

User Entrepreneurship from the Perspective of User Community

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Abstract: *With the continuous upgrading of consumption, users' unmet needs can be satisfied through innovation and entrepreneurship activities under the user communities. Based on existing literature of user entrepreneurship, this paper combs the concept connotation of user innovation, user entrepreneurship and user community in the classic literature, then refines the development process from user creativity to user entrepreneurship from the perspective of user community, and further analyzes the impact of user community on user entrepreneurship. Finally the future research direction is forecasted.*

Keywords: *user entrepreneurship; user community; user innovation; user idea*

1. Introduction

Users are economically and politically important as the source of innovation and entrepreneurship. As early as 2004 scholar showed that more than 10.7% of businesses established in the United States were founded by users, and 46.6% of start-ups that survived to five years were user-founded. The phenomenon of user innovation and entrepreneurship exists in all fields, such as infant products, sports industries, medical devices and etc.[1-3]. In recent years, Chinese government has strongly supported the development of innovation and entrepreneurship, and the policy of mass entrepreneurship and innovation has continued to advance to a wider, higher and deeper extent, so user innovation and user entrepreneurship has become a key part.

According to previous studies, user communities are the starting point of user innovation and entrepreneurship, and most of the user entrepreneurs are rooted in the community from the beginning, also known as "grassroots"^[4], for example, Linux and MySQL were built from user communities^[5], so user communities provide a platform for user innovation and entrepreneurship. User innovation and entrepreneurial activities have also been shown to be collective^[3], where users can get free information and feedback experiences form the relatively free flow of information within the community, drives the development of user innovation and entrepreneurial activities. However, in current research, some scholars focus on the topic of user entrepreneurship, including user entrepreneurship connotation, process, and influence factors etc. With the development of the Internet and technology, the communication between users is closer, so the role of user communities cannot be ignored. However the research on user entrepreneurship with user communities as the main perspective is still lack. Therefore, based on previous review. This paper sorts out the concepts and relationships among user innovation, user entrepreneurship, and user community. Integrating the process form user idea to user entrepreneurship and the role of user community on each stage, we aim at providing some insights for related user community activities and user innovation and entrepreneurship study.

2. Literature Review

2.1. USER COMMUNITY

The Internet has revolutionized the way users communicate and collaborate with each other^[6]. In recent years, since the concept of open innovation introduced, emphasizing an opening approach to innovation in a competitive environment^[7,8], numerous user communities form companies have emerged and user communities have been created and developed by users and companies in various fields^[9].

The user community are defined as a dispersed group of individuals who focused on finding new solutions to a problem^[3,10], and it has also been argued that user community is a network that is able to ask questions, provide solutions, and decide to adopt solutions. Some users express their unsatisfied needs and ideas based on their use and experience, and users who share the same views and attitudes gather to discuss solutions to needs^[11]. User communities can be divided into user spontaneously formed communities and corporate driven communities according to the type^[1,12,13]. This paper focuses on informal user communities formed spontaneously by those who has common interests, in which members freely innovate. After being established, the user community grows and expands with the frequent innovation and entrepreneurship activities, attracting individual users who has different expertise and skills, and finally the community becomes a diverse user interaction platform. In communities, as users interact with each other, weak relationships within the community are established, and the weaker the users' original relational connections, the more users are able to gain resources from the new community. As an accidental existence^[3], User innovation and entrepreneurship may lack the resources and information needed to identify and exploit opportunities, while user communities can provide numerous information and resource support during user innovation and entrepreneurship, and thus user communities are also known as incubators for user innovation and entrepreneurship^[4,14].

2.2. The concept of user innovation in the perspective of user community

Consumer behavior continuously upgrading and changing, users are playing an increasingly important role in the marketplace. Recent studies have shown that user innovation has become a common phenomenon in the market, studies have found that users are an important source of innovation^[10], more and more users innovating and up to 40% of consumers in the population being innovators of products^[12]. The concept of user innovation was defined as individuals or firms that create innovative products or services for the purpose of use^[10]. With the close communication between users and the development of information technology, there are new ways for users to participate in the process of innovation. User communities are considered to be an important platform for the development of user innovation and are increasingly influential in the decision-making process of user innovation^[6,15,16]. Based on knowledge of the product, and perceived unmet needs and emergencies during use, members of the user community share ideas with each other and help each other in the development of the innovation process^[17], innovating to meet needs and improve user experience through information and resources sharing in the community^[17]. So users and their involvement in community usually play an important role in the innovation and entrepreneurship process.

2.3. The concept of user entrepreneurship in the perspective of user community

Entrepreneurship is a complex phenomenon, in order to better understand the user entrepreneurship from a user community perspective, classical entrepreneurship needs to be sorted out. Classical entrepreneurship management is assumed that when resources are inefficiently allocated, entrepreneurs first identify ways to compensate for resource allocation inefficiencies and subsequently form creative innovations that combine resources in new ways means, introduce never-before-seen goods, services, production processes, raw materials, etc. into the market, and create economic benefits^[18,19]. Entrepreneurship was defined as a process of pursuing opportunities to realize their potential business value in the process of innovating products and services^[3,19].

As the market evolves and consumer behavior continues to upgrade, scholars have found that nearly 11% of all startups in the United States are founded by users^[3], existing and being popular in various fields, and users are thus known as an important source of entrepreneurship^[3,20]. However, there are still user innovators who find and exploit opportunities to commercialize their innovations in the process of using the innovative product and become user entrepreneurs, i.e. user entrepreneurs are user innovators who decide to commercialize the innovation and create a business. User entrepreneurship is defined as the commercialization of a new product or service by an individual or group of individuals who are users^[3].

The study of the user entrepreneurship is based on classical entrepreneurship. Review of the literature revealed differences between the two, as seen in table 1, mainly in terms of founding members, entrepreneurial identity, motivation, entrepreneurial process, nature and purpose,. First, classical entrepreneurship is based on opportunity development and plan for profitability, while the user entrepreneurship process is usually emergent, that is, users identifies an unmet need while using a product, interacting in the community and developing an idea to solve the problem, then create a new

product for their own use. With the feedback and dissemination from the user community, they can discover a potential business opportunity in the innovation and finally start a business. Second, classical entrepreneurship is often the exploitation of opportunities by individual entrepreneurs or established companies after they have identified them. In contrast, the entrepreneurial process under user communities is a collective intelligence, where users are embedded in the community, become part of it, develop innovations, identify opportunities and entrepreneurial implementation in the process of community participation and interaction. To emphasize the importance of user communities in user entrepreneurship, the user entrepreneurial process can also be described as a collective entrepreneurial process^[20], and when studying different types of entrepreneurship, user communities are seen as important complementary resources in the user entrepreneurial process that provide resources and information for users to innovate and start their own businesses^[4].

Table 1: Comparison of user entrepreneurship and classical entrepreneurship

	User Entrepreneurship	Classical Entrepreneurship
Motivations	Hobby, Self-satisfaction, etc.	Take the Opportunity, Gain Benefits, etc.
Entrepreneur	User, Community's Member	Individual, Company
Entrepreneurial Identity	Individual User, Enterprise Users	Entrepreneur, Professional Company
Process	Idea--Innovation--Opportunity --Entrepreneurship	Opportunity--Entrepreneurship
Character	Emergent, Collective	Planned

3. User Entrepreneurship Process from the Perspective of User Community

3.1. Differences between user and classical entrepreneurship from user community perspective

There are certain differences between classical entrepreneurship and user entrepreneurship, especially from the perspective of the user community. Classical entrepreneurship shows that the entrepreneurial process can be divided into two stages, opportunity identification and evaluation, then build a new business^[18,19]. Influenced by information asymmetry and empirical knowledge, some people are able to identify potential opportunities earlier than others and make a series of strategic options^[21]. Whereas, according to literature combing, the classical entrepreneurial process describes the rational entrepreneurial path, the reality is that most firms are created to respond quickly to opportunities and neither develop detailed innovative and entrepreneurial plans nor engage in too much social information sharing^[3], that they are started without the help of the community.

In user innovation and entrepreneurship processes, users rarely develop and commercialize innovative products alone, but usually gather with like-minded users who have the same interests to form user communities^[22]. Users belong to certain communities where they communicate through open communication and activities, integrate knowledge, share ideas and innovations, and freely express their ideas about existing products, then produce commercially valuable innovations by exploiting and utilizing various types of resources. With the role of the user community and its members, users who identify potential opportunities, subsequently commercialize those with potential commercial value. Thus the process can drive the transformation of user innovators into user entrepreneurs. Based on user communities, users cultivate a group identity, and communities play an important role in the development and diffusion of user innovations, providing the information and resources needed to produce more novel ideas, develop innovation and entrepreneurship^[3,23]. In the later stages of innovation diffusion and entrepreneurial implementation, through the communities are able to better attract early supporters.

Based on the study of classical entrepreneurship and user community perspective on user entrepreneurship, this paper argues that the user entrepreneurship process can be divided into three stages, including user idea generation, user innovation stage and user entrepreneurship stage^[3]. First, users with the same interests gather and interact with other users based on unmet needs to identify the prevalence of needs and generate creative ideas to solve problems. Second, user innovators embed into the user community to communicate around the product and try to develop prototypes. Finally, the user innovator obtains relevant resources from the user community, leverages the user community for product testing and innovation diffusing, and ultimately drives product commercialization.

3.2. Different stages of user entrepreneurship process from the perspective of user community

Based on the analysis and comparison of classical entrepreneurship and user entrepreneurship from the user community perspective, the user entrepreneurship process can be concluded as shown in Figure 1. The user community development process includes the establishment of user community, the expansion of user community and the diversification of user community, while based on the development of user community the user entrepreneurship process can be separated into three stages: user idea, user innovation and user entrepreneurship.

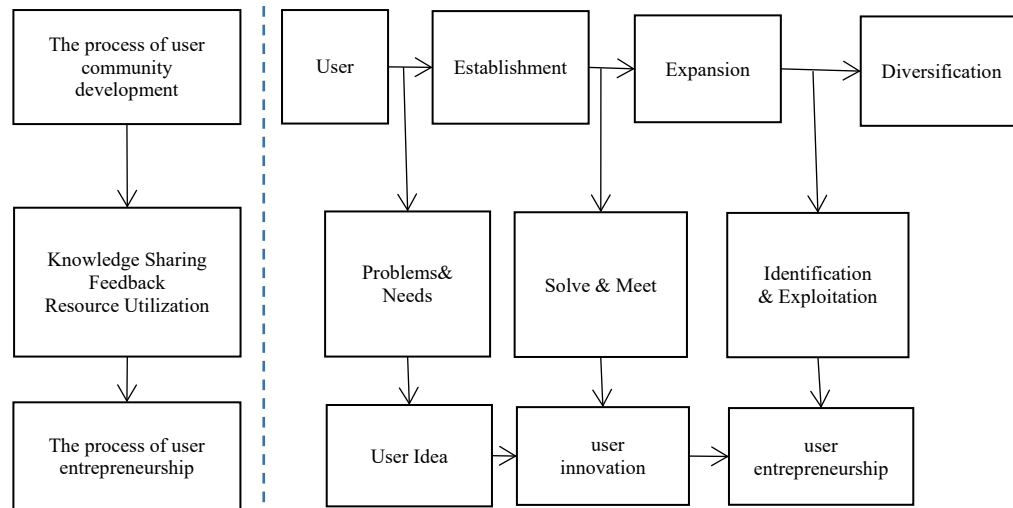


Figure 1: User entrepreneurship process from the perspective of user community

3.2.1. User idea generation stage from the perspective of user community

Idea as a source of creativity, and all innovations begin with the idea generation segment, it is the most important stage of innovation formation [24]. In user communities, the user idea phase includes idea generation, idea refinement, idea advocacy, and idea adoption. Within the community users identify problems based on unmet needs, generate ideas through discussions, improve the ideas based on feedback and suggestions from users' knowledge and resource sharing, and subsequently disseminate the ideas [25,26]. Ideas that meet users' needs and preferences are adopted. The idea generation process involves the personal skills and information of users that are difficult to transfer which is called "information stickiness" [10,27]. In user communities, users not only share the innovative knowledge they have, but also develop and update it by receiving feedback and suggestions from other members [16]. Users actively participate in user community interactions and check the usability and feasibility of new solutions. The interaction of the user community enable the sharing of knowledge, break down knowledge barriers, and gather more information, while also enable the dissemination of good ideas. Thus, user communities play an important role in idea generation, idea refinement, idea advocacy, and idea adoption processes.

3.2.2. User innovation phase from the user community perspective

The user innovation process is the implementation stage of the idea, and the user community serves as a platform for user innovation, which can be divided into four stages: innovation design, innovation development, innovation testing, and innovation release [3,13,14,28]. The idea adoption represents the consistent needs and preferences of the community members. In the innovation phase, the user community members design the innovative concept, shape, and use of the product or service, and the user innovator develops the innovation prototype based on the needs of the potential users within the community. Based on the information, knowledge, expertise, and resources provided by the community, the users continuously modify and improve the prototype through the evaluation, testing, and feedback suggestions from the community members. The innovation process is repeatedly iterated, and finally a relatively perfect product is formed and disseminated within the community and even throughout the market.

With the development of the Internet, user communities can take place both online and offline. Combined with the advantages of the Internet, user communities are expanding and have a greater mobility and greater source of innovation. In addition, users expect to benefit from the participation or

use of the innovation, and the innovation process itself is fun and satisfying for users. In the innovation phase, the common goal of users within the community is to exchange and collect information from each other, which can stimulate the creative potential of community members to contribute to innovation^[29]. According to innovation diffusion theory, based on user communities, the releases of the user innovation are more likely to gain community and market acceptance^[30]. In summary, the collective process within a community can accelerate the success of user innovations and drive them through all stages from design to release.

3.2.3. User entrepreneurship phase from the user community perspective

Combining previous studies, user entrepreneurship can be categorized into three stages: entrepreneurial opportunity identification, entrepreneurial opportunity evaluation and entrepreneurial implementation^[3,19]. After the formation of an innovation based on community interaction and collaboration, users tend to communicate and interact with each other in the community. Different users show interest in the innovative product among themselves, and user innovators identify the existence of potential entrepreneurial opportunities when they see the appeal and demand of the innovative product to other users in the market^[31]. After determining that the needs of others and willingness to pay meet the benefits outweigh the costs, the user entrepreneurs start the implementation of the venture and commercialize the product with the advantage of resources and information and interpersonal relationships of the members of the user community^[29]. Thus, users "accidentally" become user entrepreneurs^[3,14].

User communities are also an important platform for user entrepreneurship. User communities are considered as an important complementary asset for user entrepreneurship. Based on user communities, user innovators gain first-hand information about the needs and preferences of potential users to identify, evaluate, and exploit business opportunities^[4,29]. According to innovation diffusion theory^[26], user entrepreneurs can use user communities as a low-cost communication channel to promote their products and services in the marketplace, and trust among user community members can increase the willingness to try products and provide feedback^[10]. In communities, users have a distinction between lead and non-lead users^[10], lead users are more likely to implement innovative entrepreneurial behaviors, they are often also leaders in the community due to their own traits and capabilities. So leading users can generate word-of-mouth for entrepreneurial products once they start a business, while members of user communities are not only innovators but also consumers^[17]. Interaction and cooperation among user community members can enhance the competitive advantage of new ventures by improving the organization's continuous adaptation to new business environments^[32]. And forming a network of relationships between the firm and the user community also plays an important role in improving firm performance. In addition, in user communities, as the community continues to grow, the members within the community are also characterized by diversity, which helps user entrepreneurs to have more access to suppliers, distributors, and other market channels, and at the same time can broaden the sources of funding and help startups to successfully obtain crowdfunding support.

4. The impact of user communities on user entrepreneurship process

In combing through the user entrepreneurship process, it is found that the process from idea generation to entrepreneurship is continuously improved as the user community develops. In this process, according to previous studies and observations, the user community brings many advantages to the user entrepreneurship process, which is summarized as a process of interpenetration and cyclical development under the three roles of user knowledge sharing to break information stickiness, feedback and suggestions to promote product improvement, and resource utilization to bring efficiency^[23]. Thus knowledge sharing, feedback and suggestions and resource utilization are in the role of the user community throughout the user entrepreneurship process. By participating and interacting in the user community, the goal of users is to develop solutions to meet their needs based on the information and knowledge they have. In turn, as user innovators and user entrepreneurs, users want to gather feedback from the community, learn to improve the product and access user needs^[3], and use the diversity of members to obtain complementary resources. When using products, users with similar interests gather based on unmet needs. The users in community freely and openly exchange information about common problems, desired features, their own experiences and expertise. Innovative products are developed based on the sharing of information and knowledge by community members, and user innovation grows as the size and scope of the user community expands. The number of active users in the community continues to increase, and users with different expertise and needs gather to interact in the community, which also allows the community to diversify and develop, providing more resources to

support user innovation and entrepreneurship continuously^[24,29].

4.1. The impact of knowledge sharing in user communities on the user entrepreneurship process

In order to solve a problem, the required knowledge and problem-solving skills must be combined,^[10] yet knowledge is widely distributed among users, firms, and markets. Data from early studies show that the cost of transferring the knowledge required with the innovation and entrepreneurship process is about 2%-59% of the total project cost^[33], so it is high cost for the acquisition, transfer, and use of relevant knowledge. User sharing knowledge is divided into explicit knowledge and tacit knowledge. The former includes deterministic knowledge such as data, documents, concepts, etc., while the latter originates from the usage experience of members in the user community that is difficult to transfer^[33]. Users have a comprehensive understanding of the product^[33,34], so knowledge sharing among users is frequent in user communities.

Users participate in communities through common needs and knowledge sharing, which is a key component and important step in user communities. Motivations such as fun, enjoyment, self-satisfaction, social needs, gaining recognition from community members, improving status and reputation within the community, attracting headhunters for career development, and gaining benefits motivate users to actively participate in communities to share knowledge^[16,22,35]. In the user entrepreneurship process, users suggest product shortcomings and develop ideas based on their unique usage experiences and scenarios, and members in the community combine expertise and product preferences to propose solutions for product innovation. Finally, based on users' personal experiences and needs, the user entrepreneur is able to identify small-scale niche markets related to users' needs^[3,36]. Throughout the process, users share information and knowledge they have for free to drive the entrepreneurial process, meaning that knowledge sharing is crucial in user communities, and with the role of knowledge sharing among members, the community is able to gain information about needs and solutions related to them^[33].

4.2. The impact of feedback and suggestions in the user community on the user entrepreneurship process

Users in the community not only have access to information, knowledge, and ideas about products and services, but also are able to receive feedback and suggestions related to idea, innovation, and entrepreneurship from other members of the community^[27]. Users' feedback and suggestions include the assessment of the rationality and feasibility of ideas, the attitude and feeling of using the innovative products and the evaluation of entrepreneurial opportunities^[6,27,33]. There are four types of users' feedback can trigger users community's activities, that is help-seeking, help-giving, reflective reframing, and reinforcement^[23]. When users with different backgrounds and owing different resources and knowledge question each other's approaches, the feedback provided allows for the improvement of solutions and the generates more innovative and novel solutions^[3,23]. User entrepreneurs gather feedback in the user community in order to learn how to improve the product, test it. The continuous iteration of feedback and suggestions can better meet the needs of users, resulting in more complete, accurate, and meaningful information and innovation outputs^[6,33].

Feedback provided by user community members at all stages of user entrepreneurship can lead to higher quality product innovation. In the initial idea generation stage, users integrate creative ideas that are universal and can include the needs of the majority of people based on different user experiences. User entrepreneurs use users' knowledge and prototype feedback in the early innovation development phase and refine the product to meet users' needs. Users have direct experience with the product and can develop unique preferences and evaluations for ideas and innovations^[19,37]. By the entrepreneurship stage, the innovative products improved by user also have great appeal to crowdfunding institutions. User entrepreneurs remain engaged in the user community after they have built their ventures, and by embedding the community as a window to the business, it allows users to learn a lot about their needs and improvements, and is a platform for collaborative innovation between users and the business.

4.3. The impact of resource utilization in user communities on the user entrepreneurship process

The essence of entrepreneurship is the process of resources utilization to identify and develop opportunities, so resources are the basis for the establishment and development of user innovation and entrepreneurship^[38]. Although user entrepreneurs are able to have some unique information resources, they still need other resource providers. And the user community possesses various resources needed in

the user entrepreneurship process due to the heterogeneity of members, including human resources (professionals and technology, etc.), materials (capital, raw materials, etc.), and relationship networks (information, relationship resources, etc.)^[21,39]. Based on user community interaction, recent research divided the process of utilizing user entrepreneurial resources into four stages: resource development, identification, acquisition, and integration. Scholars argue that entrepreneurs need to effectively identify various resources and organize and integrate them.

Resources in user communities can be categorized into two types, which are user participation and user-generated content. Based on the knowledge sharing and information feedback from users in the community, users are willing to participate in the sharing of resources for the same motivation. Therefore resources held by different users also become easily circulated in the community^[31,17]. The community collects human, financial, and social network resources according to the needs of creativity and innovation, and members within the community use the resources, information, and feedback suggestions collected to iterate the innovative product^[27]. The collective creativity and creation through the user community enables the development and identification of resources^[17,27]. In the user entrepreneurship phase, the community integrates resources that are conducive to entrepreneurial development^[4,6]. The user community is expanding with the development of entrepreneurship, and the community members are diversifying, so that users from different professions can provide fully complementary resource support for user entrepreneurship^[29]. Thus the process of user innovation and entrepreneurship is able to access unique resources through the user community to gain competitive advantage, improve efficiency, and achieve entrepreneurial success.

5. Discussion

This paper provides a new perspective on user entrepreneurship process, based on research on user communities and user entrepreneurship, we review the concept of user communities, user entrepreneurship and user innovation, summarize and compare the process of the classical entrepreneurship and the user entrepreneurship from the perspective of user communities, and point out the differences between the two. Based on the user community, the different stages of the user entrepreneurship process are sorted out, the influential role of the user community in the user entrepreneurship process is summarized, and finally, the future research direction is proposed.

5.1. Conclusions

Based on the literature reviewed, this paper concludes the following: The user entrepreneurship process from the perspective of user community can be summarized into three stages: user idea, user innovation and user entrepreneurship. In the user idea stage, the process is divided into four steps: user idea generation, idea refinement, idea advocacy and idea adoption. Users of the product discover problems in the process of use, trigger the attention and resonance of other users, form a common demand, determine the idea after community discussion, spread it within the community and continuously improve and amend it. The user innovation stage is divided into innovation design, innovation development, innovation testing and innovation release. Based on the ideas identified in the early stage, users design and develop their products on their experience and knowledge, and other members within the community put forward their opinions and feedback to improve the products and disseminate the innovations. The user entrepreneurship phase has three steps: opportunity identification, opportunity assessment and entrepreneurial implementation. The user innovator identifies potential business opportunities in the process of testing and using the product within the community. With the advantage of information, resources of the community members, the user innovator uses the opportunities to practice entrepreneurship, and the new product builds a competitive advantage through word-of-mouth within the community, thus improve the performance.

In addition, according to the user community perspective of user entrepreneurship process summarized in this paper, we found that the knowledge sharing, suggestion and feedback, resource utilization within the user community always act as a great support for the development of user entrepreneurship.

5.2. Future Research

This paper has comprehensively sort out user innovation and user entrepreneurship from the perspective of user communities, and there are still many directions worthy of research based on user

communities. First, the study of members involved in user communities, such as leading users^[40] and professional users^[3] who are more likely to choose innovation and entrepreneurship, based on the community context, what demographic characteristics these entrepreneurial users have, how to identify, and how to utilize is still questions. Second, user communities evolve as the user entrepreneurship process advances, user communities and their members are not aligned with the entrepreneurial enterprise pursuits, how does the development of the community change after the implementation of user entrepreneurship, does it iterate for a new round of innovative entrepreneurship or does it gradually dissolve? The development process of user communities can be further studied in the future. Third, in the process of idea generation, innovation and entrepreneurship, only a few can succeed, and most studies focused on the process for successful cases, however, learning from successes is not necessarily better to avoid failures^[30], and failures in various stages can be summarized in the future.

Acknowledgements

National Social Science Foundation project "Research on dynamic user entrepreneurship model and performance mechanism based on the embedding of maker space network" (20BGL055).

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