Social Media in User Entrepreneurship

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Abstract. User entrepreneurs develop innovative products or services for their needs and then found firms to commercialize their innovations. Their ability to coordinate the innovation related efforts is vital for both these steps. Drawing upon six cases on user entrepreneurial firms, the study explores how user entrepreneurial firms use social media, highlighting firm resources that are associated with social media and give them a competitive advantage. It was seen in these six technology based firms that social media was used for outside-in, Spanning as well as inside-out resources, especially external relationship management, market responsiveness, new product/service development and technology development.

Keywords: User innovation · User entrepreneurship · Social media · Resources and capabilities

1 Introduction

Users often develop innovative products or services that do not exist in the market to meet their needs. When these innovations also address the needs of a larger population, then users can start commercially offering them in the market. Users engage in collective creative activity prior to firm formation, often in communities, that result in improvement of their ideas and initial market validation [1]. Social media applications such as blogs, social networking sites, content communities etc. [2] have been the backbone of communities and are vital for coordinating innovation and entrepreneurial activities, especially among smaller firms. This study explores how user entrepreneurs use social media, with an emphasis on resources that give them a competitive advantage. With the help of six cases of user entrepreneurial firms, it identifies resources of these firms that are associated with social media.

The following section provides the necessary literature background on user entrepreneurship and social media, which is followed by sections on the detailed research design, findings, discussion, and conclusion.

2 Literature Background

The following section reviews literature that forms the necessary background for this study. It starts out with an introduction to user innovation and subsequent of user entrepreneurship. It then describes the role of social media in firms and the research gap of social media in user entrepreneurship.

2.1   From User Innovation to User Entrepreneurship

Users of products or services often know their needs better than manufacturers. Manufacturers can discover this need information, but in many situations, these needs are too "sticky" i.e., they do not get easily transferred from the user to the manufacturer [3]. In these cases, users have developed their own innovative solutions[1] that satisfy their specific and unmet needs. Numerous studies have shown that both user firms and end users are sources of innovation in processes as well as new products [4]. User firms as sources of innovation have been seen in various industrial sectors. Some examples are in semiconductors [5], security software [6] and financial services [7]. End users of consumer goods have also developed significant innovative ideas as can be seen in various products used in extreme sports such as biking [8], kayaking [9] etc. and also in open source software [10]. Users are sometimes assisted by manufacturers e.g. who offer them toolkits to innovate [11] or by hosting user communities where their ideas branch out and evolve and as they share their ideas or creations among their network [12]. It has led to steadily improving capabilities for users to design and to coordinate their innovation related efforts which drives user innovation [13].

Sometimes, these users who develop prototypes that meet their unmet needs, realize that they could commercialize their innovative product or service and stumble into entrepreneurship [14]. User entrepreneurs are quite prevalent (for instance, 46.6 percent of firms founded in 2004 and survived to year five in the United States were founded by users), and they are different from regular manufacturers. They are predominantly innovative, and have a prevalence of venture capitalist funding, have a high human capital, successfully generate revenues, and have a higher share of women and minority groups [15]. They also have lower estimates on financial returns and profit thresholds than regular manufacturers [1]. Shah and Tripsas differentiate between professional user entrepreneurs and end user entrepreneurs. Professional user entrepreneurs founded a firm around an innovation that resulted in use in a previous job or business. This gives them a high work experience and they are likely to have previous entrepreneurial experiences and tend to have a higher rate of return, when compared to end user entrepreneurs. End user entrepreneurs build firms around innovations that developed from their personal use [1].

The user entrepreneurship process is different from regular entrepreneurship in two ways. The first difference is that the process of setting up a firm is emergent. Even before the concept of the entrepreneurial venture started, the user experienced a problem or need that was unmet by existing solutions in the market. The user then develops a prototype product for personal use, which generated interest among other users. The second difference is that user communities play a significant role in development and diffusion of the innovation much before firm formation. These communities consist of loosely affiliated users who participate voluntarily form a vital role in motivating users, building upon existing ideas, and even testing prototypes. The level of interest of community members validates of it only solves the idiosyncratic needs of the user or has commercial potential by solving the needs of a larger

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[1] 'Solutions' is used to refer to products, services or a combination of both in this paper for better readability.

population [14]. In this process, users may innovate and develop a solution for unmet needs in one industry and then shift to another industry where there is an opportunity to commercialize [16]. Social media plays a vital role in online user communities and are valuable to nascent firms. The relationship between social media and firms is discussed further in the next section.

2.2   Role of Social Media in Firms

The importance of user communities in the process of user entrepreneurship hints at a strong role of social media and associated technologies. The term social media (often used interchangeably with social networks and Web 2.0) is used to refer to internet-based applications that build on the ideological and technological foundations of Web 2.0 and that allow the creation and exchange of user generated content. Categories of social media include blogs, social networking sites, virtual social worlds, collaborative projects, content communities and virtual game worlds [2]. Social media applications aim to engage users and have features to generate initiate and circulate new and emerging sources of online information [17]. Firms can thus use social media to engage users with the eventual goal of generating profit. Firms use social media for marketing and customer relationship management, networking within and outside the organization, recruitment and other miscellaneous activities [18].

While established firms may be conservative and use social media only to mitigate risks of not having an online presence, smaller firms may be more inclined to use social media to create additional value. This is because SMEs have often struggled to adopt technology due to their lack of skills and resources when compared to bigger firms. Social media has massively reduced the barriers of SMEs in terms of skills and resources and allowed them to effectively compete with much larger organizations that enjoy efficiencies of scope and scale [19]. It is used widely by SMEs for marketing and customer relationships management [20] in both B2B [21] as well as B2C contexts [22].

2.3   Social Media for User Entrepreneurs

While many of the benefits of social media that apply to SMEs may be seen in user entrepreneurs, SMEs are quite heterogeneous and differ vastly. SME owner-managers differ in their age, education level, attitude towards the internet, preference for face to face interactions, strategies for growth etc. [23]. Hence, the technically comfortable user entrepreneurs [15] can be quite different in their use of social media to other older SME owner-managers, say for example in the French hotel industry [24]. Furthermore, user entrepreneurs may be more inclined to look for rapid market growth when compared to more conservative family owned SMEs [15]. This leads us to treat user entrepreneurs differently thereby resulting in the research question of how user entrepreneurs use social media and how does it give them a competitive advantage.

3   Research Design

As this area is relatively unexplored, an exploratory case study approach was adopted [25]. The study uses a multiple non-embedded case study based on data from six user entrepreneurial firms in the information technology industry. The data is used to theorize about the use of social media for competitiveness following an inductive approach [26–28]. Using six cases fits within the recommendation of using four to ten cases of Eisenhardt that allow sufficient data without too much complexity and do cross case analysis [26].

3.1   Data Sample

The empirical field for this study was restricted to firms in the field of information technology. For identifying a suitable sample of user entrepreneurial firms, two approaches were taken. The first was to identify firms who had previously developed innovative prototypes for use needs and are on the look out to commercialize their solutions. To do this, we selected nascent firms competing in entrepreneurial events around the field of information technology that have already user-evaluated prototypes. Out of these events, an entrepreneurship academy themed around Internet of Things that followed the approach of creating prototypes for their user needs and later commercializing them was selected. The top three teams from this academy continued to develop their prototypes and aim to bring their prototypes into production.

The second approach was to search broadly for established start-ups that were founded by users, within the theme of information technology. After exploring through various entrepreneurship communities, platforms, and Facebook groups, our search for cases was restricted to the crowdfunding platforms Kickstarter and Indiegogo. Crowdfunding campaigns on these platforms related to information technology were then filtered to those that mention a user need as the origin of the innovation. The first

Table 1. Sample of firms for cases

Name	Solution	Employees	Started
SensePro	Gesture sensing device to control Gopro action cameras	5	2015
JAMS wearables	Modular wearable bracelet so users can choose the right sensors to track their personal data that match their needs.	4	2015
Drone in	Drone based advertising service	3	2015
FreeWavz	Wire-free smart earphones which can monitor heart rate and fitness	<10	2007
OpenElectrons	Robotics systems based on Raspberry Pi and Arduino	5	2002
Sher.ly	Private cloud solution for sensitive data sharing with secure access control	6	2013

50 campaign owners were then contacted using a short survey to find out if they had indeed developed the idea based on their needs and hence were indeed user entrepreneurs [15]. Based on 13 responses to this survey, seven firms were detected as user entrepreneurial out of which three were available for interviews. The firms sampled for the case study are described in Table 1.

3.2 Data Gathering and Analysis

Data gathering for the cases began by collecting all published documentation of the firms online including profiles published on social media, entrepreneurship platforms, and crowdfunding campaigns. Individuals from these six firms were interviewed using a set of semi-structured questions that could be adapted to the interviewee. The interviews were recorded and transcribed. Any questions not covered in the interviews were further covered through email exchanges with the interviewees.

The data gathered through these multiple sources was analysed through a coding scheme based on the theoretical perspective of resource-based view [29] in the context of information systems [30]. Information systems (IS) assets and capabilities (Outside In, Spanning and Inside Out as in Table 2 that are social media based in the cases were identified and coded for the different steps in the user entrepreneurship process model outlined by [14]. The coded statements were used to organize and evaluate the data.

Table 2. Typology of IS resources from [30]

Outside-In	Spanning	Inside-Out
• External relationship management • Market responsiveness	• IS business partnerships • IS planning and change management	• IS Infrastructure • IS technical skills • IS development • Cost effective IS operations

4 Findings

Considering the data sample of high-tech user entrepreneurial firms, the use of social media is pervasive in all six cases, but is done in different ways. The first three cases of firms (SensePro, JAMS Wearables, and Drone-In) had working prototypes but were not yet at the stage of commercializing their products are presented first. They used social media for external relationship management. All three had facebook and twitter profiles to build strong community networks, where they regularly posted updates of the status of their prototypes and funding events in which they participated. The goal of these activities was to create a buzz around their new product or service idea, which could give them greater visibility during funding events and a momentum to enter into future crowd funding campaigns. This is clearly seen in the case of Drone-In.

"Social media has allowed us to effectively have free advertising and exposed us to different people from different backgrounds who are interested in the services we hope

to offer. It has been a great way to throw ourselves into the public domain and we have used it stir the conversation on drones in general. It has allowed us to reach out to potential partners and investors in new innovative tech... also given us a great deal of collateral and proof of concept when we've approached investors, the were able to see the support the idea had and how much time and effort had been invested in the project."

All three firms had their own web pages used for displaying their innovative solutions, features and user testimonials, and as a point of contact for the future. However, at this stage of the entrepreneurial process, they relied on their public social network pages to log their experiences rather than posting on dedicated blog pages. Market responsiveness was very important for the firms as they strived to differentiate themselves from competing and substitute solutions. This was done by regularly scanning various social media platforms and ensuring that they were always flexible to adapt their solutions to meet changing needs.

OpenElectrons relies on user communities for market sensing and customer linking. By following the maker movement and being regularly part of conferences like the Maker Faire, they are connected to new needs and then present it in online forums.

"Lego Mindstorms is a very small, tight community. There are forums, there are groups, and we are connected into those groups. There are people who know us from there and recommend our products through other users. They present it on the forums. That is how people know us. So it is pretty much from word-of-mouth."

Sher.ly used targeted advertising features on blogs and social networking sites to reach the right target group for their secure and private data storage.

"We advertise on blogs and we publish a lot of stories about our solution. What is the best benefit and what is the best use case, how you can benefit from it and how we can simplify things you do. So there are various things you can do. We try to focus, that means that when we talk to a specific group, we are trying to talk to specific people, for example not teenagers"

Social media did not play a major role in managing internal partnerships of SensePro, JAMS wearables or Drone-In. Instead, they played a role in keeping the firm members motivated and dedicated towards success. As these three firms relied on open source electronics for their solutions, they continuously relied on forums and blogs of related suppliers and communities (e.g. Arduino microcontrollers) to improve their technical IT skills, build knowledge assets and to experiment with new technology.

FreeWavz and Sher.ly both had close relationships with blogging sites, which they use to promote themselves. FreeWavz also used a public relations firm to manage promotions on social media based outlets.

"We also have a public relations firm. We use that as a help. There have been articles written about us. Then we have some additional promotions and discussions going on for some magazines that want to include reviews of our product so they also want to include us in reviews of top technology products and headphone products."

Hence, the user entrepreneurial firms used social media for their resources and capabilities that could give them a competitive advantage, which ranged from having market sensing to developing knowledge assets. These are summarized in Table 3.

Table 3. Identified resources and capabilities associated to social media in the six user entrepreneurial firms

Identified resource/capability	Associated types of social media	Examples from cases
Manage external relationships	Content communities Social networking sites	Find customers through Mindstorms community Find partners through facebook/twitter
Market responsiveness	Social networking sites	Monitor profile pages of competition
Business Identified resources and capabilities associated to social media	Blogs	Posting product reviews on blogs
Planning and Change Management	Content communities, Collaborative projects	New product ideas in communities
IS infrastructure	Social networking sites	Employee motivation through facebook posts
Technology development	Blogs, Content Communities, Collaborative projects	Using open source Arduino and associated content

5   Discussion and Conclusion

The paper studied six cases of user entrepreneurial firms to identify their use of social media and the role of social media in their competitiveness. Freely available social media services provide scalable models for market responsiveness and market relationships, building brand loyalties and collaborative activities with other organizations and their customers. The interlinking between different various social media platforms exacerbates this effect, allowing user entrepreneurs to tap customers who use multiple platforms and build loyalty around their brands. Integration of e-commerce functionalities in social media provides further value to small-scale user entrepreneurs. Social media based IS resources [30] are not located within the firm but are readily available and the way they are used result in their effectiveness.

This research provides further contributions to the nascent fields of social media in user entrepreneurship. User entrepreneurship is poised to take off with users getting further access to production capabilities and better funding opportunities. Its findings are relevant to potential and existing user entrepreneurs looking to learn from previous experiences of other potential and existing user entrepreneurs. While this market segment is relatively niche [1] in comparison to the general social media market, social media firms can incorporate advance features that improve their offerings to small entrepreneurs, especially those with a background in user entrepreneurship.

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