ABSTRACT

Social interaction plays a central role in effectuation processes, yet we know little about the implications for effectuation when an entrepreneur interacts via particular channels such as social media. To address this gap, our paper uses an inductive, theory-building methodology to develop propositions regarding how effectuation processes are impacted when entrepreneurs adopt Twitter. We posit that Twitter based interaction can trigger effectual cognitions, but that high levels of interaction via this medium can lead to effectual churn. Implications for our understanding of effectuation, of social interaction, and of the impact of social media on entrepreneurial firms are discussed.

INTRODUCTION

Twitter has been my number one resource for building my community and building my business. Twitter enabled me to reach out to people that I otherwise wouldn’t or couldn’t. You can find people who are relevant to your business readily and steadily and as the usage numbers peak on Twitter so does that ability to really connect with people in a relevant manner. What Twitter allowed us to do was cultivate a following of people for various things. ... A lot of these people I have engaged in an online fashion have become part of our offline social functions and I formed real relationships with many. Hundreds of people: my network exploded ... it grew exponentially and it’s through Twitter. It’s through connecting with people. They find me. They reach out to me
or I find them. I reach out to them. And we engage in ongoing conversations online, meeting up sometimes offline. These are real relationships. (Informant 3)

The quotation above is from an entrepreneur who is less than a year into her third business venture. She is describing her experiences with Twitter, the social media channel that allows users to post “microblogs” of no more than 140 characters each. The quotation is striking in its emphasis on how this channel facilitates social interaction, both online and face-to-face.

Social interactions hold a critical, yet relatively unexamined, role in the network of constructs associated with effectuation. The term effectuation refers to a logic that entails “molding and enhancing initiatives, formulating new goals and creating new opportunities rather than positioning oneself within environments largely outside one’s control or taking opportunities as exogenously given” (Wiltbank, Read, Dew and Sarasvathy, 2009, p. 129). The logic of effectuation has recently received prominence in the entrepreneurship literature with the recognition that effectual approaches can increase entrepreneurial efficacy and reduce the costs of business failure, since failures of effectual firms occur earlier and at lower levels of investment (cf. Read, Dew, Sarasvathy, Song and Wiltbank, 2009; Read, Song and Smit, 2009; Sarasvathy, 2001; Wiltbank, Dew, Read and Sarasvathy, 2006).

Prior research has helpfully clarified that effectuation is a logic that fits within the larger category of decision-making under uncertainty, and is more likely than predictive logic to be used by people with greater entrepreneurial expertise when they are faced with the need to make decisions in uncertain business situations (e.g. Read, Dew, Sarasvathy, Song and Wiltbank, 2009). Prior research has also posited that, when engaging in a behavioral process guided by the logic of effectuation, the entrepreneur interacts with other people to gain feedback and to co-create opportunities, which can lead to the gaining of commitment from new partners, the acquisition of new material resources, and the development of new goals on the part of the entrepreneur (Read, Song and Smit, 2009; Sarasvathy and Dew, 2005). However, even though social interaction is a key construct within the effectuation literature, prior research has yet to devote empirical or conceptual attention to its role. The specific objective of our research is to address the following question pertaining to social interaction: With the opportunities for social interaction that accompany the adoption of a social media channel such as Twitter, what are the consequences for effectual processes in which entrepreneurs may engage?

Social media channels are user-friendly, inexpensive, scalable internet- and mobile-based technologies that allow for the sharing of user-generated material. Social media are sometimes described as “content that has been created by its audience” (Comm, 2009) in contrast to content generated by media companies or publishing houses. There is no definitive typology of different sorts of social media (see for example Kaplan and Haenlein, 2010), but it is common to differentiate between social networking (e.g. Facebook), social bookmarking (e.g. Digg), video-sharing (e.g. Youtube), picture-sharing (e.g. Flickr), professional networking (e.g. Linked_In), user forums, weblogs (or blogs), and micro-blogging (e.g. Twitter). A number of the more established social media channels enjoy some of the highest traffic on the internet. The reasons for their popularity are doubtless many and varied, but, as the quotation above suggests, a key feature is that they allow an unprecedented opportunity for individuals – including entrepreneurs – to engage in social interactions on a scale, and in a way, that was not possible before social media became widely popularized.

Given that social interaction is facilitated by social media, given that many entrepreneurs are experimenting with using social media for business purposes (e.g. Center for Excellence in Service, 2010), and given that social interaction is one key element in the effectuation perspective, it is logical to ask how the use of a social media channel may affect entrepreneurs’ effectual cognitions. By studying how engagement with social media may be related to aspects of effectuation, we can gain a better understanding of the conditions under which entrepreneurs’ use of social media may facilitate cognitions and behaviors that ultimately result in creating opportunities and developing new firms, markets, or industries. At the same time, by studying the use of social media through an effectuation lens, we can gain a theory-informed understanding of the potential impact of adoption of such channels by entrepreneurs.

We focused our study on one social media channel for reasons of tractability and selected Twitter for several reasons. First, Twitter was introduced relatively recently, and its popularity mushroomed little more than a year ago, which means that we can access a substantial group of entrepreneurs whose initial experiences are relatively recent. Second, compared with other social media channels, Twitter enables social interaction that is more dynamic and less time-consuming, yet oriented less than Facebook towards the entrepreneur’s personal network. The entrepreneurs in our study believed that Facebook involved more personal commitment and less wide-scale public exposure compared with Twitter; for example, one stated:
“Facebook is a cocktail party and so when you are engaged in Facebook you're surrounded, sometimes very peripherally but surrounded, by people that you know and you like and that are part of your social graph. Twitter's not that. Twitter is more like somebody standing on the street corner with a megaphone saying, “Hey, if you're interested in the Toronto Maple Leafs, check out this article!” And I may be interested and I might check it out or I may just walk right by.” (Informant 11)

Moreover, Twitter can augment other social media channels in that entrepreneurs can use Twitter to broadcast a link to their blog and send their Twitter messages automatically to their Facebook page. Finally, Twitter, as a social media channel, renders the entrepreneur him- or herself central to the interaction, and so it is ideally suited to studying effectuation which is also an individualized process (Sarasvathy, 2004).

Twitter is the leading platform among “microblogging” forms of social media that provide a way of broadcasting brief posts. In Twitter, these messages (called tweets) are very short: a maximum of 140 characters. Users can post original tweets under their Twitter accounts and can “retweet,” which means posting another user’s tweet, while giving credit to the originator. Twitter users have a profile page, which describes them, and indicates their followers and whom they follow. When a person chooses to follow someone, they receive their tweets. Often, people reciprocate and follow those who follow them. Therefore, Twitter users are both consumers of tweets (followers) and producers of tweets (followed).

Twitter Inc. was founded in 2006 and the company has recently been valued at over one billion dollars (Corkery and Vascellaro, 2009). In the year between May 2008 and May 2009 the number of users jumped from 1.6 million to 32.1 million (Vascellaro, 2009); in April 2010 Twitter reported that they had more than 105.7 million registered users (http://www.huffingtonpost.com/2010/04/14/twitter-user-statistics-r_n_537992.html). This means that most companies using Twitter – and most of the entrepreneurs we studied – had been using it for a year or less when our initial data were initially collected in September – October 2009.

Despite its newness, though, entrepreneurial firms are using Twitter in a variety of innovative ways. There are some novel ventures particular to Twitter itself. For example, entrepreneurs are developing third party applications, such as Tweetdeck, Tweetie and Twitterberry, to make Twitter easier to use on computers and smart phones. Twitter is also being used innovatively by established firms to perform core business functions that existed before Twitter, such as sales, customer service and branding. Dell and Starbucks offer coupons through Twitter to promote sales (Miller, 2009). Recognizing that disgruntled customers can easily broadcast complaints online about poor service, companies such as Pizza Hut, Comcast, and Southwest Airlines are hiring people to monitor the Twittersphere for negative comments and respond instantaneously (Reisner, 2009). This increase in social interaction has required organizational changes. For example, Comcast now has a team to monitor comments about the company being posted on Twitter (Siegener, 2009) and Dell has hundreds of people who talk to customers through Dell Twitter accounts (Miller, 2009). Indeed, the CEO of online shoe retailer Zappos uses Twitter to hire the right people to sustain the company culture, and encourages them all to communicate with the outside world via Twitter: “For customers, I think it's a way to get an inside glimpse of what our people are like and what our culture is like. Our belief is that your culture and your brand are, ultimately, the same thing.” (Tony Hsieh, quoted in Steinberg, 2008).

With well-publicized examples like these and headlines in the business press such as “One bad Twitter ‘tweet’ can lose companies as many as 30 customers” (Shannon, 2009) and “Dell reports $3 million in Twitter revenue” (Miller, 2009) it is not surprising that entrepreneurs are thinking about how Twitter can be incorporated into their businesses. There is evidence that many are actively engaged; indeed, Inc. Magazine’s online presentation 2009: The Entrepreneurial Year in Review (Inc, 2009) starts with the line: “In many ways, 2009 was the year of Twitter.” Twitter is being used by 52% of the companies on the 2009 Inc. 500, Inc. Magazine’s list of America’s Fastest-Growing Private Companies (Barnes and Mattson, 2009). In addition, a study of 11.5 million Twitter accounts indicates that “entrepreneur” is one of the most common words in the profiles of the most active users on Twitter, defined as the 5% of users who account for 75% of the traffic and have more than 1,000 followers (Cheng and Evans, 2009). These facts and figures highlight that Twitter is being increasingly adopted by entrepreneurs and reinforce the conclusion that entrepreneurship scholars need to understand the implications of this adoption.

Scholarly research on social media in general has largely focused on how it may be used by companies as a marketing tool to monitor a marketplace (e.g. Berinato 2010) or increase marketing communication effectiveness (e.g. Dholakia and Durham, 2010; Kozinets, de Valck, Wojnicki and Wilner 2010; Trusov, Bucklin and Pauwels, 2009). Virtually no research has examined how the user’s (in our
case, the entrepreneur’s) opportunities for social interaction that accompany the use of a social medium like Twitter may impact their own cognitions and actions.

In order to address this gap, we next review past research on effectuation in general and in particular on social interactions in effectuation processes. We describe the qualitative methodology used to investigate the consequences for effectual processes resulting from the adoption of Twitter. Results of the data analysis are then outlined and conclusions are presented.

**Literature Review: The Effectuation Process and Social Interaction**

The concept of effectuation was introduced by Sarasvathy (2001). She contrasted causation processes (that take a specific goal as given and identity the means needed to achieve the goal) with effectuation processes (that take a set of means as given and focus on selecting between possible effects that can be created with that set of means). Sarasvathy argues that effectuation processes are likely to be more appropriate than causation processes when entrepreneurs have generalized aspirations (e.g. to make money) rather than specific goals (e.g. to become a market leader in a specific niche of an established market), and under conditions where the future is unpredictable but at least partially controllable. While not explicit in the effectuation literature, Sarasvathy’s original treatment of the topic and all those subsequent to it reveal that effectuation processes may involve intra-subjective cognitions, interactive behaviors, and inter-subjective outcomes. These three elements are defined in turn.

**Intrasubjective cognitions** are about the “means” the entrepreneur believes she or he has available and the effects that might be achieved with these means; these cognitions conform to a particular logic emphasizing non-predictive control (Wiltbank et al. 2006), and they are intra-subjective in the sense that they are cognitions the entrepreneur has which may not be known to other people or agreed with by other people. Arising from cognitions conforming to a particular logic, effectuation processes also include **interactive behaviors**, i.e. social interactions with others. These interactions are of focal interest here and are elaborated upon below. Ultimately, as a result of a cognition and interactions, the effectual process may result in two **inter-subjective outcomes**, i.e. outcomes that are understood in the same way by the entrepreneur and other people, including, but not necessarily limited to, stakeholders. One inter-subjective outcome is the creation of “artifacts such as firms, markets and economies” (Sarasvathy 2001, p. 249). The other is that entrepreneur acquires or is able to access additional material resources (e.g. funding) and/or intangible resources (e.g. reputation); these resources are assets of the firm (Sarasvathy and Dew 2008, p. 242) and differ from the means inventoried by the entrepreneur in that the former are intra-subjective assessments made by the entrepreneur, whereas the latter are resources as defined by Penrose (Sarasvathy and Dew 2008). However, effectuation theorists have posited that there is a link between the two. Though there is some ambiguity in the specification of this link (Chiles, Gupta and Bluedorn 2008) we believe that acquiring inter-subjectively recognized resources may trigger the entrepreneur to engage in a cognitive re-evaluation of the means available to them, leading to an iteration in the process This effectuation process linking intra-subjective cognition, inter-individual behaviors, and inter-subjective outcomes is depicted in Figure 1, and following the Figure we elaborate on the interactions that are of central interest in the present research.

**Insert Figure 1 about here**

Both the cognitive and the behavioral components of effectuation processes have aspects that are relevant here given our focus on social interactions via social media. At the intra-individual cognitive level, entrepreneurs who are thinking effectually take stock of the means they believe they have available to them. These means “usually consist of the relatively unalterable characteristics/circumstances” (Sarasvathy 2001, p. 249) that the entrepreneur believes she or her firm possesses and the entrepreneur can take mental account of these means by asking the questions: “Who am I?” “What do I know?” and “Whom do I know.” This third question explicitly deals with the complement of friends and acquaintances the entrepreneur believes are potentially relevant to achieving some generalized goal she has for her firm.

At the behavioral level, interaction with people whom the entrepreneur knows or meets is a stage in the effectuation process that can eventually culminate in the outcomes described above. In discussing the interaction element of the process, effectuation scholars have described entrepreneurs as sharing information with at least those “others” who are committed partners because “relationships (particularly with shared rewards) shape the trajectory of opportunity” (Read, Dew, Sarasvathy, Song and Wiltbank, 2009, p. 3). They have also implied that it is not only committed partners who are important in the effectuation process: customers, investors, suppliers, and “any and all people [who are] potential stakeholders” (Read, Dew, Sarasvathy, Song and Wiltbank, 2009, p. 14) may be involved in the co-
creation process that results in new artifacts. Further, the roles and relationships of self-selected stakeholders may be negotiated and renegotiated in the value creation process.

While incremental refinements to the social interaction element of the effectuation model have been articulated recently, there has as yet been little conceptual consideration of the behavioral interaction element of effectual processes. The implicit assumption in regards to interactions appears to be that they involve the entrepreneur telling stakeholders about the effects she thinks she can create given the means she believes she has available; this triggers engaging stakeholders in the process of refining or creating new artifacts and acquiring new resources. What has not been considered is the possibility that interactions could have an additional role in effectual processes.

Indeed, there is little work in either the entrepreneurship literature or other business literatures that has paid attention to role of social interactions per se, although there is a significant literature on related constructs. One such related construct that has attracted considerable interest is social networks. There is a significant literature in entrepreneurship, strategy and marketing (e.g. Coviello, 2006; Davidsson and Honig, 2003; Hite, 2005; Hite and Hesterly, 2001; Hoang and Antoncic, 2003; Lechner, Dowling and Welpe, 2006; Palmatier 2008: Starr and Fondas 1992) that has looked at how the size and characteristics of an individual’s or a firm’s social network matter to firm level outcomes. A closely related line of research that has attracted considerable interest reflects the characteristics of the relationship between a focal actor and another party with whom that actor is doing business. For example, marketers have examined the how the degree of dependency between actors affects their behavior and performance (e.g. Lusch and Brown 1996); how their relational embeddedness (the degree of reciprocity and closeness that exists between two parties) affects the degree to which desirable outcomes are achieved (e.g. Palmatier 2008; Rindfleisch and Moorman 2001); and how the perception of friendship versus business roles affect business outcomes (e.g. Grayson 2007; Heide and Wathne 2006). Within the entrepreneurship domain, there is also a small but significant literature on social competence, an individual level construct that has been shown to affect the resources entrepreneurs are able to acquire and what they are able to achieve in conjunction with those with whom they interact (e.g. Baron and Markman, 2003; Baron and Tang, 2009). Collectively, these studies, and many others shed considerable light on how characteristics of entire networks, of specific relationships, or of individual differences in social skills, affect outcomes of interest. Yet studies that are concerned with networks or relationships are typically not concerned with the impact of interactions per se.

To our knowledge, only a few studies have specifically included social interaction – the characteristics of the interaction that occurs between two parties (versus the nature of their relationship) – as a variable of interest. One recent example is Maula, Autio and Murray (2009) who show that more frequent social interactions between corporate investors and portfolio companies lead to learning benefits for portfolio companies. Their work builds on earlier studies that similarly found frequency of social interactions between investors and firms to benefit the investees (Sapienza 1992; Sapienza and Gupta 1994).

Beyond highlighting the impact of frequency of interaction in the investor-investee context, however, the extant literature in entrepreneurship and other management fields sheds little light on how engaging in social interactions (versus having social relationships) might affect other outcomes of interest. Conceptualizing the role of social interactions is increasingly pressing as the use of social media escalates, and the variety of types of social interactions proliferates (e.g. Erickson 2010). Thus, given that (1) social interactions are posited to play a central role in effectuation processes; (2) existing conceptualizations of the impact of social interactions is relatively limited; and (3) social media appear to be giving rise to new types of social interactions, it is critical that we develop theory regarding how social interactions of the type that occur via social media such as Twitter may impact effectual processes. Since the purpose of our research is theory development, qualitative methods are appropriate (Edmonson and McManus, 2007; Eisenhardt, 1988). In the following section, we explain the specific qualitative methods utilized.

**METHODOLOGY**

In this study, our interest is in how effectual processes might be affected among entrepreneurs who have adopted the Twitter social media channel. We used a qualitative methodology to develop theory inductively (Miles and Huberman 1994; Strauss and Corbin, 1998). As is common in such research, a primary source of data was interviews. Specifically, we conducted depth interviews (McCracken 1988) in which individuals were encouraged to give detailed answers to questions that were organized in a semi-structured interview guide. Interviews were approximately one hour long on average; each was audio-recorded and transcribed verbatim. The interview data forms the primary data source for this study.
For each interviewee, we also collected archival data by examining publicly available information about their Twitter accounts. We collected any tweets and re-tweets made from their personal or company accounts over the two weeks preceding and the 6 months following the interview. We also noted from their profile page, on the day of interview, how many other Twitter users they were following and how many were following them. Any personal or company blog postings were also collected for the month preceding and the 6 months following the interview.

Selection of Interviewees
A priori, our selection of interviewees was influenced by the consideration that expert entrepreneurs are more likely than those who lack entrepreneurial expertise to use a logic of effectuation (Dew, Read, Sarasvathy and Wiltbank, 2009; Read, Dew, Sarasvathy, Song and Wiltbank, 2009). We therefore attempted to select people who varied in terms of entrepreneurial expertise. As in previous research (e.g. Dew, Sarasvathy, Song and Wiltbank, 2009; Reuber and Fischer, 1994; Reuber and Fischer, 1999) we assessed entrepreneurial expertise on the basis of experience and success. Specifically, we considered the longevity of the entrepreneur’s current business and the number of successful businesses they had founded. We also considered the possibility that it might be logical to sample on expertise in social media, were it possible to identify such expertise. Conceptually, we believe social media expertise would be a subset of business expertise in that it would encompass knowledge and skills relating to the effective use of social media channels. In practice, however, we believe it is unlikely that there can yet be a settled and stable body of social media expertise, given the relatively short span of time that many channels have existed, and given that tactics and technologies for each major channel have been, and continue to be, evolving rapidly. Thus we did not attempt to sample on social media expertise, but rather ensured that informants in our sample were Twitter users, and that they varied considerably in the extent to which they were actively using Twitter and in the nature of their use. Further, we ensured that our sample included both entrepreneurs whose product/service offerings were primarily online (e.g. a website developer) and those whose offerings were not (e.g. a venture capitalist). Because we expected that the social media activities of business-facing versus consumer-facing firms might differ in ways that had little relevance to effectuation, we narrowed our focus to entrepreneurs who had founded business-to-business firms.

In total, twelve entrepreneurs were interviewed. Table 1 provides information about the businesses of each informant, their relative level of entrepreneurial experience, and their use of social media other than Twitter. Of the twelve entrepreneurs, four run businesses that are primarily on-line. The experience levels of those included in the study varies considerably, as does their social media usage.

Interview Protocol
During the interviews, we asked the entrepreneurs about how they became involved with Twitter, the role of Twitter in their business, and their behavior as both a producer and consumer of tweets. Given the semi-structured nature of the interviews, interviewers were free to explore interesting themes in more detail and were not required to ask every question in the protocol.

Analysis
To begin the analysis, both authors independently coded each interview as soon as the transcript became available. Following methodological precepts outlined by Miles and Huberman (1994) and Strauss and Corbin (1998), our literature review and research questions played a sensitizing role, suggesting the a priori constructs of expertise, assessment of means, identification of effects, co-creation, social interaction and the like. However, as the coding progressed, additional constructs emerged, and the presumed linkages among constructs were called into question. For example, as discussed in the Findings section, one construct that emerged as relevant to effectual processes was “community orientation.” Similarly, as analysis proceeded, an a priori distinction that we had originally anticipated between more and less expert entrepreneurs proved insignificant and so did not figure as a conceptual moderator.

Our coding relied on the constant comparative method, whereby newly coded text is compared to previously coded text to ensure that the emergent constructs maintain their integrity (Strauss and Corbin, 1998). We compared our coding of each transcript in order to attain reliability through discussion (cf. Kvale, 1994). When differences in the coded portions were detected, we discussed them to the point where...
we achieved consensus. However, we operated on the assumption that a given excerpt could be supportive of more than one observation and yield multiple interpretations.

An example of a passage that was supportive of more than one observation is the following:

*You have to have some minimum consistency of tweets or you’re just not going to be relevant enough for people to keep continuously adding you. And I would say, you know, it's just an excellent way to kind of build a profile of expertise around a particular subject, and you can get known for that and then your business will get known for that, at the same time.* (Informant 7)

One code assigned to this passage was “Twitter-based social interaction.” The other was “cognitive re-assessment of effects.”

All new codes that emerged in the coding process were entered into the coding schema. The emergence of new codes diminished significantly with the coding of the ninth and tenth interviews. At that point, our analysis turned to the archival data (tweets and blogs) to see if the data provided insights relevant to the research questions. The archival data were helpful in the sense that they provided some verification for claims made in the interviews. For example, a recurrent theme in interviews was that Twitter allowed entrepreneurs to humanize the images of their firms in the eyes of external stakeholders (which became a dimension of the emergent construct community norm adherence). By examining their tweets we were able to gain a better sense of how they actually conveyed such an image in their interactions.

**FINDINGS**

Analyzing the data resulted in an expanded conceptualization of the effectuation process, as shown in Figure 2. It suggests new pathways in the effectuation process triggered by Twitter-based social interaction. Each of these is described below, together with the propositions that emerged from analyses of the data. These extensions to the effectual process of Figure 1 are shown with dashed lines.

**Insert Figure 2 about here**

From Social Interaction to Cognitions about Means

Since our research objective was to examine the impact on effectual processes of the type of social interaction that is afforded through the adoption of Twitter, we looked for evidence of assessment of means, the starting point in the process as specified in the Read et al (2009) model shown in Figure 1. What was immediately striking was that 10 of the 12 entrepreneurs appeared to be cognitively triggered to assess the means available to them after spending some time interacting with others on Twitter.

This pathway from interaction via Twitter to assessment of means represents a new pathway in an effectuation process, from interaction to cognition, as shown in Figure 2. A relatively simple example comes from an entrepreneur who was an avid user of many social media channels prior to his adoption of Twitter. He notes:

“I thought Twitter was the most absurd, ridiculous thing ever. I thought of myself as being somewhat progressive in social media space, but I thought “Twitter is never going to take off. And I will certainly never use something like this. It is just so ‘buzzy’ and ridiculous.’ But I followed it and I continued reading about it. About the end of 2008 I finally signed up. One of the things that captivated me was that I could go on Twitter and be totally uninteresting myself but I could follow all these really cool people. And that’s what I did for probably about the first month. I just hung out and I followed some businesses because I was trying to see what the business application was. And I wanted to see the way that people were doing it. And so I sat on the sidelines for a couple of weeks.

And then I started to find my voice. I realized that I read a lot and I’m exposed to some interesting things and I’ve got some interesting thoughts. Why don’t I put them up here and see what people think. And from there I’ve gone from zero followers to about 425 people that follow [Company] on Twitter now. That’s been over the course of about 9 months and we haven’t done any of these slick things to generate more followers. (Informant 7)

In this example, the entrepreneur’s interactions on Twitter, especially his observation of the kinds of things being said by others, seems to have led him to reconsider the value to himself and others of what he knows. In saying he has found his “voice” he is acknowledging his dawning recognition that he knows things that are of interest to others. And he realizes that posting microblogs reflecting these things can add
value to his company – an effect he can achieve with the means he now realizes he has available. He believes that the tweets he posts about his thoughts on his company and the opportunities they face have helped him disseminate information that he might not otherwise have shared as broadly. He believes this is resulting in a greater sense of trust on the part of his customers: “the more that I’m opening up about things about [Company] and the things that go on here, the more that treats our customers and other stakeholders with respect and also makes them part of our community.”

This quotation suggests that his assessment of means is not a one-time occurrence upon adoption of Twitter nor mediated through resource commitments from stakeholders, as suggested in the original effectuation model. Rather, it is an ongoing, almost fluid, process that can take place independently of generating any new inter-subjectively recognizes resource stocks.

For a number of the entrepreneurs in our sample, Twitter-based interactions also triggered a cognitive re-assessment related to the “who do I know” category of means. Users of Twitter make conscious choices about whom they will follow regularly. The sheer volume of potential choices relating to whom they might follow has triggered some who use it to consider how those they know provide them with various valuable inputs. This is demonstrated in entrepreneurs’ considerations of whom they should follow on Twitter, and of what the benefits are to them of following those people. The following quote is illustrative:

Selfishly, I only will follow somebody that is going to enlighten me. And so somebody like [Person X] ... if he wasn’t so good I would definitely unfollow him (because he tweets frequently). In fact, the best people I follow are the people that maybe tweet four or five times a day but you know as soon as they show up they’re tweeting something of great relevance and impact. I try to filter all the potential people I can follow, I try to say, “What am I going to learn from them? What can they do to make my life easier?” And as long as there’s a good answer to one or both of those then I follow them. But I also unfollow people. You know, maybe on a monthly basis I sort of do a purge and people that have either started tweeting too much and I’m not interested in them filling up my TweetDeck columns or people that have just gone off-track and are talking about things that I have no interest in I just stop following them. (Informant 11)

The key insight here is that the nature of the interactions on Twitter – which entail brief but sometimes quite frequent bursts of commentary – is such that those engaging in interactions via the medium are frequently assessing the value to them of those with whom they interact.

We summarize the main insight here in the following proposition:

**Proposition 1:** Social interaction via Twitter can influence an effectuation process by triggering a cognitive assessment of the means that are available to an entrepreneur.

### From Social Interaction to Cognitions about Effects.

In their original model of an effectual process, Dew et al (2009) posited that an assessment of effects that can be achieved is triggered by an evaluation of means. Our analysis indicates that social interaction through Twitter can also lead to an assessment of the effects that can be achieved with the means available. A case illustrating this comes from an entrepreneur whose company provides online business services. This individual had been using a variety of social media prior to adopting Twitter, including blogs, a Facebook page for “fans” of his company, and an online forum for users of his service. Thus, online social interaction was not new to the entrepreneur. However, the nature of the social interactions he was exposed to on Twitter led him to re-evaluate what it was possible for his company to do.

When an employee brought to his attention that there were tweets about his company, the entrepreneur began to monitor Twitter on a daily basis for mentions of his firm. He also had his company “follow” on Twitter anyone who had tweeted about his company even once. Through this interaction the entrepreneur learned that he could connect to his customers even more effectively than he had been doing. He stated:

*We can listen and respond. And we can show the orientation of our company. We’re an unconventional business. We’re personable. We can become even closer to our customers if we let them see that. For example, one of our customers who we were following tweeted “If you ask a woman out on a date, don’t stand her up, don’t let her down.” We’re a friendly company and when we saw that tweet and saw that a customer was down and out, we did something about it. We sent her flowers saying [Company Name] won’t let you down. (Informant 9)*

It should be noted that this kind of demonstration of the personality of his company, and the enactment of some kinds of personal caring for customers, had doubtless been possible prior to the entrepreneur’s
engagement with Twitter. What has changed is not what is possible to do; rather it is what is considered possible to do. Monitoring customers’ tweets has led the entrepreneur to consider it possible to achieve effect of conveying his company’s “personable” qualities in more tangible ways than he had previously considered.

This case illustrates a relatively incremental modification of an entrepreneur’s perception of the effects achievable with the means available. His company did not change dramatically as a result of the exposure and interactions he gained through Twitter, but may have pursued an even stronger branding as a “friendly” company, and possibly a closer bond and an increased level of co-creation with customers. An example that demonstrates a more dramatic reassessment of achievable effects comes from an entrepreneur who has developed a successful company that gave him a comfortable cash flow. He highlighted that his interactions on Twitter were helping him see many new effects he could achieve by combining some of that cash flow, his knowledge in the industry, applications he could easily develop, and the characteristics of Twitter. He states:

> What I like about Twitter is how to take what's built into it in terms of how information flows and build business applications for it, and that's what we're trying to do. You know, if Twitter runs through my village and your village and her village, we all need the information running through it, but I might like it out of a big glass and you may like it out of a small glass and she may want it with a straw. So we share the need for the information, but today we kind of have to jump in the river and get wet to get it. And I think the true value and the benefit down the road will be if you can operate in that river with an interface that allows you to get out what you need without having to jump in. And that's what I'm trying to do. So we have a number of different Twitter applications and really what I do now is just develop them to see if they work, to see “Does this move information properly?” (Informant 12)

While previous conceptualizations of the effectuation process have suggested that cognitive evaluation of effects achievable occurs prior to social interaction, our data analysis suggests that the reverse is also possible. We summarize this premise as follows:

**Proposition 2:** Social interaction via Twitter can influence an effectuation process by triggering a cognitive assessment of effects that can be achieved with the means available.

**Variability in Levels of Effectual Cognitions Triggered**

As was mentioned above, not all those interviewed provided evidence that their social interactions via Twitter were stimulating effectual cognitions. Indeed, at the time of their interviews, two entrepreneurs (Informants 8 and 10) expressed considerable reservations about the medium and portrayed themselves as relatively tentative users. Their reservations are reflected by the fact that they were following relatively small numbers of people on Twitter when they were first interviewed, and that neither is posting as much as a one Tweet per month. In essence, although Twitter provides a platform that facilitates widespread, frequent interactions, these entrepreneurs’ levels of social interactions via Twitter are minimal, and thus unlikely to trigger much effectual thinking on their parts.

At the other end of the spectrum are two entrepreneurs (Informants 4 and 5) who were each following over 1,000 people when we interviewed them, and 2,000 people six months later. These two individuals are avid Tweeters, respectively posting 332 and 226 tweets on average per month. If those who interact very infrequently via Twitter are unlikely to benefit from it terms of effectual cognitions, it is possible that those who are interacting extremely frequently may be somewhat distracted by the triggering of effectual cognitions. Indeed, it can be seen from Figure 2 that there is the potential for “effectual churn,” which we define as the continuous looping between social interaction through Twitter and the reassessment of means and effects achievable, without progression through the effectuation process. As the term “churn” suggests, this cycling may be unproductive from the perspective of the entrepreneur’s business. In effect, this suggests that entrepreneurs may benefit less from their effectual cognitions if they engage too extensively in social interactions via Twitter and are iterating repeatedly from interaction to cognition without advancing through to achieving inter-subjective outcomes. Those familiar with Twitter often acknowledge that while it can enhance outcomes it may also lead to time-wasting (e.g. [http://webworkerdaily.com/2009/02/09/twitter-productivity-tool-or-time-waster/]). Although none of our informants stated directly that they felt they were wasting time on Twitter, we speculate that those who continuously engaged in high and increasing levels of social interaction via Twitter were more likely to experience effectual churn.
We note that many of our informants sought means of managing their connections so as to avoid becoming overwhelmed and distracted. For example, one informant described her struggle to place limits on the social interactions she engaged in via Twitter:

"I used to have my 250 rule. I always called [the numbers of people I followed] because I found outside of 250 I wasn’t seeing the updates of people. I wanted to make sure that I was keeping engaged with my people that I was following. But I just couldn’t keep it to 250 no matter how hard I tried, and I was pretty ruthless. I’d go through and if you’re not really providing me value, in any sort of context, I’d drop you. I look for people who are providing me value as an entrepreneur, so insights and things like that. Or competitor information. And then there are users and people who are relevant to our community. And there are evangelists or influencers and I make sure that I am keeping up with them. And then obviously people I know personally. And so over the course of the past 18 months it’s scaled to a point where I think I’m around 350 users that I’m trying to keep it down to following. Keeping it manageable is really important to me. (Informant 3)

Our analysis suggests that some effectual churn is likely inevitable for entrepreneurs struggling to cope with the potentially vast volume of information and opportunity for social interaction afforded by engagement with Twitter, but that such churn is not inevitable if the entrepreneur strives for a moderate level of social interaction via Twitter. The following proposition summarizes the foregoing discussion:

P3: A moderate level of social interaction via Twitter is likely to trigger a useful level of effectual cognitions. If social interactions are extremely restricted, the level of effectual cognitions triggered is likely to be commensurately low. If social interactions are extremely voluminous, the entrepreneur may experience effectual churn.

DISCUSSION

This paper has adopted an effectuation theoretic lens to develop insights into the implications for entrepreneurs of engaging in social interaction via a specific social medium, Twitter. It makes contributions to, and highlights directions for, future research not only for the effectuation literature, but also the literature on social interaction and the literature on the how social media usage may impact entrepreneurs and entrepreneurial firms. In this section, we discuss first the insights for the effectuation literature, second some possible implications for the conceptualization of variability in social interaction, and third the way our study complements other research on entrepreneurial usage of social media.

Insights for Effectuation

In contrast to prior research on effectuation, which has focused on a process that begins with an evaluation of means and proceeds through evaluation of possible effects and then to interaction with potential stakeholders, this study has focused on a process that is triggered as an entrepreneur interacts with what may be a large group of potential stakeholders.

One contribution of our work is that it suggests a refinement of our understanding of effectual processes by highlighting that they need not begin with an evaluation of means but may rather be triggered by social interaction itself. Another is that it suggests “loops” or iterations that may occur: the extant effectuation model shows a feedback loop from inter-subjective outcomes to cognitive evaluation of means; our refinement of the model suggests that there may be interim iterations within the process, particularly from social interaction to intra-subjective cognitive evaluation of means and evaluation of effects achievable.

Of particular value is the idea that iterations may or may not be “productive” in terms of advancing through the effectuation process. Our notion of effectual churn suggests that entrepreneurs engaged in an effectual process (at least if it is triggered by a expanded volume and diversity of social interactions) may cycle unproductively through a recurrent series of social interactions, re-evaluations of means and/or re-evaluation of effects that can be achieved. Much like employees faced with “information overload” (O’Reilly 1980), entrepreneurs may experience a sense of pleasure or satisfaction from the cycle of social interaction, reflection and re-evaluation, while failing to make effective decisions as a result. Clearly this notion of effectual churn requires further research, but it is valuable to consider the possibility that, although effectual processes may have positive consequences for entrepreneurial firms (e.g. fast failure), they may have negative ones such a unproductive, iterative re-evaluations of what means are available and what effects are achievable. It is interesting to note in this regard that our third proposition
points to the possibility that social interaction can be a “mixed blessing” for entrepreneurs enacting effectual processes. Like too little interaction, too much interaction may hinder advancement through the process. In this sense, it is possible that entrepreneurs could be more effectual when they are moderately engaged in social interaction rather than being engaged too much or too little.

A question that might be raised is why the present research has identified loops within an effectual process not present in prior models. One obvious reason is that the study has focused on entrepreneurs using a social media channel that affords social interaction with particular characteristics, a point we consider more fully below. However, another reason may be that the present research has studied entrepreneurs running ongoing young businesses, while prior effectuation research examining the process has focused on entrepreneurs engaging in hypothetical startup processes (Dew, Read, Sarasvathy and Wiltbank, 2009; Read, Dew, Sarasvathy, Song and Wiltbank, 2009). It is possible that further examination of effectual processes among entrepreneurs engaged in running their businesses could yield further refinements in our understanding of what triggers and advances effectuation processes.

**Social Interaction**

As discussed above, little conceptual attention has been paid to social interaction as a construct in the past entrepreneurship and marketing research. To the extent that it has been included as a construct in conceptual models (e.g. Sapienza 1992), scholars have tended to treat social interaction as varying in frequency. In our paper, we have likewise considered only variation in frequency, as that was all that our data enabled us to observe.

However, our reflections on the social interaction construct, coupled with our focus on a special social medium designed to facilitate social interaction, have prompted us to consider how the specific context of Twitter might be one that is particularly likely to trigger effectual cognitions, in three ways. First, interactions via Twitter are composed and archived in written form. This means that when composing a communication, the entrepreneur can choose to take time to draft and redraft the message they are sending; moreover, they can re-read both their own tweets and those of others if they desire. Some other forms of interaction (e.g. letters, emails, Facebook posts) are archived and can be re-read, but for many interactions (e.g. face-to-face conversations) archiving and the opportunity for reviewing are atypical. We speculate that archived communications may be particularly likely to trigger effectual cognitions because people can reflect both upon communications they create and those they receive.

A second feature of Twitter interactions is that they are “one to many.” This means that the audience for any given tweet is potentially huge, and unknowable a priori. Again, other forms of interaction (e.g. speeches, blog postings) share this property; in contrast, many (such as face to face communications in private contexts) do not. Like their archived nature, this characteristic of Twitter-based social interactions could make them particularly likely to trigger effectual cognitions because people can reflect both upon communications they create and those they receive.

The third and final characteristic of Twitter-based interactions that we wish to highlight relates to the set of the norms that have developed among business users of this particular medium. Besides the norms discussed above, there is a norm of using “hashtags” so that tweets relating to particular topics can be easily identified by those searching for information on a topic, and a norm of “retweeting” posts from others than one has found valuable or inspiring. Some entrepreneurs believe there is a norm of reciprocity and it is considered impolite not to follow someone who is following you. Some of the other types of media used for interaction will share these norms, while others will not. Our point here is that future research on social interaction will need to take into account the norms that characterize the use of particular media.

Taken as a whole, we posit that our study may spark new directions in research on interaction dimensions that complement and extend the existing focus on interaction frequency. What this means is that much additional research is required to understand whether social interaction in contexts with other characteristics, including other social media channels, may have similar impacts as those we propose are triggered by interaction via Twitter. We acknowledge that having studied only a single social communication medium, we cannot generalize to other social media, or to more conventional forms of interactions.

**Complementing Prior Literature on Social Media Usage.**

The use of social media by entrepreneurial and established organizations is of sufficiently recent occurrence that there is a limited scholarly literature on the subject. As indicated in our discussion of earlier academic studies, most business researchers have focused on social media as a marketing tool (e.g.
Beyond scholarly work, there is a vast and rapidly expanding practitioner literature on social media and business practice. Most of this practitioner literature appears to be focused likewise on advising businesses, small and large, on how social media can be useful for marketing (for example, the website mashable.com is one aggregator of such practitioner articles). Without doubt, Twitter and other social media have the potential to be valuable tools that, if deployed well, can positively affect business outcomes such as sales growth, brand image, and company reputation. We argue, based on our study, that Twitter is not merely “good for marketing.” We posit that, at least for entrepreneurs who themselves adopt and use the medium, it can stimulate other outcomes with consequences for their businesses. As we have suggested, these outcomes may be effectual cognitions that can in turn lead to advancement through an effectual process culminating inter-subjective outcomes. We believe that this investigation reinforces the need to consider social media not just as marketing tools, but also as a form of communication that can have much broader consequences at the individual and firm level. One promising avenue for future research in our field, therefore, is to consider more broadly the effects of social media adoption by individuals who found ventures and who work in entrepreneurial firms.

Limitations
Like any study, ours has limitations. One notable limitation is that the sample we chose to use included only business-to-business firms, and no business-to-consumer firms. This choice is justifiable on the grounds that Twitter usage is actually more common among business-facing firms. It is also justifiable on the grounds that when developing theory, it is important to take into account and control for contextual factors such as the type of business environment in which companies operate (Bamberger 2008). This sample limitation does mean, however, that the theoretical insights should not automatically be assumed to generalize to all contexts. Another limitation of our study is that we rely on interview and archival data relating to Twitter usage and blogging. Observational data would clearly enable us to better understand, on a day-to-day basis, how the use of a social medium like Twitter interacts with other factors at the individual and firm level to affect effectual cognitions, interactions, and outcomes.

Table 1. Characteristics of the entrepreneurs interviewed.

<table>
<thead>
<tr>
<th>Informant number</th>
<th>Business Sector (Web-based firms indicated with w)</th>
<th>Entrepreneurial Experience (length of time spent running a business, # of businesses started)</th>
<th>Blog(s)</th>
<th>Other social media to which posts are made</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Public relations</td>
<td>&lt; 6 months, 1 company</td>
<td>Personal Facebook, LinkedIn</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Video production</td>
<td>1 year, 1 company</td>
<td>Personal Facebook, Youtube,</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Community management (w)</td>
<td>5 years, 3 companies</td>
<td>Company Facebook, LinkedIn</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Website design (w)</td>
<td>4 years, 2 companies</td>
<td>None Facebook</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Public relations</td>
<td>15 years, 1 company</td>
<td>Company Facebook, LinkedIn</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Venture capital</td>
<td>12 years, 2 companies</td>
<td>Company LinkedIn</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Corporate giftware</td>
<td>12 years, 3 companies</td>
<td>Company Facebook, Youtube, LinkedIn, Flicker</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Consulting</td>
<td>10 years, 1 company</td>
<td>None LinkedIn</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Online business services (w)</td>
<td>12 years, 2 companies</td>
<td>Personal, Company Facebook, LinkedIn, User forums</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Consulting</td>
<td>8 years, 1 company</td>
<td>None LinkedIn</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Private equity</td>
<td>3 years, 2 companies</td>
<td>None Facebook</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Online business services (w)</td>
<td>15 years, 5 companies</td>
<td>Company Facebook, Youtube</td>
<td></td>
</tr>
</tbody>
</table>
REFERENCES
http://www.businessweek.com/managing/content/jan2009/ca20090113_373506.htm.
Shannon, S. 2009. One bad Twitter ‘tweet’ can cost 30 customers. Bloomberg.com, November 26:
Siegler, M. 2009. Comcast: Twitter has changed the culture of our company. October 20: