she needed to solve personal frustrations and/or problems that they faced. Second, they were asked to respond with which reward they would choose (i.e., product or non-products rewards such as thank you notes, t-shirts, etc.). We found that the correlation between the participants’ answers concerning the need of the product and their choice of the product as a reward was 0.72. We also validated our proxy measure in a different way, similar to the approach used by Franke and colleagues (2006a). We measured need similarity between the entrepreneur and funders with respect to the need of the product by adopting the established measure from Ng and colleagues’ study (2016). The survey item was, “With respect to the need of product, I think I am very similar to the entrepreneur.” Participants responded to the question using a five-point Likert scale. Then, we calculated the correlation between need similarity and their choice of a product as a reward. The correlation between these two measures was 0.80. In addition, we also captured need similarity with an open-ended question. Below are a

few examples. One participant who chose the product as a reward mentioned, *“I experienced the problem that the presenter mentions in real life.”* Another participant also shared similarity writing, *“Like the presenter, I am a woman, and I share a similar frustration when it comes to making my bed.”* Our quantitative and qualitative evaluations provided confidence to use the percentage of backers who asked for the product as a reward as a proxy for need similarity.

### **5.2.3. Dependent Variable**

The dependent variable is crowdfunding performance: whether a success or a failure. This is consistent with prior studies (Colombo et al., 2014). We operationalized the outcome of each fundraising campaign as a dichotomous variable which was coded as 1 if successful. This operationalization is consistent with the “all-or-nothing” nature of Kickstarter.

### **5.2.4. Control Variables**

To control for alternative explanations, we used several control variables that prior research suggests influence entrepreneurial resource acquisition and/or crowdfunding performance. As with the other variables, two coders rated each; initial reliability ranged from 0.98 to 0.92 with disagreements mutually resolved. We controlled for lead entrepreneur gender, based on suggestions that funders may prefer one gender over another. Gender was coded as 1 for male and 0 for female. Similarly, prior research has suggested homophily effects on investors’ decisions. Thus, we controlled for lead entrepreneur ethnicity by using a dummy variable, where Caucasians were coded as 1 and 0 otherwise. We also controlled for lead entrepreneur’s prior experience by using a dummy variable, where entrepreneurs with prior related experience were coded as 1 and 0 otherwise. Prior success in crowdfunding was also controlled through a dummy variable, prior success was coded 1, 0 otherwise.

Research has revealed that internal social capital can impact the likelihood of funding success (Colombo et al., 2014). Thus, we controlled for it by calculating the number of ventures backed by the entrepreneur. Research has also suggested that each member in entrepreneurial teams have different entrepreneurial resources (Mosakowski, 1998). We controlled for the size of the founding team as a count variable. Media coverage is also a potential signal of venture quality; we controlled for this with a dummy coded 1 if media covered the campaign.

The purpose of the crowdfunding appeal – whether to make a new product for an already existing business or starting a new venture can signal risk levels to potential funders. A dummy variable was coded 1 for existing businesses. Another indicator of risk is a venture's stage of development; thus, we included a product development scale as a control as well. Campaign length and goal have effects which are negatively related to funding performance. We calculated campaign duration in days and the goal amount in dollars, transformed by the natural logarithm, and included these controls (cf. Colombo et al., 2014). Prior research has also revealed an effect of preparedness on fundraising performance (Chen et al., 2009). Similar to two recent crowdfunding studies (Chan and Parhankangas, 2017; Davis et al., 2017, we controlled for preparedness by using the five-item scale developed by Chen et al. (2009). Finally, since projects in some categories may be more likely to succeed than projects in others, we included category dummy variables: technology (the omitted reference group), product design, and fashion.

### **5.3. Estimation Technique**

All direct hypothesized relationships were tested using hierarchical regression analysis. We first predicted the effect of the user entrepreneur on perceived entrepreneurial passion, product innovativeness, and need similarity. In the first step, we added control variables. In the second step, we added the predictor (i.e., user entrepreneur) to test Hypotheses 1a, 2a, and 3a.

Then, we predicted the effect of perceived entrepreneurial passion, product innovativeness, and need similarity on crowdfunding performance. Similarly, we first added control variables, then added each predictor to test Hypotheses 1b, 2b, and 3b. Finally, we examined mediation effects (Hypotheses 1c, 2c, and 3c), by using the “PROCESS” macro (Preacher and Hayes, 2008). This technique allows us to estimate the coefficients in a simulated mediation model and provides an estimate for each indirect effect. In addition, the macro allows bootstrapping, which is more powerful than the traditional Sobel test; because of these benefits, recent studies in entrepreneurship have increasingly used this technique (e.g., Breugst et al., 2012). We ran mediation tests by entering the user entrepreneur as an independent variable, controls as covariates, with the outcome of the funding campaign as a dependent variable.

## 6. Results

‘Insert table 1 about here’

The correlation matrix and descriptive statistics are reported in Table 1. With respect to control variables, the results of our model replicated prior crowdfunding studies. For example, we found that internal social capital and the campaign goal impacts the success of a campaign (Colombo et al., 2014). The results also show that media coverage and entrepreneurial team size also have a positive impact on the crowdfunding success. Turning to predictors, signaling as a user entrepreneur was positively associated with crowdfunding performance ( $\beta = 1.37, p < .001$ ; Table 3), suggesting support for our baseline hypothesis. We transformed the logistic coefficient of user entrepreneurs to an odds ratio. This implies that claims of user entrepreneurship as a signal increase the odds of success in crowdfunding by 3.94. As we predicted in Hypotheses 1a, 2a, and 3a, the empirical results in Table 2, models 2, 5, and 6, indicate that user entrepreneurs develop more innovative products ( $\beta = .203, p < .05$ ), have higher perceived passion ( $\beta = .180, p$

< .05), and have higher need similarity with crowdfunders ( $\beta = .070, p < .05$ ), suggesting support for all three hypotheses. Hypotheses 1b, 2b, and 3b predicted that product innovativeness, perceived entrepreneurial passion, and need similarity are positively related to crowdfunding performance. As seen in Table 3, we found support for H1b ( $\beta = 1.127, p < .001$ ), H2b ( $\beta = 0.551, p < .05$ ), and H3b ( $\beta = 1.450, p < .001$ ).

‘Insert table 2 and 3 about here’

Because the relationships between the independent variable and the proposed mediators and the relationships between the proposed mediators and the dependent variable were both significant, we ran mediation tests. We adopted the recommended bootstrapping method, which is viable for smaller sample sizes and doesn’t rely on a normal sampling distribution. We used 10,000 bootstrap samples (cf. Breugst et al., 2012); these results are presented in Table 4. First, the indirect effect of a user entrepreneur on crowdfunding performance via product innovativeness was positive and significant (indirect effect = .249, 95% CI = .046–.467). Thus, we found support for Hypothesis 1c. Second, the indirect effect of a user entrepreneur on crowdfunding performance via passion was positive and significant (indirect effect = .099, 95% CI = .007–.278), suggesting support for Hypothesis 2c. Third, the indirect effect of a user entrepreneur on crowdfunding performance via need similarity was positive and significant (indirect effect = .109, 95% CI = .004–.312, suggesting support for Hypothesis 3c).

‘Insert table 4 about here’

## **7. Discussion**

In this study, we sought to examine whether the performance advantages enjoyed by user entrepreneurs (Shah et al., 2012) extend to very early stage financing. Claiming to be a user entrepreneur has signaling value in that it suggests the venture quality is higher because the



entrepreneur has spent significant time developing the product, evidence of a market for the product is provided, and connections already exist between buyers and others interested in supporting the product. We extend the user entrepreneurship literature by proposing a set of complementary theories, linked by identity, to explain performance differences between user and non-user entrepreneurs. We find support for the idea that user entrepreneurs are more passionate about their ventures and are able to marshal social support through similarity with potential supporters.

### **7.1. Theoretical Contributions**

We provide evidence of the differences in quality that underlie and validate the value of an entrepreneur-claimed signal. Using multiple methods, we show that the signaling value of claiming to be a user entrepreneur is backed-up by apparent differences in innovativeness. We respond to calls for more research on user entrepreneurship (Shepherd et al., 2015). Although users are an important source of new ventures (Shah and Tripsas, 2007), scholars have infrequently examined the roles of user entrepreneurs and how they differ from those of non-user entrepreneurs. As most early-stage entrepreneurs have limited financial capital (Amit et al., 1990), one way to assess whether user entrepreneurs have different performance outcomes than non-user entrepreneurs is to examine differences in the fundraising performance between the groups. Although crowdfunding usage and research is rapidly growing, research on this phenomenon is still in a fairly early stage (e.g., Colombo et al., 2014). By examining user entrepreneurship as an aspect of the crowdfunding phenomenon, we unite two nascent research streams and provide empirical evidence that user entrepreneurs are more likely to succeed in crowdfunding campaigns than non-user entrepreneurs.

We also suggest that the better performance of user entrepreneurs is explained and predicted by three complementary theories, each of which is linked to user entrepreneur identities. By explaining differences in the ability to discover opportunities, the innovativeness of developed solutions, and ability to acquire resources and orchestrate the venture (Shane and Venkataraman, 2000), these complementary theories provide a coherent explanation for superior performance. Through this contribution, we validate the premise that the use of multiple theoretical perspectives from other disciplines represents the most fruitful avenue to future crowdfunding research (McKenny et al., 2017). Finally, as a contribution to research on passion (e.g., Murnieks et al., 2014), we show how perceived entrepreneurial passion may serve as a mediating mechanism in crowdfunding. Entrepreneurial passion is at the core of entrepreneurship (Cardon et al., 2013). Our study contributes to the entrepreneurial passion literature with evidence that user entrepreneurs have higher perceived passion.

## **7.2. Practical Implications**

This study provides several implications for practitioners. Crowdfunding is a novel path for user entrepreneurs to start their entrepreneurial dream. Our results suggest that user entrepreneurs are more likely to be successful in raising financial capital through crowdfunding. Furthermore, for non-user entrepreneurs, our findings may suggest that entrepreneurs should approach the entrepreneurial process with user perspective taking (cf. Autio et al., 2013; Prandelli et al., 2016) to develop innovative products that can attract potential crowdfunders.

## **7.3. Limitations and Future Research Directions**

In this study, some of our empirical choices involved trade-offs that, while useful in eliminating potential confounding effects, have some implications for generalizability. For example, we used perceptual measures for a number of variables. We believe that the tradeoffs

inherent with perceptual measurement was worth the benefits of being able to study a broad, diverse set of early-stage ventures which tend to threaten validity through non-response to surveys. This required adapting established, validated measures to coder/rater questions and scales. Such adaptation entails other risks, so we used small surveys and experiments to provide evidence of convergent validity. For example, our content analysis measure for user entrepreneur was validated by examining convergence with prior measures (Shah et al., 2012). Future research could computerize the process using content analysis through machine learning in order to capture not only keywords but also the contexts of entrepreneurs' stories. We also conceptually identify project creators in crowdfunding as user entrepreneurs as opposed to user innovators. Since the timing of the transition from user innovator to user entrepreneur would require further study to pinpoint, we chose to follow prior studies in crowdfunding and identify project creators as entrepreneurs (e.g., Anglin et al., 2018; Allison et al., 2017). There remains an interesting future research opportunity to explore at what point user innovators should be considered user entrepreneurs. Furthermore, we took many precautions such as blinding raters, conducting an additional small experiment and a post-hoc qualitative study to establish causation. Future research should consider a longitudinal research design to fully capture the temporal order of user entrepreneurship phenomenon.

Another tradeoff we made was to adopt a proxy measure of need similarity (and thus, probable in-group favoritism) between the entrepreneur and funders. There are strong theoretical reasons to expect this proxy to be valid. Our measure relies on the assumption that crowdfunders who asked for the product/service as a reward also have same needs as the entrepreneurs. These similar needs and interests make crowdfunders feel that they are a part of the same group. In addition, our validation study showed a strong correlation between our proxy measure and the

established scale; empirical results from the validation study using the established scale also matched our findings. Further research involving the examination of group identity effects in crowdfunding might adopt a psychometric measure or a measure based on a content analysis of backer comments in order to build evidence of convergent validity.

Another possible fruitful path for future work is to examine commitment as another mechanism in order to explain the superior crowdfunding performance of user entrepreneurs. Given that most user entrepreneurs have already invested their time and effort to develop the product and test it on the potential market, crowdfunders may perceive that user entrepreneurs have high level of commitment. Therefore, commitment could also be a motivational cue (Cardon et al., 2017) that can lead to the success in crowdfunding.

An additional limitation comes in the form of a boundary condition. We studied user and non-user entrepreneurs raising funds through crowdfunding. Crowdfunding is a unique context that enables user entrepreneurs to meet with their potential customers who also have similar needs. As a result, our results are most likely to be valid in reward-based crowdfunding and perhaps other relatively informal investment contexts (perhaps some early stage angel investing). Whether our findings generalize to other contexts will require future research. A related opportunity for future research is to examine the effect of perceived passion in raising financial capital. Mixed findings exist. For example, Chen et al., (2009) found that passion was not a significant predictor of VC funding, while Mitteness et al., (2012) found that it predicts angel funding decisions. Assessing these works and ours, we believe more research is needed, especially in new contexts, such as equity-based crowdfunding or peer-to-peer lending.

## **8. Conclusion**

User entrepreneurship is an important but understudied phenomenon (Shah et al., 2012; Shepherd et al., 2015). This study begins to close that gap and takes an important step toward understanding performance differences between user and non-user entrepreneurs. Our results have provided evidence that entrepreneurs who began as users solving their own needs are more likely to succeed in crowdfunding campaigns. Our theory has outlined a logic for the signaling value of claiming the identity of user entrepreneur. We build a deeper understanding of how the identities of user entrepreneurs influence performance through complementary effects on perceptions of entrepreneurial passion, product innovation, and to in-group favoritism.

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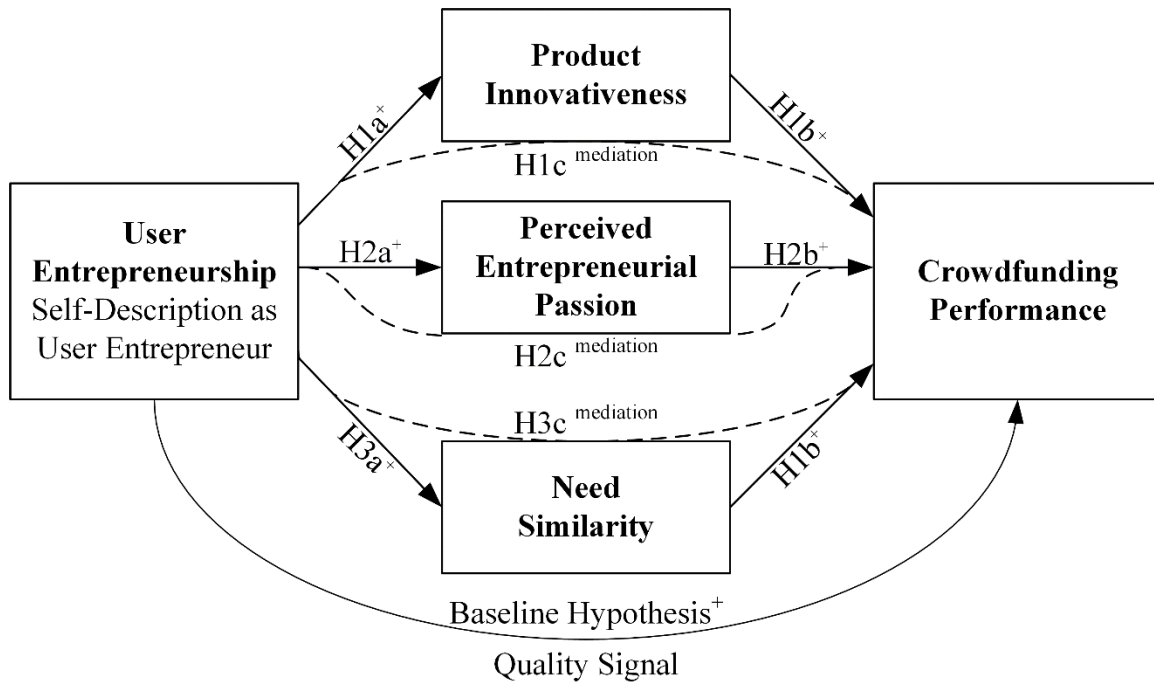
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Figure 1. Conceptual Model

**User Entrepreneurship Hypothesized Research Model**



**Table 1. Descriptive statistics and correlations<sup>a</sup>**

Variables	Mean	s.d.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Crowdfunding Performance	.48	.50																
2. Gender	.80	.40	-.01															
3. Ethnicity	.81	.39	-.01	.04														
4. Related Experience	.34	.47	.11	.13	.03													
5. Prior Crowdfunding Success	.15	.85	.13	.06	.08	.11												
6. Preparedness	2.79	.52	.32	.06	.08	.07	.00											
7. Internal Social Capital	3.36	5.15	.32	.00	.04	.10	.30	.24										
8. Entrepreneurial Team Size	1.80	1.78	.23	.15	.02	.11	-.05	.26	.12									
9. Media Coverage	.23	.45	.28	.09	-.11	.13	-.04	.31	.13	.20								
10. Origin of Project	.15	.36	-.08	.09	-.06	.16	-.06	.02	-.12	.00	.16							
11. Development Stage	2.72	.57	.22	-.06	-.01	.00	.08	.25	.16	.09	.15	-.09						
12. Campaign Duration	34.06	8.31	-.07	.01	.00	.00	-.03	-.01	.05	.03	.03	-.02	.00					
13. Campaign Goal (Logged)	9.66	1.28	-.07	.13	.06	.14	-.12	.26	.12	.30	.28	.15	.01	.18				
14. Perceived Entrepreneurial Passion	2.44	.69	.15	.01	.12	-.09	-.04	.18	-.03	.07	.04	-.09	.09	-.02	.14			
15. Product Innovativeness	1.94	.82	.42	.14	.00	.15	.01	.38	.26	.32	.40	.02	.16	.07	.37	.23		
16. Need Similarity	.67	.32	.33	.12	.02	.06	.16	.25	.27	.07	.13	-.07	.39	-.04	.03	.13	.21	
17. User Entrepreneur	.49	.50	.29	-.04	-.06	-.07	-.15	.18	.00	.10	.05	-.06	.12	.05	-.01	.14	.16	.15

<sup>a</sup>N = 300. Correlations with absolute value greater than 0.11 are significant at P < 0.05.

**Table 2. Prediction of Mediating Variables (Product Innovativeness, Perceived Entrepreneurial Passion, and Need Similarity)**

Variables	Product Innovativeness		Perceived Entrepreneurial Passion		Need Similarity	
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
<b>Controls</b>						
Gender	-.028	-.022	.008	.013	.120*	.122**
Ethnicity	-.071	-.058	.161	.172+	.003	.007
Related Experience	.064	.073	-.159	-.152+	.013	.016
Prior Crowdfunding Success	.004	.022	-.003	.012	.022	.029
Preparedness	.286**	.253**	.210*	.181*	.075*	.064+
Internal Social Capital	.017*	.018*	-.013	-.012	.011**	.011**
Entrepreneurial Team Size	.044+	.038	-.005	-.010	-.003	-.005
Media Coverage	.323**	.319**	-.047	-.050	.031	.030
Origin of Project	-.187	-.177	-.217+	-.208+	-.022	-.019
Product Development Stage	.211**	.203**	.137+	.130	.166***	.163***
Campaign Duration	.003	.003	-.002	-.002	-.002	-.002
Campaign Goal (Logged)	.104**	.110**	.067+	.073*	-.004	-.002
<b>Predictor</b>						
User Entrepreneur		.203*		.180*		.070*
F-statistic	12.319***	12.153***	2.438**	2.640**	6.435***	6.361***
R <sup>2</sup>	.377	.391	.107	.122	.240	.251
Δ R <sup>2</sup>		.014		.015		.011

+ p < .1; \* p < .05; \*\* p < .01; \*\*\* p < .001.

**Table 3. Prediction of Dependent Variable (Crowdfunding Performance)**

DV: Crowdfunding Performance	Model 1	Model 2	Model 3	Model 4
<b>Controls</b>				
Gender	-.300	-.348	-.582	-.747+
Ethnicity	.158	.049	.207	.127
Related Experience	.567+	.691*	.508	.537
Prior Crowdfunding Success	.388	.356	.322	.230
Preparedness	.868**	.820*	.669+	.642+
Internal Social Capital	.123**	.136**	.119**	.111**
Entrepreneurial Team Size	.410**	.396**	*.349	.338*
Media Coverage	1.506***	1.543***	1.232**	1.185**
Origin of Project	-.422	-.311	-.133	-.135
Product Development Stage	.306	.206	.172	-.041
Campaign Duration	-.026	-.026	-.033	-.034
Campaign Goal (Logged)	-.535***	-.590***	-.780***	-.786***
<b>Predictors</b>				
User Entrepreneur	1.370***	1.325***	1.218***	1.147**
Perceived Entrepreneurial Passion		.551*	.393	.378
Product Innovativeness			1.127***	1.108***
Need Similarity				1.450*
-2 Log Likelihood	290.246	284.499	261.860	255.820
Chi-Square	124.988***	130.736***	153.374***	159.414***
Nagelkerke R <sup>2</sup>	.455	.471	.534	.550

+ p < .1; \* p < .05; \*\* p < .01; \*\*\* p < .001.

N = 300; Industry control dummies included in model but not reported for parsimony.



**Table 4. Mediation Analysis with Bootstrapped Effect Estimates**

Hypothesized Mediation Paths	Bootstrap-indirect Effect	SE <sup>a</sup>	95% CI <sup>b</sup>	95% CI <sup>b</sup>
User Entrepreneur → Product Innovativeness → Crowdfunding Performance	.249	.113	.046	.467
User Entrepreneur → Perceived Entrepreneurial Passion → Crowdfunding Performance	.099	.070	.007	.278
User Entrepreneur → Need Similarity → Crowdfunding Performance	.109	.078	.004	.312

N=300. <sup>a</sup>standard error, <sup>b</sup>confidence interval; CI are bias-corrected based on 10,000 bootstrap samples. Controls included as covariates in model, not reported for parsimony.