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# IDEA CO-CREATION ON SOCIAL MEDIA PLATFORMS:

## TOWARDS A THEORY OF SOCIAL IDEATION

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### Reference

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## 1. Introduction

1  
2 Social media has shown its pervasive and transformative influence on the democratization  
3 of innovations even though it is still at an early stage of development (Aral, Dellarocas, & Godes,  
4 2013; von Hippel, 2006). Organizations constantly monitor external social media platforms such  
5 as Twitter and Facebook for innovative ideas and customer engagement (e.g., Bayus, 2012; Bharati,  
6 Zhang, & Chaudhury, 2014; Culnan, McHugh, & Zubillaga, 2010; Di Gangi, Wasko, & Hooker,  
7 2010; Gallagher & Ransbotham, 2010; Jarvenpaa & Tuunainen, 2013; Schlagwein & Bjorn-  
8 Andersen, 2014). They also implement enterprise social media platforms to mobilize and facilitate  
9 their own employees for innovation-related activities (e.g., Kane, 2014; Kuegler, Smolnik, & Kane,  
10 2015; Leonardi, Huysman, & Steinfield, 2013; Majchrzak, Cherbakov, & Ives, 2009; Recker &  
11 Lekse, 2015; Van Osch, Steinfield, & Balogh, 2015). Dell, for example, operates an open social  
12 media platform named IdeaStorm, on which customers can submit, rate, and discuss innovative  
13 ideas that are related to Dell's product and service offerings (Bayus, 2012; Di Gangi et al., 2010).  
14 In just five months after IdeaStorm's initial launch, Dell received 6,200 ideas worldwide (Di Gangi  
15 et al., 2010). IBM, as an example of using enterprise social media, implements an open, intranet-  
16 based forum named ThinkPlace, on which IBM employees can submit, comment on, rate, and  
17 modify innovative ideas (Majchrzak et al., 2009). In about four years, IBM adopted over 350 ideas  
18 submitted to ThinkPlace, and it was estimated that these ideas generated an impact of over \$500  
19 million on IBM (Majchrzak et al., 2009). The global insurance group, Allianz, as another example,  
20 implemented a dedicated idea management platform named Idea to Success (i2s), which in UK  
21 alone had generated more than 41,000 ideas and delivered average benefits of about \$28.2 million  
22 annually (Benbya & Leidner, 2018). Similar stories were pervasive. As Culnan et al. (2010)  
23 reported, by 2009, 64% of the Fortune 500 companies had already adopted some form of a social

1 media platform and the adoption rates were remarkably similar across industries.

2       Although anecdotal evidence on the success of using various social media platforms for  
3 innovation is flourishing, organizational theories, however, are largely lagging behind. Traditional  
4 innovation-related theories usually highlight the value of exchange and combination of knowledge  
5 in innovation processes (Kogut & Zander, 1992; Nonaka, 1994). However, in the era when these  
6 traditional theories were developed, exchange and combination were constrained by organizational  
7 and spatial boundaries and the influence of information and communication technologies were still  
8 unfolding. Now, after about a decade of social media in use, the phenomenon appears to be stable  
9 and mature enough for the introduction of social media to innovation theories. Some pioneering  
10 scholars have already taken the move to theorize the role of social media in innovations (e.g.,  
11 Boudreau, 2012; Leonardi, 2014; Majchrzak & Malhotra, 2013; Yoo, Boland, Lyytinen, &  
12 Majchrzak, 2012). Joining their efforts, in this study, we are endeavoring to develop a theory of  
13 social ideation, defined as the organizational processes that carry out social exchanges of  
14 information, knowledge, and preliminary ideas on various social media platforms and across  
15 individual, group, organization, and environment levels to generate viable innovation ideas for  
16 organizations. With our newly proposed theory of social ideation, we aim to address a research  
17 question as how social media can enhance the effectiveness of idea generation, or, *ideation*.

18       The advantage, as well as the challenge, of using social media for generating ideas comes  
19 from the diversity of potential ideation participants. If we conceptualize innovation as a process of  
20 searching for new solutions, social media allows an organization to search for solutions in a wider  
21 space (Afuah & Tucci, 2012) and allows potential solvers who would otherwise be marginalized  
22 to participate (Jeppesen & Lakhani, 2010). Consequently, organizations can harvest more –  
23 possibly more diverse – ideas. However, previous scholars have discussed two major challenges

1 in leveraging social media in innovation. First, the volume of ideas generated from social media  
2 platforms could be overwhelming. Such “*idea overload*” may prevent the innovation-seeking  
3 organizations from filtering out high quality ideas, and it may crowd out future innovators to  
4 participate. Previous case studies reported that Dell adopted 11 ideas out of 6,200 from IdeaStorm  
5 (Di Gangi et al., 2010), while IBM adopted 350 ideas out of over 18,000 from ThinkPlace  
6 (Majchrzak et al., 2009). Large-scale empirical studies have also noted that a large number of  
7 participants could sometimes hurt the overall innovation outcome (Boudreau, 2012). Second,  
8 social media communities are characterized by the “*fluidity*” of the members and their time,  
9 passion, and engagement with others (Faraj, Jarvenpaa, & Majchrzak, 2011). Ideation is a  
10 cumulative process, whereby one preliminary idea needs to build upon the other. When lacking a  
11 mechanism to organize and integrate the contribution of social media community members,  
12 ideation will become individuals’ heroic efforts, which can hardly be sustainable or effective for  
13 an organization.

14         Nevertheless, social media platforms are still flourishing and increasingly used to stimulate  
15 ideas in organizations, regardless of the aforementioned challenges including idea overload and  
16 member fluidity. While some other scholars have begun to study the design and affordances of  
17 social media platforms to address these challenges (e.g., Leonardi & Vaast, 2017), in this study we  
18 particularly focus on the use of social media platforms. We took an explorative research approach  
19 by analyzing 79 cases of social media use in a variety of organizations, with a research objective  
20 to develop a theory of social ideation. Our theory is primarily built upon social capital theory  
21 (Adler & Kwon, 2002; Nahapiet & Ghoshal, 1998) and its applications in social media contexts  
22 (e.g., Ali-Hassan, Nevo, & Wade, 2015; Bharati, Zhang, & Chaudhury, 2015; Robert, Dennis, &  
23 Ahuja, 2008).

1 By developing a theory of social ideation, this study contributes to the ideation literature by  
2 highlighting the social media-enabled approaches of ideation. Although previous researchers have  
3 intensively studied ideation, their studies mostly focus ideation at the cognition- or team- level  
4 (e.g., Briggs & Reinig, 2010; Knoll & Horton, 2011; Santanen, Briggs, & De Vreede, 2004). Only  
5 recently, scholars started to pay research attention on technology-mediated idea co-creation (e.g.,  
6 Faraj et al., 2011; Majchrzak & Malhotra, 2013). In contrast to the traditional research contexts of  
7 ideation, social media platforms present new collaboration forms and idea exchange patterns,  
8 associated with which are unique challenges traditional ideation theories are inadequate to address.  
9 The social ideation theory proposed in this study depicts the idea co-creation dynamics enabled by  
10 multi-level social exchange activities happening on social media platforms. Social ideation theory  
11 features such dynamics as a sequence of four activities, including (1) idea sourcing, (2) idea  
12 filtering, (3) idea elaboration, and (4) idea integration, which ultimately contribute to the  
13 effectiveness of ideation at the organizational level. By articulating the mechanisms of social  
14 ideation, this study updates the ideation literature by theorizing the rapid changes in innovation  
15 practice introduced by the assimilation of social media platforms.

16 Our proposed theory of social ideation also features a multi-level perspective of innovation  
17 (Beck, Pahlke, & Seebach, 2014; Crossan, Lane, & White, 1999). Generating ideas is ultimately a  
18 function of cognitive processes inside humans' brains, but the surrounding organizational settings  
19 can facilitate or inhibit these idea-generation processes greatly (Toubia, 2006; Wooten & Ulrich,  
20 2017). Thus, to develop a theory of social ideation at the organizational level, it is inevitable to  
21 discuss how individuals' cognitive processes can be stimulated and their cognitive outputs can  
22 aggregate to the organizational level. Our study contributes to the literature by articulating the  
23 multi-level social exchange processes across individual, group, organizational, and environmental

1 levels.

2 We organize the rest of the paper as follows. In Section 2, we briefly review the relevant  
3 literature. We then report our research design and implementation in Section 3 and our findings in  
4 Section 4. In Section 5, we discuss the implications of our results and conclude our study.

## 5 **2. Literature Review**

### 6 **2.1 Ideation**

7 Ideation is the process of generating ideas that can be used to solve certain problems or attain  
8 certain desired outcomes (Briggs & Reinig, 2010), while ideas themselves are defined as  
9 descriptions of potential solutions to the problems or plans to achieve the outcomes (Kornish &  
10 Hutchison-Krupat, 2017). Generating ideas is the crucial starting phase of the overall innovation  
11 process (Garud, Tuertscher, & Van de Ven, 2013), and the quality of initial ideas contributes  
12 greatly to the ultimate success or failure of an innovation (Kornish & Ulrich, 2013).

13 Scholars have studied ideation at cognitive, group, and organizational levels, as Table 1  
14 reviews below. Ideation studies at the cognition and group levels have generated a considerable  
15 amount of knowledge. We know that, although ideas are ultimately a product of individuals'  
16 cognitive processes, individuals can stimulate, or interfere with, each other's cognitive ideation  
17 processes, and consequently generate better, or worse, ideas in different group settings. IS scholars  
18 have also contributed greatly to the group-level ideation studies, especially in the area of group  
19 decision support systems (e.g., Dennis & Valacich, 1993; Dennis, Valacich, Connolly, & Wynne,  
20 1996; Gallupe et al., 1992; Nunamaker, Hale, & Konsynski, 1987). However, ideation studies at  
21 the organizational level are rare. We know from a few studies that organizational factors such as  
22 culture and structure matter (e.g., Kornish & Hutchison-Krupat, 2017), but in the literature there  
23 is still a major lack of theoretical development in the ideation process beyond small, closed groups.



Table 1 Literature Review of Ideation Studies

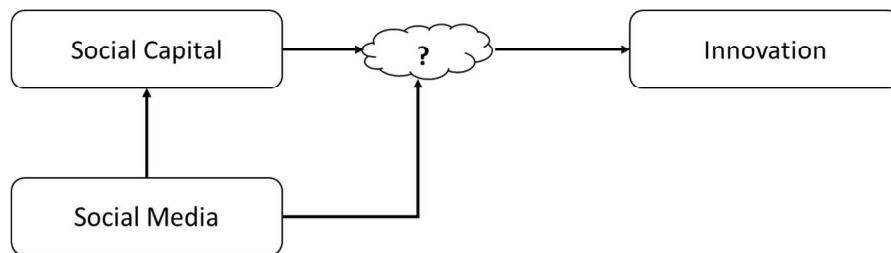
Level of Theorization	The Process of Ideation	Facilitating IT Artifacts and Capabilities	Key Findings
Cognition Level	Cognitive ideation is to combine mental elements such as experiences, knowledge, and heuristics in an individual's mind for solutions or suggestions (Mednick, 1962)	Individual software tools such as mind mapping and brainstorming	<ul style="list-style-type: none"> <li>• Individuals rarely generate ideas in absolute isolation</li> <li>• Cognitive ideation processes are influenced by external factors such as goals, incentives, time pressure, feedbacks, tools, and physical environments (Toubia 2006; Wooten and Ulrich 2017)</li> <li>• Individuals can stimulate, or interfere with, each other's cognitive processes (Lamm &amp; Trommsdorff, 1973; Santanen et al., 2004)</li> </ul>
Group Level	Group ideation is to repeatedly search for ideas in the associative memory of a group's individuals, during which individuals share own expertise, stimulate each other, and collaboratively produce the desired solutions (Nijstad & Stroebe, 2006; Osborn, 1957)	<ul style="list-style-type: none"> <li>• Group decision support systems</li> <li>• Collaboration software, especially used in support of virtual teams</li> </ul>	<ul style="list-style-type: none"> <li>• A group of individuals do not necessarily generate more or better ideas than these individuals working separately, due to reasons such as production blocking, fear of evaluation, and free riding (Diehl &amp; Stroebe, 1987; Lamm &amp; Trommsdorff, 1973)</li> <li>• Collaborative tools, if properly designed and used, can facilitate group-level ideation and improve its effectiveness (e.g., Dennis &amp; Valacich, 1993; Dennis et al., 1996; Gallupe et al., 1992; Nunamaker et al., 1987)</li> </ul>
Organizational Level	Lack of articulation in the literature with regards to the process of ideation beyond small, closed groups	Lack of IT studies on ideation at the organizational level	<p>Research is rather limited. Relevant findings include:</p> <ul style="list-style-type: none"> <li>• Certain organizational factors can affect ideation, such as organizational culture, incentive systems, and bureaucratic structure (Kornish &amp; Hutchison-Krupat, 2017).</li> </ul>

1 **2.2 Social Capital and Social Media Research**

2 In discussing social media, we adopted a broad definition of social media as computer–  
3 mediated tools that allow users to “*create, circulate, share, and exchange information in a variety*  
4 *of formats and with multiple communities*” (Leonardi & Vaast, 2017, pp.150). By this definition,  
5 social media encompasses both public social media platforms - such as Facebook, Twitter, or  
6 Wikipedia - as well as proprietary enterprise social media platforms such as Dell’s IdeaStorm or  
7 IBM’s ThinkPlace. Despite the vast differences in their functionalities and governance  
8 mechanisms, these social media platforms share commonalities such as their ability to build and  
9 visualize social connections as well as enabling publicly visible communications of user-generated  
10 content (Kane, 2014; Leonardi, 2014; Leonardi & Vaast, 2017).

11 Social media scholars have taken multiple theoretical lens to link social media platforms  
12 to a variety of research streams such as virtual team collaboration, knowledge management, and  
13 ultimately innovation (Leonardi, 2014; Leonardi et al., 2013; Leonardi & Vaast, 2017). Among  
14 them, the use of social capital theory is rapidly growing. Particularly for this study, social capital  
15 theory can help us conceptualize the multi-level mechanisms that facilitate the exchanges and  
16 aggregation of individuals’ mental outputs. Thus, we choose social capital theory as our primary  
17 theoretical lens. Figure 1 below summarizes the development of social capital theory in the social  
18 media context, which we elaborate further in the rest of Section 2.2.

19 **Figure 1 Literature Review of Social Media, Social Capital, and Innovation**



20  
21 **2.2.1 Social Media and the Creation of Social Capital**

1 Social capital is a valuable organizational resource that resides in the networks of relationships  
2 characterized by mutual acquaintance and recognition (Nahapiet & Ghoshal, 1998). Social capital  
3 theorists have been discussing broadly three dimensions of this construct, namely, structural,  
4 relational, and cognitive social capital. Structural capital refers to the actor's social interactions  
5 and the possibility of access to resources or information. Relational capital refers to the relationship  
6 assets such as trust, nurtured through the interactions, which can induce collaboration and joint  
7 projects. Cognitive capital refers to the extent to which actors share a common understanding  
8 emerging from these interactions such as shared beliefs, mental models, norms, and codes  
9 (Nahapiet & Ghoshal, 1998; Tsai & Ghoshal, 1998).

10 Scholars have investigated how social media platforms contribute to the generation of social  
11 capital, mostly through users' network articulation and content sharing. Network articulation refers  
12 to the activities where social media users mutually confirm their social relationships by initiating  
13 and accepting connection requests on social media (Leonardi & Vaast, 2017). Articulating  
14 networks allow users to test the robustness of their social relationships and thus contribute to the  
15 development of structural social capital through network articulation (Leonardi & Vaast, 2017).  
16 Moreover, social media users often can explicitly express their interests in connecting to other  
17 users to whom they cannot make connections in real life. Social media platforms can also  
18 recommend further connection possibilities based on a user's existing connections. By building,  
19 visualizing, and expanding social connections, social media platforms help users better understand  
20 their own social networks and offer means and suggestions to grow them, thus, increasing those  
21 users' structural capital (Ellison, Steinfield, & Lampe, 2007). After building connections, users  
22 can use social media to share news, updates, and other contents in their networks. The electronic  
23 connections, and the constant content sharing through them, can foster trust and build bonds

1 between communicating parties, thus increasing relational capital (Bharati et al., 2015). Social  
2 media-enabled communications can also help the development of a shared code that facilitates a  
3 common understanding of collective goals, thus increasing cognitive capital (Ali-Hassan et al.,  
4 2015; Bharati et al., 2015).

### 5 **2.2.2 Social Media and the Innovation Impact of Social Capital**

6 Although there are few direct studies on social media and ideation, scholars have studied how  
7 social capital developed among social media users contributes to the effectiveness of information  
8 and knowledge exchange as well as collaboration among these users.

9 Tsai and Ghoshal (1998) discuss, in one of the seminal social capital theory works, how the  
10 three dimensions of social capital can facilitate resource exchange within organizations, which  
11 ultimately leads to better product innovations. Bharati and other (e.g., Bharati & Chaudhury,  
12 forthcoming; Bharati et al., 2015) extend this line of argument to the social media context. They  
13 show that, after social media enables the formation of social capital, organizations can benefit from  
14 the newly formed social capital with further knowledge creation, knowledge exchange,  
15 collaboration, organizational learning and job performance (Ali-Hassan, Nevo, & Nevo, 2010; Ali-  
16 Hassan et al., 2015; Bharati et al., 2015). Beck and colleagues (2014) develop and test a model,  
17 encompassing both individual and dyadic levels, on how enterprise social media platforms foster  
18 knowledge exchange among their users. Leonardi (2014), focusing on the role of social media  
19 platforms in rendering communications visible, argue that social media platforms improve the  
20 knowledge sharing and collaboration by improving users' meta-knowledge such as knowing who  
21 knows what and whom. Many other scholars provide further evidence on the role of social media  
22 platforms in knowledge acquisition, exchange, and use (e.g., Bharati et al., 2015; Hwang, Singh,  
23 & Argote, 2015; Kwahk & Park, 2016; Papadopoulos, Stamati, & Nopparuch, 2013; Vuori &

1 Okkonen, 2012; Yan, Davison, & Mo, 2013). Leonardi and Meyer (2015) summarize these  
2 arguments precisely by labeling the role of social media as “*social lubricant*.” Overall, we have  
3 accumulated certain evidence that social media and social capital can facilitate exchanges and  
4 collaboration, which would arguably benefit innovation, but how exactly such exchange and  
5 collaboration translate into organizational innovation outcomes remain largely unclear.

6 This represents a gap in the literature, as we do not have adequate theoretical development on  
7 the mechanisms through which the individual use of social media can affect organization-level  
8 outcomes. After intensively reviewing studies on social media and knowledge sharing, Leonardi  
9 and Vaast (2017) conclude that “*save exceptions (e.g., Beck et al., 2014), most research [of social*  
10 *media and knowledge sharing] has either favored the individual or the organizational levels of*  
11 *analysis, but has not much examined multilevel processes*” (pp.174).

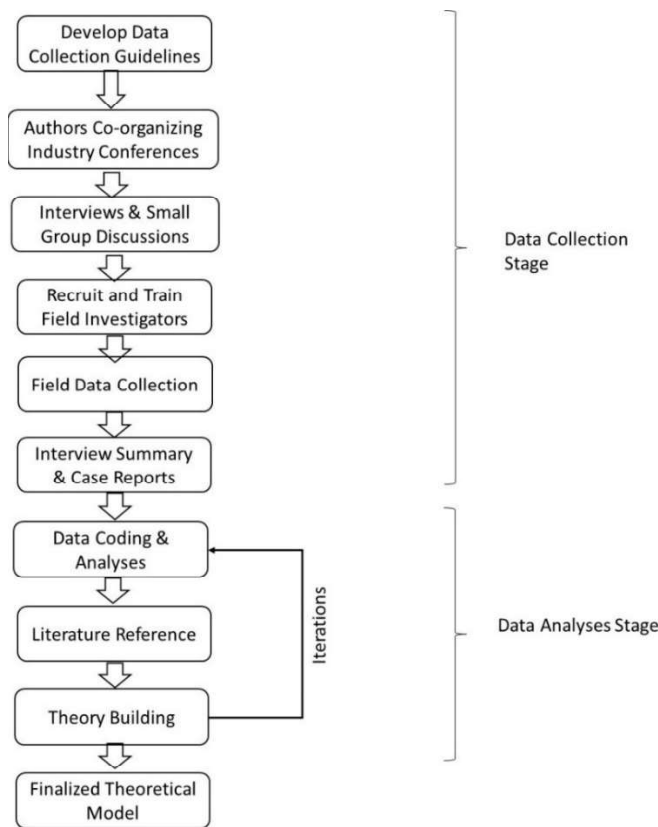
12 If theoretical mechanisms that link social media and organization-level outcome such as  
13 innovation were developed, they would have to be multi-level by encompassing individuals,  
14 groups, organizations, and their environments. Their focus would be on the combination and  
15 aggregation processes through which individual activities ultimately lead to organizational  
16 outcomes. Our study endeavors to investigate such theoretical mechanisms, with a focus on  
17 ideation as one particular organizational outcome. The study aims to develop a unified theory that  
18 explains how social media can intervene with the combination and aggregation processes that  
19 ultimately allow individuals, both inside and outside an organization’s boundary, to generate  
20 quality ideas viable at the organizational level.

### 21 **3. Research Method**

22 The paucity of theories on social media and ideation motivates us to employ an exploratory  
23 case study approach, in which data are “*representative facts*” and theories are inductively built “*a*

1 *framework with identified variables and relationships, or lessons learned*” (Sarker, Xiao, Beaulieu,  
 2 & Lee, 2018, p.764). Moreover, as our intended theory is multi-level and thus inevitably  
 3 comprehensive, there is unlikely a single case that can provide sufficiently representative facts on  
 4 every part of the theoretical framework. Additionally, multiple cases help identify cross-case  
 5 patterns, thus, increasing the rigor of the research (Eisenhardt, 1989). Given these considerations,  
 6 we chose to examine a large number of case sites to study the use of external and enterprise social  
 7 media platforms. Figure 2 below summarizes the key steps of our data collection and analyses.

8 **Figure 2 Research Method Workflow**



9  
 10 **3.1 Data Collection**

11 The workload of covering a large number of case sites required us to employ mixed data  
 12 collection approaches, including the authors’ direct data collection activities and the use of field  
 13 investigators. We collected data through four different sources as summarized in Table 2.

Table 2 Data Collection Sources

Data Collection Source	Informant*	Investigator	Data Collection Method
Meetings organized by the KM (Knowledge Management) Community of the Confederation of Indian Industry (CII), a major Indian industry association, in Bengaluru.	20 Chief Knowledge Officers (CKO) and senior managers of knowledge management and innovation at information technology services and software multinationals (e.g. firms similar to IBM, Infosys and Oracle).	Authors	Presentations and interviews with open-ended questions
A research forum on social media and innovation, held in collaboration with CII's Knowledge Community Bangalore, National Association of Software and Services Companies (NASSCOM), National Human Resource Development (NHRD) Network Bangalore and the Fulbright Foundation in India	About 200 participants of the forum, representing 60 IT and software firms (e.g. firms similar to SAP, Redhat, and Motorola)	Authors	Keynote speeches; Small group sessions with participants discussing employment of social media for innovation in their organization and the ensuing challenges.
Part-time graduate programs in business-related fields	Full time IT and software managers and professionals, who were pursuing a graduate degree (e.g. interviewing subjects from firms similar to Accenture, Unisys, or Wipro)	Graduate students, delegated as field investigators	As part of the curricular activities, the selected and trained degree-pursuing senior professionals choose a large organization, conduct interviews with key informants to discuss the use of social media platforms in the organization, and submit a case report.
Executive MBA program	Full time middle and senior managers, who were pursuing an executive MBA degree (e.g. interviewing subjects from firms similar to GE, EMC, or Volvo)	EMBA students, delegated as field investigators	Same as above

\* Firm examples are for illustration purposes only, as actual identity of firms and individuals are confidential.

Eisenhardt (1989) recommends and discusses the use of a hierarchically organized team of multiple investigators. Using this approach, the principal researchers develop data collection guidelines, train other investigators, and then send different teams of investigators to collect qualitative data at different case sites. In addition to the benefits of covering more case sites and collecting richer data, using multiple investigators also allows case sites to be reviewed from different perspectives of the investigators, thus avoiding conformational biases of a small number of investigators involved in the entire data collection and analyses process (Eisenhardt, 1989).

Following the suggestion of Eisenhardt (1989), many previous studies have employed hierarchically organized teams of multiple investigators (e.g., Ein-Dor & Segev, 1982; Mandviwalla & Watson, 2014; Mintzberg, Raisinghani, & Théorêt, 1976; Sabherwal & Robey, 1993, 1995). One of the major concerns of using this approach, however, is the quality of data collected. As suggested in previous studies (Sabherwal & Robey, 1993, 1995), scholars should address this concern by carefully choosing and using only experienced field investors who are familiar with the subject matter and the organizational context. While many previous studies taking this data collection approach used undergraduate and graduate students, we followed the approach employed by Mandviwalla and Watson (2014) and used only experienced managers either attending MBA and executive MBA programs or participating in professional research forums on social media and innovation. We also corroborated and complemented the findings from data collected by field investors with findings from data by authors themselves.

In the first and second data sources mentioned above, the interviews take forms of presentations and focus group discussion, which were transcribed later as case reports. In the third and fourth data sources mentioned above, field investigators, under the supervision of the researchers, conducted interviews with a selected organization and wrote up their interviews as



case reports. Combining data from all the four data sources, we compiled 79 cases from 53 firms. The average employee number of these firms is approximately 143,000, and a large portion of the case sites are multinational software firms, multinational IT services firms, and IT divisions of multinational firms. We also varied the roles of our interviewees from team leaders to top business executives so that we can collect data about social media usage at different organizational levels.

Table 3 below summarizes the study sites our case library covers.

**Table 3 the Summary of Case Study Sites and Key Informants**

<b>(a) Industry Distribution</b>		<b>(b) Size Distribution</b>	
<b>Industry Sector</b>	<b>Case Site Count</b>	<b>Employee Numbers</b>	<b>Case Site Count</b>
Information Technology & Telecommunications	30	5,000 ~10,000	4
Professional Services	10	10,000 ~ 50,000	8
Manufacturing	6	50,000 ~ 100,000	8
Education	3	>100,000	17
Retail & Wholesale Trade	2	Unknown <sup>note</sup>	16
Media	1		
Finance	1		
<b>Total</b>	<b>53</b>	<b>Total</b>	<b>53</b>

<b>(c) Geographic Distribution</b>		<b>(d) Key Informants Summary</b>	
<b>Country</b>	<b>Case Site Count</b>	<b>Job Titles</b>	<b>Case Site Count</b>
Multinational Company (MNC)	35	Engineer, Consultant, or Analysts	15
Indian MNC	18	Manager, Team Leader, or Department Head	24
<b>Total</b>	<b>53</b>	Vice President Level	4
		Executive Level	2
		Other or Anonymous <sup>note</sup>	34
		<b>Total</b>	<b>79</b>

Note: The employee numbers of some of the case sites are unknown because of (1) the company was anonymous in our original data source; or (2) the company's employee number is not available in both our original data source and/or public information sources. Similarly, the job titles of some of the informants are unknown in our original data source.

### 3.2 Data Analysis Approach

We organized, coded, and analyzed our collected case reports using NVivo. First, we loaded all the documents into NVivo, with one document for one case. Even though our 79 cases cover

53 distinctive firms, the cases covering the same firm usually each comprises of different social media initiatives pertaining to the firm, thus, we organized the cases separately. After initial document organization, we started a continuous data analysis process with two major phases.

The first phase of our data analyses focused on data coding. We started by developing a starting list of codes (Miles & Huberman, 1994) that were developed based on our review of the social capital and social media literature. The list of codes were set up as nodes in NVivo, and then two researchers independently read all the imported documents and highlighted the texts that capture the essence of a pre-determined code. During coding, the researchers remained open to data-emergent codes and adjusted the initial coding list accordingly (Eisenhardt, 1989). The researchers met periodically to resolve any discrepancies and discuss emerging codes or patterns. We continuously read and coded the documents and refined the list of codes in an iterative process, and at the same time discussed the case insights and referenced back to the relevant literature until both coders agreed that theoretical saturation had been reached (Eisenhardt, 1989; Myers, 1997). Table 4 below presents the codes, the categories of our coding results and the frequency of each code appearing in our data sources after the aforementioned iterative process. Among the columns of Table 4, the number of case sites covered refers to the number of our case sites from which the key informants discuss contents related to a given code. The number of references refers to the number of instances in which this code has been mentioned across all the case sites, for example, the first code “Social Media Systems/Platforms,” has been referred by our informants a total of 842 times in 78 out of the 79 cases.

**Table 4 Code List**

<b>Starting and Data-emergent codes</b>	<b>No. of Cases Covered<sup>1</sup></b>	<b>No. of References<sup>2</sup></b>	<b>Framework and Literature Background</b>
Social Media Artifact			(Ali-Hassan et al.,

Social Media Systems/Platforms	78	842	2015; Bharati et al., 2014; Faraj et al., 2011; Mandviwalla & Watson, 2014; Robert et al., 2008; Wasko & Faraj, 2005)
Social Media Projects/Initiatives	21	57	
Social Capital			(Adler & Kwon, 2002; Nahapiet & Ghoshal, 1998; Wasko & Faraj, 2005)
Structural Capital	75	259	
Relational Capital	51	169	
Cognitive Capital	48	139	
Cycles of Social Exchange			
Directions of Exchange			
<Internal Exchange>			(Leonardi, 2014, 2015; Mandviwalla & Watson, 2014; Risius & Beck, 2015)
Individual to Individual	23	45	
Individual to Group	30	58	
Individual to Organization	30	60	
Group to Individual	26	41	
Group to Group	19	23	
Group to Organization	7	9	
Organization to Individual	18	30	
<External Exchange>			(Culnan et al., 2010; Gallaughier & Ransbotham, 2010; Luo, Zhang, & Duan, 2013; Miller & Tucker, 2013; Rishika, Kumar, Janakiraman, & Bezawada, 2012)
Customer to Organization	35	73	
Organization to Customer	11	12	
The public to Organization	24	54	
Organization to the Public	16	34	
Elements in Exchange <sup>3</sup>			(Bharati et al., 2015; Faraj et al., 2011; Leonardi, 2014)
Activities of Data Exchange	64	198	
Activities of Knowledge Exchange	72	279	
Activities of Preliminary Idea Exchange	57	126	
Outcome of Ideation	33	56	(Briggs & Reinig, 2010; Reinig, Briggs, & Nunamaker, 2007; Santanen et al., 2004)

Notes:

1. *No. of Cases Covered* (Column #2) refers to the number of our case sites from which a given code has been at least mentioned once by the key informants.

2. *No. of References* (Column #3) refers the number of instances in which this code has been mentioned across all the case sites.

3. Four idea co-creation activities were conceptualized further based on reviewing the specific exchange activities of data, information, and ideas, as we explain in Section 4.3 and Appendix A-3 later.

The second phase of our data analyses focuses on identifying constructs and then their

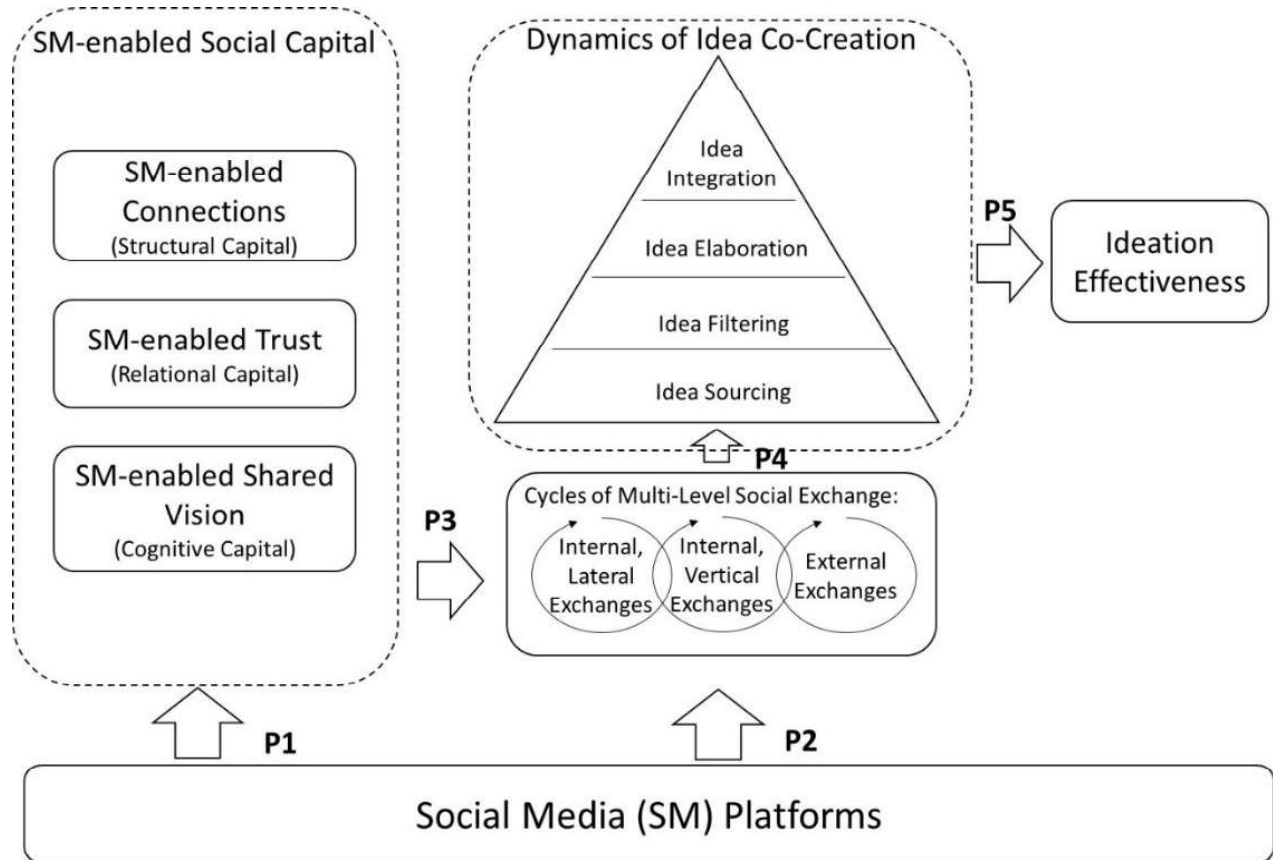
relationships from the list of codes. We first grouped codes with similar or related conceptual meanings to form constructs. In some cases, we further grouped constructs to form second-order constructs. For example, as reported in Table A-1 of Appendix A, our list of codes may suggest that firms use social media for activities such as building new connections and offering new outlets for existing connections. Reflecting on the data and the literature, we concluded that this group of codes reflected structural capital among ideation participants, a first-order construct in our findings. Similarly, we identified groups of codes that support relational capital and cognitive capital. Then, the three first-order constructs were further grouped under a second-order construct as social capital. As another example, as shown in Table A-2 of Appendix A, our list of codes from the first phase of data analyses focus on the directions and the contents of exchanges among ideation participants happening on social media platforms. At the second phase, we reflected on these exchanges and summarized them in a multi-level exchange framework, which in turn developed our construct of social exchange. We had similar processes to come up with all the other constructs. With constructs identified, we then paid attention to their co-occurrences in the same case reports as well as the sequence of them mentioned in these reports, which help us develop our theoretical propositions that connect these constructs. We also reviewed the identified constructs and relationships further by checking whether they confirm or contradict the extant literature. In some cases, further abstraction and theorization were made to the identified constructs and relationships to enfold the literature (Eisenhardt, 1989).

The richness of our qualitative data enabled us to identify a rich set of constructs and their relationship in this process. Although no single case covers all the constructs and their relationships, the large number of case sites provides adequate opportunity to validate the constructs and relationships identified and thus, jointly, ensures that the proposed theory is grounded in data.

## 4. Findings

Our data analyses lead to a theoretical framework of social ideation, as depicted in Figure 3 below. We further elaborate the constructs and propositions of this theory and link them to empirical evidence in the rest of this section.

**Figure 3 Theoretical Model**



### 4.1 Social Media and the Social Capital Development of Ideation Participants

We started our data analyses by validating the findings of previous studies on the impact of social media usage on the development of social capital (e.g., Mandviwalla & Watson, 2014), but specifically among individual ideation participants. Adding to the literature, our data and analyses reveal in detail the mechanisms by which external and enterprise social media platforms can contribute to the development of different dimensions of social capital, including structural,

cognitive, and relational capital among ideation participants. We elaborate these mechanisms below and summarize our empirical evidence in Table A-1 of Appendix A.

#### **4.1.1 Structural Capital**

Our results show how social media builds new connections between those ideation participants that may not have contact otherwise. In addition, social media also increases the agility of communication among existing connections. Structural capital, as one dimension of social capital, captures the configuration of network ties and their appropriability. In particular, we noticed the following ways through which structural capital develops on social media platforms.

**New Connections:** Social media puts employees who have never met one another before in touch. This is especially applicable within geographically dispersed service organizations. For example, one manager reported that the firm's global social media platform *"help[s] in identifying resources required for a certain job. Project managers would be able to search for the desired skill set, look at their availability, quickly start a voice or video conversation and if they meet the requirements quickly pull them into their project."*

**Existing Connections:** Social media sometimes also serves as a preferred method of communication for employees who already know one another, especially when the communication needs to be asynchronous and less formal. Such communication exists especially among geographically dispersed virtual teams. For example, as one of our informants mentions, *"it [a social media platform] has been very helpful in member interactions and building relationships across different geographies...It gives a platform to connect members across the globe and innovate collectively, which would have been very difficult otherwise."*

#### **4.1.2 Cognitive Capital**

Our results show that the frequent use of social media helps establish a shared vision within

the organization through blogs, online training sessions, and informal conversations that distribute vision and strategy messages. In particular, we noticed the following ways through which cognitive capital develops on social media platforms.

**Training:** Firms are using social media for training, especially on codes of conduct and socializing new employees, which build organizational norms. For example, one firm explained its social-media-based training platforms as follows, *“the trainings could be related to company policies that could be made mandatory and enforced on all employees. Follow-up can be initiated in cases of noncompliance. Business specific, technical trainings can be optionally availed.”*

**Distributing Vision and Strategy:** Many of our case sites also use their social media platforms to distribute vision and strategy information. For example, one uses “video events” to *“bring alive the context and make a more human-to-human interaction possible. As a goal, the platform aims to enable employees to watch internal webcasts while participating in Twitter-like discussions, quizzes, surveys, and polls.”* With the help of social media, organizations are able to get feedback from employees and learn about assimilation of the firm strategy and vision, thus avoiding the top-down-only distribution pathway.

#### **4.1.3 Relational Capital**

Our results also show that social media can help build the sustainability of interpersonal relationships by allowing greater frequency of contact between employees, offers the opportunity to bond based on personal interests and by portraying credible expertise. In particular, we notice the following ways by which relational capital develops on social media platforms.

**Sustainability of ties:** As social media makes consistent communication more convenient, it can transform weak ties into strong ones. One firm in our study uses social media techniques to allow employees to network with each another: *“...the half-life of connections made at these*

*[employee] meetings was very short until technology provided us a means to support the network over time.”*

**Bonding:** Social media users often leverage social media platforms to interact on matters of common interest with their peers and are likely to continue these positive interactions with each other. Discovering and discussing matters of common interest improves identification between employees. In one case, for example, an employee learned of her manager’s love for trekking on the company social platform, so they undertook a hike together. She said, *“This really helps build a better cordial relationship between manager and the employee.”* In another case, social media once served as a *“platform to promote participation in Fun at Work events,”* and *“the [social media] platform has lend itself quite naturally on this aspect.”*

**Credibility:** It may be hard for an employee to trust a teammate’s knowledge or judgment when the employee knows little about the other person’s background and skill. Social media facilitates trust by enabling the development of credibility. Status symbols such as badges earned through past activities and the number of “likes” on personal or project profile pages are all examples of outside endorsements that can lead to immediate trust in that person’s skills. One of our informants describe that in her organization, for example, *“Every employee has got their profiles and networks [on an internal social medial platform]. When I register, I got my profile of who I am, what I am interested in, what is my area of expertise, what people can come and ask me about... with whom I would like to follow, and the communities in which I am interested in... The profile and the directory services gives you the ability for you to know who you are and what it is all about yourself.”*

#### **4.1.4 Proposition Development**

The premise of our theorization is that, for ideation to be effective at the organizational level,



it needs to go beyond a mere sum of individuals' cognitive ideation efforts. The findings reported above in Section 4.1 show how social media platforms can enable exchanges among individual ideation participants to allow and facilitate the aggregation of their own data, knowledge, experiences, and cognitive outputs. We find that the influence of social media platforms starts with generating more social capital for individuals. Using social media platforms, individuals build new connections and interact with existing connections in innovative ways, thus increasing the density of social networks inside an organization and the connectedness of individuals of this organization to its outside environment. Consequently, the structural dimension of individuals' social capital is enhanced. Using social media platforms, individuals can also better maintain and leverage existing relationships through continuous bonding activities that often exceed their professional workspace. Consequently, trust will build up among individuals, and consequently the relational dimension of their social capitals increases. Lastly, social media platforms can be used for training, reinforcing an organization's vision and values, disseminating organizational culture, offering an open-discussion forum, and detecting individuals' sentiments and reactions to various organizational initiatives. Consequently, individuals will be more likely to share a common vision toward their work and thus the cognitive dimension of their social capital is enhanced.

Our findings on the relationship between the use of social media platforms and social capital are consistent with the literature (e.g., Ali-Hassan et al., 2015; Bharati et al., 2015; Leonardi & Vaast, 2017). Moreover, while previous studies have examined the impact of social media platforms on social capital, the findings were reported in a rather piecemeal and isolated manner, in that only a subset of the dimensions of social capital was addressed in a given study. Our findings complement previous studies by offering a comprehensive overview on the relationships between social media and social capital. We summarize our findings by proposing the following

relationship as the starting step for the theorization of social ideation:

*P1: The use of social media platforms can contribute to the formation of social capital, including structural, relational, and cognitive capital, for individual ideation participants in an organization.*

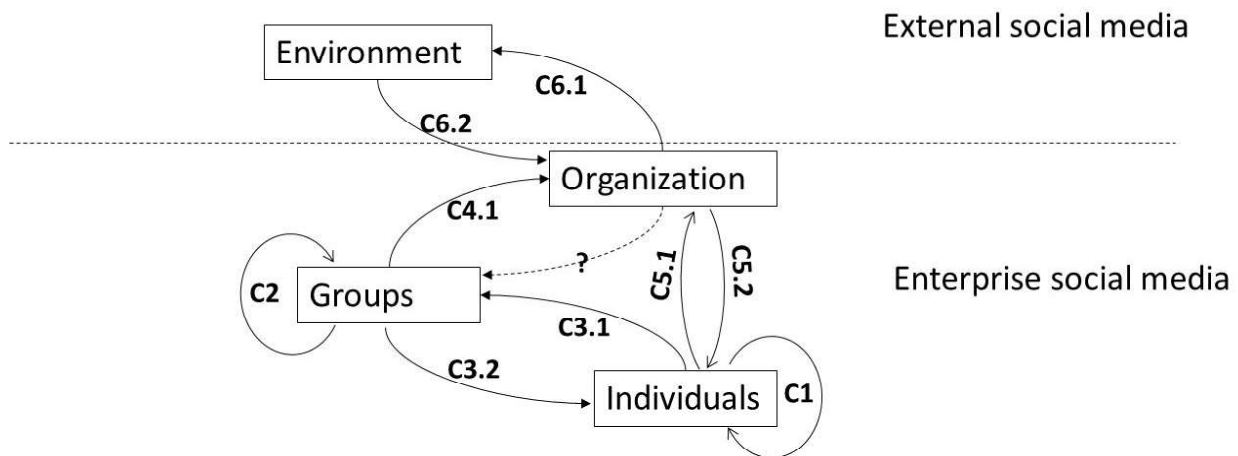
#### **4.2 Cycles of Multi-level Social Exchanges among Ideation Participants on Social Media**

The findings of our data analyses also highlight multi-level, multi-directional social exchange, both inside and outside an organization. During our coding, we consider four levels of social media-related activities: (1) the individual level– a person uses social media platforms individually; (2) the group level - a formal or informal team of individuals establishes its team identity on social media and uses social media platforms to interact with individual team members, other teams, or the organization; (3) the organizational level - an organization, usually official organizational accounts or senior management, use social media platforms to communication and act on behalf of the organization; and (4) the environmental level - various individual or organizational players use public social media platforms to interact with the focal organization or its constituents. During data analysis, we observed exchanges happening laterally at the individual level and group level. We also observe exchanges happening vertically in various directions including bottom-up, top-down, inside-out, and outside-in. Summarizing these findings, we visualize such exchanges in Figure 4 below.

In brief, we identify in total six different exchange cycles on various social media platforms, as depicted in Figure 4, which we labeled as Cycle C1 to Cycle C6 respectively. Cycles C1 and C2 are two internal, lateral exchanges cycles at the individual and group level respectively. Cycles C3, C4, and C5 are internal, vertical exchanges cycles across individual, group, and organizational levels, with each having two directions of exchanges either bottom-up or top-down (denoted as

C3.1, C3.2, etc. accordingly). Cycle C6 is the external, vertical exchange between an organization and its environment, especially its customers and the public. We further summarize or directly excerpt the exemplary contents exchanged in these circles in Table A-2 of Appendix A.

**Figure 4 Cycles of Multi-Level Social Exchange**



Note: From our qualitative dataset, we did not find references to the exchange from Organization to Groups (i.e., the dashed line path in the figure).

#### 4.2.1 Internal, Lateral Social Exchanges on Social Media Platforms

In Cycle C1, individual ideation participants use social media platforms to communicate a large variety of issues with each other. Many different types of contents are exchanged among individuals without a clearly common theme. It appears that, at the individual level, social media platforms mainly serve as a convenient communication tool. In this cycle, individuals help each other in ideation through intuiting and interpreting. Intuiting, or the learning process of recognizing possibilities or patterns based on previous experiences (Crossan et al., 1999), is critical for individuals to generate an initial idea. With the help of social media, individuals tap into each other's information, knowledge, expertise, and experiences in developing the initial ideas. Moreover, Cycle C1 also encompasses interpreting activities, which are learning processes through which an individual explains an often-preconscious idea to self and others (Crossan et al., 1999).

For example, individuals explain the ideas to each other to check their viability, solicit instant feedbacks, and helping others understand the logics behind the ideas. This individual-to-individual exchange helps refine previously vague ideas and allows collective efforts in developing them.

When the problem to be solved becomes complicated, multiple groups within an organization will be involved. Their group-level ideation efforts also need to be coordinated and integrated. From our case reports, we encounter many references that groups share their experiences and achievements, discuss overarching architecture of products, and collectively address clients' needs on social media platforms. Thus, it appears that social media platforms serve particularly as a powerful cross-group coordination and integration tool during Cycle C2.

#### **4.2.2 Internal, Vertical Social Exchanges on Social Media Platforms**

Ideation is a team and organizational effort that needs to transcend individuals' heroic activities. Preliminary ideas generated by one or a few individuals need to be developed before they can lead to mature ideas viable at the organizational level. Groups, either formal or informal, are an important mechanism to aggregate individuals' ideation efforts and outputs. From our data, we notice multi-level social exchange between individuals and groups as both bottom-up and top-down exchange pathways, labeled as C3.1 and C3.2 in Figure 4, which jointly form one circle. In C3.1, individuals leverage social media platforms to exchange contents with a group as a whole, such as sending updates, requesting help, or disseminating information; and, in C3.2, groups also leverage social media platforms to assign tasks, provide information and feedback, and conduct training. Through C3.1 and C3.2 collectively, individuals' ideation efforts start to aggregate. Observing the contents being exchanged in C3.1 and C3.2, we continue to notice the presence of collective interpreting activities (Crossan et al., 1999) as individuals explain their ideas or progress to a group of stakeholders and the group, as a whole, offers feedback and appraisal to individuals.

We also start to notice the emergence of integrating activities (Crossan et al., 1999) as individuals join forces towards a common goal and their activities are coordinated.

We continue observing the aggregation of ideation activities from the group level to the organizational level. For an idea to become viable at the organizational level, business executives at the top level need to allocate critical resources and recognize promising ideation processes. According to our case analyses, groups leverage various social media platforms to propose new, innovative attempts, suggest new strategies or directions, and contribute to organizational knowledge repertoire. However, interestingly, from our data, we only observe the one-way exchange from groups to the organization, as in C4.1, but not in the opposite direction. It appears that, at least on social media platforms, organizations tend to engage in social exchange directly with individuals, as further elaborated below in exchanges C5.1 and C5.2. The contents being exchanged from groups to the organization on social media platforms, as our data suggest, tend to be formal.

Cycle 5 depicts the social exchange between individuals and their organizations. According to the literature, the exchange from individual to the organizational level could possibly overcome bureaucratic barriers to idea flows in organizations with rigid structures and, consequently, democratize innovations (von Hippel, 2009). We observe from our case analyses that organizations crowd-source ideas and suggestions from their employees, which allow ideas to flow from the bottom to the top, as in C5.1. We also observed that organizations leveraged social media platforms to conduct employee training, disseminating and explaining new policies and rules, and sharing news and updates, as in C5.2. The exchanges activities at this level contribute to institutionalizing, or the learning processes through which organizations articulate rules and norms, define and specify tasks, and ultimately ensure desirable routines emerging (Crossan et al., 1999).

Institutionalizing ideation activities is critical for an organization to move from ad hoc innovation activities to systematic, coordinated ideation organization-wide.

#### **4.2.3 External Social Exchanges on Social Media Platforms**

Cycles C1 to C5 mainly happen inside an organization, mostly on enterprise social media platforms. We also notice various exchange activities across organizational boundaries in Cycle C6. Organizations leverage both self-developed and third-party-provided social media platforms to engage in exchanges with their customers or the public. The literature has intensively documented this type of exchange, such as using social media to deliver customer services (e.g., Culnan et al., 2010; Gallagher & Ransbotham, 2010; Jarvenpaa & Tuunainen, 2013) or managing public relations (e.g., Luo et al., 2013; Zhang, 2015; Zhou, Lei, Wang, Fan, & Wang, 2015). Our case analyses collectively confirm the consensus in the literature that social media platforms enhance the linkage between organizations and their environment. Among various constituents of an organization's environment, our data particularly highlights the exchange between the organization and its customers or the public. These findings are consistent with previous findings that organizations leverage external social media platforms to engage with their customers to discover new demand or pilot test new ideas (Majchrzak & Malhotra, 2013) as well as leverage these external platforms for public relation management and reputation building (Benthaus, Risius, & Beck, 2016).

Our findings pertaining to the external social exchanges on social media platforms connect to the broad literature streams of open innovation and crowdsourcing. When information, knowledge, preliminary ideas, or even innovations themselves, are sourced from outside, organizations need to internalize them by incorporating them into the organizations' own innovation processes. As depicted in Figure 4, according to our data analyses, external social exchanges are an integral part

of the multi-level social exchange cycles, and the influence of external resources can propagate throughout the organizations through other lateral or vertical exchanges. While our research focus is not on open innovation or crowdsourcing, it complements these related literature streams by encompassing external and internal exchanges in one integral framework, as in Figure 4.

#### **4.2.4 Proposition Development**

Our findings in Section 4.2 above highlight the social exchange of information, knowledge, and preliminary ideas that span across multiple levels including individual, group, organization, and environment. These social exchanges could happen laterally among individuals or among groups; they could happen vertically, in both bottom-up and top-down directions, between individuals, groups, and organizations. The exchanges also happen between an organization and its environment, through which an organization uses social media to learn about its environment and project its own messages back to the environment. While the contents of these lateral and vertical exchanges vary, collectively these exchanges serve as the foundation for effective ideation aggregation. Although ideas are ultimately produced by an individual's cognitive process, individuals can stimulate each other's idea generation by sharing, discussing, and questioning their preliminary ideas. Groups, organizations, and the environment assist individuals' cognitive processes, and, more importantly, the multi-level exchanges ensure that individuals can join force to produce ideas viable at the organizational level. Social media platforms provide the technical infrastructure for these multi-level social exchanges to happen. In summary, we propose that:

*P2: The use of social media platforms enables multi-level social exchanges of data, knowledge, and preliminary ideas among ideation participants.*

Previous studies have argued that social media is the “*social lubricant*” for exchanges among people (Leonardi & Meyer, 2015). Our proposition P2 also recognizes the enabling role of social

media in social exchange. However, as technology artifacts, social media platforms alone cannot guarantee that they lubricate the exchange processes: while they do make the exchanges feasible, and possibly more efficient, the effectiveness of such exchanges largely still relies on the dyadic relationships between the exchange parties, just like in offline exchanges. There is limited understanding on how social media can become a social lubricant in the literature, but in the broad literature of social capital theory, there has already been a fundamental proposition that social capital improves both the frequency and the effectiveness of social exchange (Chiu, Hsu, & Wang, 2006; Inkpen & Tsang, 2005; Nahapiet & Ghoshal, 1998). Because social media platforms develop social capital among ideation participants, as we discussed in the proposition P1, we further propose that it is mainly the social capital developed on social media platforms “lubricates” the multi-level social exchanges, while social media platforms themselves serve as technological enablers. In summary, we propose that:

*P3: Social capital generated on social media platforms facilitates the multi-level social exchanges of data, knowledge, and preliminary ideas among ideation participants.*

#### **4.3 The Emergence of Idea Co-Creation Activities**

When a broad spectrum of contents, including data, knowledge, and preliminary ideas, are exchanged laterally and vertically, internally and externally, as we discussed above, we start to notice the emergence of idea co-creation activities. As reported earlier in Table 4, our initial data analyses include coding the specific activities that involve the exchange of data, knowledge, and preliminary ideas. We then review these specific activities and categorize them into four dimensions of idea co-creation activities based on their purpose. The four idea co-creation activities emerging from further data analyses include idea sourcing, idea filtering, idea elaboration, and idea integration. We report the coded specific exchange activities and their mapping to the



four high-level idea co-creation activities in Table A-3 of Appendix A.

#### **4.3.1. Idea Sourcing**

We observe in our cases that social media platforms oftentimes serve as a vehicle to source ideas from both internal employees and outside users. Traditional innovators in a firm are often constrained by their knowledge and experience. Organizational structure and the typical division of labor add further constraints by grouping similar minds together in the same organizational units. Thus, when innovators are searching for a new solution, their search tends to be myopic, and innovations they create tend to be incremental (Levinthal & March, 1993). The sourcing of external or different knowledge is important for the assimilation of new technologies and solutions (Ettlie & Pavlou, 2006) including social media (Bharati et al., 2014). Social media enables these problem solvers to reach out for data, knowledge, and preliminary ideas that might be different to their own, thus, increasing the possibility of generating novel and revolutionary ideas (Afuah & Tucci, 2012). In particular, we observed two types of idea sourcing activities - soliciting through open calls and listening through social media analytics.

**Soliciting.** As observed in our cases, soliciting activities include open calls for solutions to an undefined or targeted group of audience. For example, organizations can launch open competitions for a specific problem on internal or external social media platforms. On internal social media platforms, organizations in our sample sometimes run structured polls and surveys to collect data on a specific topic. They sometimes present a problem and then ask for suggested solutions and ideas in special groups or forums. On external social media platforms, some organizations in our sample launch idea contests and crowdsourcing projects or directly solicit suggestions from targeted customers or other users. One of our case sites report how it used Facebook beyond one-way information sharing: *“the [company’s] Facebook page appears to be more about interaction*

*and entertainment, and ties together video and photographic media. It doesn't just provide information and news. The company also posts contests such as the current 'Super Fan' contest."*

**Listening.** We also find that organizations are parsing the contents on social media platforms without a specific question. For example, some firms analyze the sentiments of customers' blogs to understand or estimate their reactions to new features of a product. Some firms also collect and analyze information about their competitors from external social media platforms in order to learn from their disclosed or leaked ideas and cut in their innovations. Scholars have noticed that social media analytics could have pervasive influence on the business value of firms, covering the lifecycle of product development, production, use, and disposal (Fan & Gordon, 2014). One of our case sites refers to this type of searching activities as "*social listening*". They comment that "*Why did social listening evolve? Why do you need it in the first place? Simple answer is [that] not all data is under your control anymore. People will write in various forums; people will write in various blogs, even in the internal forums that you give them; they will create their own thread zone and so on and so forth. But the organization needs that data, if for nothing else, for its own growth.*" In this type of idea sourcing, organizations usually do not have a clearly pre-defined question that needs to be answered, but instead they parse the contents on social media platforms and wait for new and valuable data, knowledge, and preliminary ideas to emerge.

#### **4.3.2 Idea Filtering**

The challenge of leveraging social media for ideation is often not the quantity of information or preliminary ideas collected but the filtering of them. The organizational judges of new information or ideas could still be myopic as they are constrained by their own knowledge and experience, which can potentially jeopardize the value of idea sourcing from social media platforms. As reported in our case sites, organizations often further leverage social media platforms

for collaborative filtering, the process through which social media users contribute to the categorization, selection, and evaluation of raw information and preliminary ideas collected. We observe several forms of idea filtering on social media platforms. Social tagging, for example, is used for end users to spontaneously categorize the collected information and preliminary ideas. User rating systems are used for end users to vote for their favorite ideas or perform peer reviews. Influential users, opinion leaders, and discussion moderators often emerge on social media, and they are often voluntarily involved in summarizing existing ideas or commenting, comparing, and recommending their choices. Many social media platforms provide functionalities that support idea filtering. In addition, organizations in our sample often invest in custom digital tools, which are often based on text mining, to aggregate opinions, monitor trends, and identify valuable discussions that happen on social media platforms. As one example of collaborative idea filtering from our case sites, a company describes how social media helps users quickly filter out the most relevant information and ideas: *“This library of assets, deliverables and ideas [on a social media platform] represents the best thinking... This vault includes discussion forums, blogs, wikis and even ratings, comments, cross-search downloads and recommendation functionality such as, ‘other people who downloaded this also downloaded that...,’ making it easier to find information based on social actions.”*

#### **4.3.3. Idea Elaboration**

Idea elaboration is the organizational process that multiple participants clarify the concepts of, add detailed design features to, and evaluate the viability of existing preliminary ideas, which has been widely documented on social media platforms (Piller & Walcher, 2006). Idea elaboration is the critical step that transforms a “hunch” or a prototype design into the starting point of a feasible, organizational innovation project. Many preliminary ideas would be turned down in the

idea elaboration phase due to the lack of originality and technical feasibility, or due to non-compliance with the organization's overall positioning and strategies. We observe in our cases that organizations leverage social media platforms to allow users to elaborate on their preliminary ideas in the forms of Questions & Answers, open discussions, trials, feedbacks, and formal or informal expert reviews. One of our case sites highlights the importance of idea elaboration as the following: *"[the company] is extremely welcoming and accepting of the suggestions provided by young employees. But this acceptance doesn't necessarily mean that all the suggestions will be implemented. The reason is that, being a 30 year old company, it works in a certain way and the new idea from an employee with an experience of 1-2 years may not be acceptable to an employee with an experience of 10 years. The experienced employee might have seen several scenarios and would always take a multidimensional view on how clients and organizations work."*

#### **4.3.4 Idea Integration**

Ideation at the team and organizational levels is a collective endeavor and thus requires coordination and integration among participants. Integration refers to the activities through which individuals and individual teams' work can join force and function as a unified whole (Barki & Pinsonneault, 2005). To integrate ideas, organizations need to form mechanisms that can allow individuals or groups to coordinate and collaborate in order to manage the dependencies among different tasks or actors to ensure the smooth transition from one activity to the other (Roberts, Galluch, Dinger, & Grover, 2012). In particular, we observe two types of coordination and integration mechanisms existing on social media platforms: (1) structured mechanisms that often lead to planned idea coordination and integration for a predefined taskforce; and (2) spontaneous mechanisms that often generate serendipitous findings that are not previously planned. This finding echoes the recent discussion in the literature about the co-existence of formal and informal

coordination practices for knowledge co-creation in multidisciplinary teams (Ben-Menahem, von Krogh, Erden, & Schneider, 2016) and such integration in social media contexts (Beck, Rai, Fischbach, & Keil, 2015).

**Structural mechanisms.** Social media platforms can provide a structure that regulates the coordination and integration of innovators' efforts. For example, one company comments on the benefit of having a central, digitized idea repertoire as follows: *“Further innovation attempts by one individual or group should be made centrally available in order to be able to build constructively on those attempts. For an innovation to succeed, it is critical that knowledge of all relevant domains and functions is appropriately tapped in order to see most sure and fastest success of the idea.”* Idea integration also reduces duplicated innovation attempts, thus avoiding wasting companies' valuable human and other resources on reinventing wheels. As one company pointed out, *“Another critical aspect is avoiding duplication. Any effort made on ideas will use resources in terms of time, people and energy. These are extremely important assets for any organization and the need to tap into these and use them to their optimal best is a very grave need for any organization. Replication of efforts is a direct wastage, and if the best minds can be used to co-create rather than work in isolation and duplicate efforts, the direct impact on the bottom line is serious.*

**Spontaneous mechanisms.** In addition to a formal structure imposed by the design of social media functionalities, our data also reveals the spontaneous coordination and integration of ideation efforts by social media users. In many cases, users collectively co-create ideas without a priori plan. Sometimes, new ideas or solutions emerge when social media users just casually socialize online. To better leverage the serendipitous nature of ideation, some organizations in our sample allow their members to use corporate social media platforms for personal purposes,

although it might be partly regulated. They mention that, *“if an employee wanted to set up a special interest group for cricket in his department or unit, it couldn’t be considered inappropriate...Considering the personal space of individuals, communications among the employees were allowed within certain well defined boundaries.”* The consideration is that, by allowing employees to interact freely with each other or with outside customers, new ideas may emerge in unanticipated ways.

#### **4.3.5 Proposition Development**

Social exchanges in itself can sometimes be chaotic and will not necessarily produce ideas. Our findings however reveal four idea co-creation activities that can emerge from social exchanges happening on social media platforms.

Idea sourcing activities happen when individuals or organizations use social media platforms to acquire data, knowledge, and preliminary ideas as inputs to their own ideation activities. Idea filtering activities happen when users of social media platforms collaboratively select possible solutions using mechanisms such as voting, rating, or commenting. Idea elaboration activities happen as an iteration when users present their ideas, receive questions and feedback, clarify their original thinking, later, make modifications, and, in-turn, start another round of elaboration. Lastly, idea integration activities happen when pieces of an idea originally generated by different users is combined to form one unified solution. All the four activities build upon intensive and effective communication and exchange. Collectively, the activities of idea sourcing, filtering, elaboration, and integration represent IT-enabled idea co-creation activities enabled by social media platforms. Summarizing the emergence of such activities, we propose that:

*P4: Multi-level social exchanges of data, knowledge, and preliminary ideas enable idea co-creation activities, including idea sourcing, filtering, elaboration, and integration.*

## **4.4 Ideation Outcomes**

### **4.4.1 Ideation Effectiveness**

Previous ideation studies, especially at the cognitive or team levels, define ideation effectiveness as the degree to which ideation processes can lead to ideas with high levels of novelty, variety, quality, and quantity (Shah, Smith, & Vargas-Hernandez, 2003). Conceptualizing ideation as a process of searching for solutions in a potential solution space, ideation scholars argue that the novelty and variety of ideas reflect the exploration of such solution space, and the quality and quantity of ideas reflects the outcome of such exploration (Nelson, Wilson, Rosen, & Yen, 2009; Shah et al., 2003). High variety implies that a larger part of the potential solution space has been covered during ideation and high novelty implies that unusual or unexpected solutions are found in the marginal regions of the potential solution space (Shah et al., 2003). The quality of ideas refers to the feasibility of the ideas and the usefulness of the ideas in attaining the innovation goal (Reinig et al., 2007). The quantity of ideas refers to the total number of distinctive ideas generated.

In our study, we consider the ideas generated at the cognitive or team levels as preliminary ideas, and we need to extend the definition of ideation effectiveness to the organizational level. As discussed earlier, preliminary ideas need to be collectively filtered, elaborated, and integrated in order to develop innovative ideas that are viable at the organizational level. Some high quality preliminary ideas may represent the best solution from an individual or a team's perspective. However, they may be infeasible for an organization because of resource or environmental constraints. Some preliminary ideas may also be inconsistent with the organization's strategies, culture, or value systems, or incompatible with other high quality preliminary ideas. For an idea to be viable at the organizational level, we need to consider the overall potential impact of an idea on an organization. Thus, we define ideation effectiveness at the organizational level as the degree

to which ideation processes lead to ideas that are ready for implementation, and, if implemented, can potentially make significant and positive contributions to an organization's performance.

From our rich qualitative data set, we are able to observe direct evidence of effective ideation when informants from our case sites describe how ideation activities can be associated with certain realized or anticipated organizational benefits, both operationally and financially.

For operational benefits, our case sites report the positive influence of ideas generated on social media in areas such as project implementation, process improvement, and employee engagement. For example, one case site reports that, during the implementation phase of a major enterprise information system, they tried to *"pick up ideas and suggestions for implementation as posted by employees [on their enterprise social media platforms]. Some of the suggestions have led way to major revamp of internal systems and to make them employee friendly."* Another case site describes how proactively analyzing employees' social media content helps improve its human resource management practice: *"by looking at results of sentiment analysis [of employees' posts on social media platforms], [the company] has continuously been trying to improve its employee engagement to gauge and understand how organization can improve its services and offerings so as to reduce human factor challenges and be more user friendly."*

Another case site gives an example of financial benefits of ideation on social media as follows: *"[The company] has seen benefits of adopting and leveraging Social Media. It allows employees and contractors to react more quickly and effectively, but also to do it for in an optimized way. [The company] saves about \$250,000 for one product launch, by using blogs, rapid videos developed internally rather than professionals, and content reuse."*

Some of our case sites have conducted systematic evaluation on their social media investments, which provide evidence on the link between social media platforms and ideation. For example,



one of such evaluation reports that: “*the ROI [Return of Investment] of the system [its custom-built enterprise social media platform for knowledge sharing and idea co-creation] was evident within the first year of launch itself. There are multiple data points which reflect the clear success of the system.*”

#### **4.4.2 Proposition Development**

Lastly, we propose that, as social media platforms enable social exchange and idea co-creation activities, the effectiveness of ideation at the organizational level will likely improve.

When the four co-creation activities emerge on social media platforms, first, they enable wider participation in ideation activities. Expanded ideation participation will lead to higher novelty, variety, and quantity of preliminary ideas. Novelty, variety, and quantity are all positively associated with quality. If novelty and variety are low, high quality ideas are less likely to emerge because in these cases, only a small portion of the potential solution space has been explored (Shah et al., 2003). Moreover, although a high quantity of ideas may not necessarily guarantee high quality in the beginning, even bad ideas can be beneficial at the ideation stage because they can increase awareness of the situation, invoking productive counter-arguments, and inspiring others, which would ultimately increase the chance of the emergence of high quality ideas (Reinig & Briggs, 2008). Thus, idea co-creation activities on social media platforms, first of all, increases the effectiveness of ideation for preliminary ideas.

More importantly, idea co-creation activities assure the aggregation of preliminary ideas to form ideas that are viable at the organizational level. Through collaborative filtering and iterative elaboration, ideas that are infeasible, inconsistent with the organization’s overall strategy, or incompatible with other important ideas, will be identified and eliminated at an early stage, thus, ensuring the emergence of ideas viable at the organizational level. Moreover, idea integration

activities can ensure different preliminary ideas that constitute different aspects of a whole solution can be combined to provide one holistic solution to organization-level problems. Summarizing the effects of these four idea co-creation activities, we propose that:

*P5: Idea co-creation activities enabled by social media platforms can improve the effectiveness of ideation in an organization.*

## **5. Discussion and Conclusion**

### **5.1 Discussions**

This study addresses the research question of how social media platforms can contribute to organizational ideation. After analyzing a large number of cases, we propose a comprehensive theoretical model to depict the influence of social media on ideation. Social media facilitates organizations to develop structural, relational, and cognitive social capital. It also facilitates cross-boundary, multi-level social exchange cycles, from which a set of idea co-creation activities emerge and eventually leading to ideas that can potentially have positive performance impact on an organization. The five propositions, as summarized in Figure 3, comprise a conceptual framework of social ideation. Our study is exploratory in nature and may not be sufficient to support the claim of a full-fledged theory. Nevertheless, we consider it as a first step towards the development of a new social ideation theory.

The prospective social ideation theory aims to explicate a new solution mechanism to address an existing organizational problem, i.e., the ineffectiveness of ideation at the organizational level. As we reviewed in Section 2.1, ideation scholars have recognized that organizational settings can influence individuals' cognitive ideation processes, but these previously studied organizational settings are mostly either formal organizational structures and incentive systems or offline social networks (Kornish & Hutchison-Krupat, 2017). While the traditional approaches are certainly

relevant and probably still prevalent in ideation practice, the new social ideation approach differs from them significantly. In social ideation processes, participants are not pre-selected and not bound by formal organizational structures or rules, the ideation processes are not moderated by a central unit, and the critical success factors of social ideation is social capital generated on social media platforms.

The prospective social ideation theory also highlights the role of social media platforms as the key enabler of the proposed solution mechanism to the ideation problem. As we reviewed in Section 2.1, previous scholars have studied group decision support systems as an IT-enabled solution to improve the effectiveness of ideation. Group decision support systems are often designed to work in closed team settings, in which a fixed number of team members collaborate to generate solutions for a clearly defined problem. While traditional group decision support systems certainly still have their value, social media serves as a revolutionary technology that changes the nature of collaboration in ideation processes. By theorizing the role of social media platforms, this study updates the literature of IT-enabled decision-making and problem solving by incorporating these emerging technologies.

There are potentially a few boundary conditions of our prospective social ideation theory. Many of our sample firms are from IT-related industries, which are often characterized as high turbulence, dynamic, and with short product life cycles. The pressure for generating and implementing innovations is particularly high in such environments. There has been speculation that digital transformation is happening in every industry and there have been cases demonstrating the use of social media platforms for innovation in traditional, non-IT firms such as Lego (Schlagwein & Bjorn-Andersen, 2014). Nevertheless, the environmental boundary condition applies, as our theory is better suited to firms operating in relatively turbulent, dynamic, and

innovative environments. Another boundary condition of our theory might be the maturity of firms themselves. Our data covers mostly large and established firms. The theory might need to be adapted when it is applied to small- and medium-sized firms or startups. Small- and medium-sized firms and startups may not have the abundant resources to invest in their enterprise social media platforms but they also have a relatively flat organizational structure so that ideas may flow more smoothly without the help of social media platforms. The effects of social media platforms on ideation might thus be different in small- and medium-sized firms.

## **5.2 Theoretical Implications**

This study contributes to the ideation literature by proposing a social ideation theory. Although ideation is widely recognized as the first stage of organizational innovations (Crossan & Apaydin, 2010; Garud et al., 2013), as we reviewed in Section 2.1, the theories of ideation were mostly developed at the cognition level, and the role of organizations is only introduced as facilitator and regulator (e.g., Briggs & Reinig, 2010; Santanen et al., 2004). In the era of social media, managers can potentially better combine the knowledge and information that used to be previously dispersed and isolated by geographic and organizational boundaries. However, many challenges exist when organizations try to leverage social technologies to combine the distributed knowledge and information for generating ideas. By articulating the dynamics of idea co-creation, our model offers a new theoretical angle to understand how ideas can be socially generated.

Our proposed theory of social ideation is particularly suited to address the emerging ideation practice of open and decentralized participation. Traditional ideation studies mostly focus on closed teams of ideation participations trying to solve clearly defined problems. While the traditional ideation model of closed teams certainly still has its theoretical and practical value, there has been increasing research attention and practical enthusiasm on distributed problem

solving (Afuah & Tucci, 2012; Jeppesen & Lakhani, 2010). In distributed problem solving, a wide array of users who would traditionally not collaborate now join forces in solving a common problem and develop a solution. It is becoming commonly accepted that social media platforms can allow an organization to reach potential innovators from both inside and outside the organization. However, it remains unclear in the literature how the organization can manage the challenges associated with the volume, variety, velocity, and veracity of inputs it can obtain from social media where there is little structure or boundary to effectively govern ideation participants. Our social ideation theory presents the dynamic mechanism by which the pieces of an innovative solution that were widely dispersed inside and outside an organization are sourced, filtered, elaborated, and integrated on social media platforms.

This study also contributes to the growing literature on the organizational impact of social media in general. While there has been a large volume of studies on the impact of social media on individuals, studies on its organizational impact have lagged behind. Existing studies on social media's organizational impact often focus on the role of social media in shaping an organization's external environment or serving as a channel for the organization to communicate with its environment (e.g., Luo et al., 2013; Miller & Tucker, 2013). The direct impact of social media on organizations' operational performance remains unclear. By revealing how social media can help ideation at the organizational level, this study brings more research attention to the operational impact of social media.

### **5.3 Practical Implications**

Our findings can provide new insights to the practice of using social media in generating new ideas. As discussed earlier, firms using social media for ideation face severe challenges of "idea overloading": for examples, Dell adopted merely 11 ideas out of 6,200 from IdeaStorm (Di Gangi

et al. 2010), while IBM adopted only 350 ideas out of over 18,000 from ThinkPlace (Majchrzak et al. 2009). Our results suggest that firms may focus on nurturing and focusing on key steps of the idea co-creation process, especially collaborative filtering and the integration of preliminary ideas. With ideation participants questioning each other's preliminary ideas and further building on them, viable ideas will appear to emerge organically. Another challenge for firms using social media for ideation is the fluidity of ideation participants: when users of an open online community enter and exit frequently, without long-term commitments to continue developing an idea, how can firms ensure the continuity of ideation and innovation activities? Our findings again suggest organizations to focus on fostering and gently guiding the idea co-creation activities. While the participation of an individual user may appear intermittent, the activities of idea filtering, elaboration, and integration can help different users understand and build on each other's work, thus still ensuring ideation as a joint, collective effort at the organizational level.

Our findings also suggest a few findings that appear to be counter-intuitive. First, organizations may consider encouraging the active use of both internal and external social media platforms, including even, in some case, the hedonistic use of social media such as discussing a hobby in the working environment. When such hedonistic use is restrained to an acceptable level, they can be helpful in building social cohesion and social capital, which in turn is key to building trust and increasing social exchange among users. From this perspective, the hedonic uses of social media might not always be as counter-productive as we often assume in the workplace.

Second, due to the fear of losing control over social media activities, organizations often tend to impose stringent governance mechanisms on social media use, such as blocking access to public social media platforms, not allowing anonymity on enterprise social media platforms, or having moderators to review and filter the contents posted to these platforms. Despite the good intention

of having stringent social media governance, too much governance often leads to either lack of effective social media use or using social media merely as yet another reporting and communicating tool. The governance of social media should be an art of balancing flexibility and control. When social ideation is desired, the governance of social media should be able to nurture an open, participatory task environment for potential innovators to co-create ideas, yet at the same time the governance should also provide sufficient rules and guidance for the co-creation activities to emerge from otherwise random and chaotic social exchanges. For ideation, it might not be always advisable to have a closed committee of a few experts who manage and control the idea selection process, but instead organizations need to keep the processes of idea filtering, elaboration, and integration open and flexible and encourage participation and transparency. After all, social media technologies on their own will not be able to create nurturing environments for ideation and innovation. Such environments can only gradually develop based on the transformation of the organizational culture that builds connections with trust and shared vision.

#### **5.4 Limitation and Future Research Directions**

Our study remains an explorative qualitative study. Many propositions and arguments we derived from our cases need to be validated by further studies. Our specific data collection approach, while allowing us to capture a comprehensive picture of social media usage, also prevents us from studying deep enough in any one of the case sites. Furthermore, while the use of field investigators for data collection allows us to cover a larger volume of case sites, the field investigators, who are not trained as academic researcher, might potentially cause more biases in the data due to their different experiences and perspectives. Future qualitative studies focusing on fewer organizations but deeper at the process level may further develop our findings. Moreover, we should note that our findings are based on a sample of firms who were generally successful or

were actively exploring the use of social media for ideation. Failure stories of using social media for ideation or innovation are certainly abundant in practice and, analyzing them systematically may generate new theoretical insights.

Ideation is just the first step in innovation (Perry-Smith & Mannucci, 2017). Our study intends to focus only on this first step and does not explore the mechanisms through which social media platforms can contribute to other steps of innovation, especially the implementation of an innovative idea. Future studies can extend our social ideation model to investigate the dynamics of social exchanges on social media platforms during other phases of an innovation journey.

Our study encompasses both external and internal social media platforms. However, even for open innovations, organization boundary might still have a major role. Future studies can aim to develop finer-grained theories that depict the commonalities and differences when ideas are co-created either within or across organizational boundaries on enterprise or external social media platforms respectively.

The theoretical model we develop needs further quantitative validation. The complexity of our model, however, may lead to research design difficulties. We suggest two options for follow-up quantitative studies. First, future studies can divide our model and validate different parts of the model in separate studies. Second, in order to test and extend our holistic model, we particularly suggest future scholars to consider simulation modeling as a research method. Simulation models are particularly suitable to cover a large number of constructs in a complex nomological network and, thus, may generate new insights when used to model the behaviors and interactions of ideation participants on social media platforms.

The practice of generating ideas from social media platforms is becoming increasingly salient. Scholars need to catch up and develop theories to understand the phenomena better. We end this



paper by calling for more research attention broadly on the relationship between social media and innovation.

## References

- Adler, P. S., & Kwon, S.-W. (2002). Social capital: Prospects for a new concept. *Academy of Management Review*, 27(1), 17-40.
- Afuah, A., & Tucci, C. L. (2012). Crowdsourcing as a solution to distant search. *Academy of Management Review*, 37(3), 355-375.
- Ali-Hassan, H., Nevo, D., & Nevo, S. (2010). Mobile collaboration: Exploring the role of social capital. *The Data Base for Advances in Information Systems*, 41(2), 9-24.
- Ali-Hassan, H., Nevo, D., & Wade, M. (2015). Linking dimensions of social media use to job performance: The role of social capital. *The Journal of Strategic Information Systems*, 24(2), 65-89.
- Aral, S., Dellarocas, C., & Godes, D. (2013). Social media and business transformation: A framework for research. *Information Systems Research*, 24(1), 3-13.
- Barki, H., & Pinsonneault, A. (2005). A model of organizational integration, implementation effort, and performance. *Organization Science*, 16(2), 165-179.
- Bayus, B. L. (2012). Crowdsourcing new product ideas over time: An analysis of the Dell ideastorm community. *Management Science*, 59(1), 226-244.
- Beck, R., Pahlke, I., & Seebach, C. (2014). Knowledge exchange and symbolic action in social media-enabled electronic networks of practice: A multilevel perspective on knowledge seekers and contributors. *MIS Quarterly*, 38(4), 1245-1269.
- Beck, R., Rai, A., Fischbach, K., & Keil, M. (2015). Untangling knowledge creation and knowledge integration in enterprise Wikis. *Journal of Business Economics*, 85(4), 389-420.
- Ben-Menahem, S. M., von Krogh, G., Erden, Z., & Schneider, A. (2016). Coordinating knowledge creation in multidisciplinary teams: Evidence from early-stage drug discovery. *Academy of Management Journal*, 59(4), 1308-1338.
- Benbya, H., & Leidner, D. (2018). How Allianz UK used an idea management platform to harness employee innovation. *MIS Quarterly Executive*, 17(2), 141-157.
- Benthaus, J., Risius, M., & Beck, R. (2016). Social media management strategies for organizational impression management and their effect on public perception. *The Journal of Strategic Information Systems*, 25(2), 127-139.
- Bharati, P., & Chaudhury, A. (forthcoming). Assimilation of big data innovation: Investigating the roles of IT, social media, and relational capital. *Information Systems Frontiers*, in press.
- Bharati, P., Zhang, C., & Chaudhury, A. (2014). Social media assimilation in firms: Investigating the roles of absorptive capacity and institutional pressures. *Information Systems Frontiers*, 16(2), 257-272.
- Bharati, P., Zhang, W., & Chaudhury, A. (2015). Better knowledge with social media? Exploring the roles of social capital and organizational knowledge management. *Journal of Knowledge Management*, 19(3), 456-475.
- Boudreau, K. J. (2012). Let a thousand flowers bloom? An early look at large numbers of software app developers and patterns of innovation. *Organization Science*, 23(5), 1409-1427.

- Briggs, R. O., & Reinig, B. A. (2010). Bounded ideation theory. *Journal of Management Information Systems*, 27(1), 123 - 144.
- Chiu, C.-M., Hsu, M.-H., & Wang, E. T. G. (2006). Understanding knowledge sharing in virtual communities: An integration of social capital and social cognitive theories. *Decision Support Systems*, 42(3), 1872-1888.
- Crossan, M. M., & Apaydin, M. (2010). A multi-dimensional framework of organizational innovation: A systematic review of the literature. *Journal of Management Studies*, 47(6), 1154-1191.
- Crossan, M. M., Lane, H. W., & White, R. E. (1999). An organizational learning framework: From intuition to institution. *The Academy of Management Review*, 24(3), 522-537.
- Culnan, M. J., McHugh, P. J., & Zubillaga, J. I. (2010). How large U.S. Companies can use Twitter and other social media to gain business value. *MIS Quarterly Executive*, 9(4), 243-259.
- Dennis, A. R., & Valacich, J. S. (1993). Computer brainstorming: More heads are better than one. *Journal of Applied Psychology*, 78(4), 531-537.
- Dennis, A. R., Valacich, J. S., Connolly, T., & Wynne, B. E. (1996). Process structuring in electronic brainstorming. *Information Systems Research*, 7(2), 268-277.
- Di Gangi, P. M., Wasko, M., & Hooker, R. (2010). Getting customers' ideas to work for you: Learning from Dell how to succeed with online user innovation communities. *MIS Quarterly Executive*, 9(4), 213-228.
- Diehl, M., & Stroebe, W. (1987). Productivity loss in brainstorming groups: Toward the solution of a riddle. *Journal of Personality and Social Psychology*, 53(3), 497-509.
- Ein-Dor, P., & Segev, E. (1982). Organizational context and MIS structure: Some empirical evidence. *MIS Quarterly*, 6(3), 55-68.
- Eisenhardt, K. M. (1989). Building theories from case study research. *The Academy of Management Review*, 14(4), 532-550.
- Ellison, N. B., Steinfield, C., & Lampe, C. (2007). The benefits of Facebook "friends:" social capital and college students' use of online social network sites. *Journal of Computer-Mediated Communication*, 12(4), 1143-1168.
- Ettlie, J. E., & Pavlou, P. A. (2006). Technology-based new product development partnerships. *Decision Sciences*, 37(2), 117-147.
- Fan, W., & Gordon, M. D. (2014). The power of social media analytics. *Communications of the ACM*, 57(6), 74-81.
- Faraj, S., Jarvenpaa, S. L., & Majchrzak, A. (2011). Knowledge collaboration in online communities. *Organization Science*, 22(5), 1224-1239.
- Gallaugh, J., & Ransbotham, S. (2010). Social media and customer dialog management at Starbucks. *MIS Quarterly Executive*, 9(4), 197-212.
- Gallupe, R. B., Dennis, A. R., Cooper, W. H., Valacich, J. S., Bastianutti, L. M., & Nunamaker, J. F. (1992). Electronic brainstorming and group size. *Academy of Management Journal*, 35(2), 350-369.
- Garud, R., Tuertscher, P., & Van de Ven, A. H. (2013). Perspectives on innovation processes. *The Academy of Management Annals*, 7(1), 775-819.
- Hwang, E. H., Singh, P. V., & Argote, L. (2015). Knowledge sharing in online communities: Learning to cross geographic and hierarchical boundaries. *Organization Science*, 26(6), 1593-1611.
- Inkpen, A. C., & Tsang, E. W. K. (2005). Social capital, networks, and knowledge transfer. *Academy of Management Review*, 30(1), 146-165.

- Jarvenpaa, S. L., & Tuunainen, V. K. (2013). How Finnair socialized customers for service co-creation with social media. *MIS Quarterly Executive*, 12(3), 125-136.
- Jeppesen, L. B., & Lakhani, K. R. (2010). Marginality and problem-solving effectiveness in broadcast search. *Organization Science*, 21(5), 1016-1033.
- Kane, G. C. (2014). Enterprise social media: Current capabilities and future possibilities. *MIS Quarterly Executive*, 38(1), 275-304.
- Knoll, S. W., & Horton, G. (2011). Changing the perspective: Using a cognitive model to improve thinklets for ideation. *Journal of Management Information Systems*, 28(1), 85 - 114.
- Kogut, B., & Zander, U. (1992). Knowledge of the firm, combinative capabilities, and the replication of technology. *Organization Science*, 3(3), 383-397.
- Kornish, L. J., & Hutchison-Krupat, J. (2017). Research on idea generation and selection: Implications for management of technology. *Production and Operations Management*, 26(4), 633-651.
- Kornish, L. J., & Ulrich, K. T. (2013). The importance of the raw idea in innovation: Testing the sow's ear hypothesis. *Journal of Marketing Research*, 51(1), 14-26.
- Kuegler, M., Smolnik, S., & Kane, G. (2015). What's in IT for employees? Understanding the relationship between use and performance in enterprise social software. *The Journal of Strategic Information Systems*, 24(2), 90-112.
- Kwahk, K.-Y., & Park, D.-H. (2016). The effects of network sharing on knowledge-sharing activities and job performance in enterprise social media environments. *Computers in Human Behavior*, 55, Part B, 826-839.
- Lamm, H., & Trommsdorff, G. (1973). Group versus individual performance on tasks requiring ideational proficiency (brainstorming): A review. *European Journal of Social Psychology*, 3(4), 361-388.
- Leonardi, P. M. (2014). Social media, knowledge sharing, and innovation: Toward a theory of communication visibility. *Information Systems Research*, 25(4), 796-816.
- Leonardi, P. M. (2015). Ambient awareness and knowledge acquisition: Using social media to learn "who knows what" and "who knows whom". *MIS Quarterly*, 39(4), 747-762.
- Leonardi, P. M., Huysman, M., & Steinfield, C. (2013). Enterprise social media: Definition, history, and prospects for the study of social technologies in organizations. *Journal of Computer-Mediated Communication*, 19(1), 1-19.
- Leonardi, P. M., & Meyer, S. R. (2015). Social media as social lubricant. *American Behavioral Scientist*, 59(1), 10-34.
- Leonardi, P. M., & Vaast, E. (2017). Social media and their affordances for organizing: A review and agenda for research. *Academy of Management Annals*, 11(1), 150-188.
- Levinthal, D., & March, J. (1993). The myopia of learning. *Strategic Management Journal*, 14(Winter Special Issue), 95-112.
- Luo, X., Zhang, J., & Duan, W. (2013). Social media and firm equity value. *Information Systems Research*, 24(1), 146-163.
- Majchrzak, A., Cherbakov, L., & Ives, B. (2009). Harnessing the power of the crowds with corporate social networking tools: How IBM does it. *MIS Quarterly Executive*, 8(2), 103-108.
- Majchrzak, A., & Malhotra, A. (2013). Towards an information systems perspective and research agenda on crowdsourcing for innovation. *The Journal of Strategic Information Systems*, 22(4), 257-268.

- Mandviwalla, M., & Watson, R. (2014). Generating capital from social media. *MIS Quarterly Executive*, 13(2), 97-113.
- Mednick, S. (1962). The associative basis of the creative process. *Psychological Review*, 69(3), 220-232.
- Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis: An expanded sourcebook* (2nd ed.). Thousand Oaks, CA: Sage.
- Miller, A. R., & Tucker, C. (2013). Active social media management: The case of health care. *Information Systems Research*, 24(1), 52-70.
- Mintzberg, H., Raisinghani, D., & Théorêt, A. (1976). The structure of "unstructured" decision processes. *Administrative Science Quarterly*, 21(2), 246-275.
- Myers, M. D. (1997). Qualitative research in information systems. *MIS Quarterly*, 21(2), 241-242.
- Nahapiet, J., & Ghoshal, S. (1998). Social capital, intellectual capital, and the organizational advantage. *Academy of Management Review*, 23(2), 242-266.
- Nelson, B. A., Wilson, J. O., Rosen, D., & Yen, J. (2009). Refined metrics for measuring ideation effectiveness. *Design Studies*, 30(6), 737-743.
- Nijstad, B. A., & Stroebe, W. (2006). How the group affects the mind: A cognitive model of idea generation in groups. *Personality and Social Psychology Review*, 10(3), 186-213.
- Nonaka, I. (1994). A dynamic theory of organizational knowledge creation. *Organization Science*, 5(1), 14-37.
- Nunamaker, J., Hale, J., & Konsynski, B. R. (1987). Facilitating group creativity: Experience with a group decision support system. *Journal of Management Information Systems*, 3(4), 6-19.
- Osborn, A. (1957). *Applied imagination, principles and procedures of creative thinking* (2nd ed.). New York: Scribner.
- Papadopoulos, T., Stamati, T., & Nopparuch, P. (2013). Exploring the determinants of knowledge sharing via employee weblogs. *International Journal of Information Management*, 33(1), 133-146.
- Perry-Smith, J. E., & Mannucci, P. V. (2017). From creativity to innovation: The social network drivers of the four phases of the idea journey. *Academy of Management Review*, 42(1), 53-79.
- Piller, F. T., & Walcher, D. (2006). Toolkits for idea competitions: A novel method to integrate users in new product development. *R&D Management*, 36(3), 307-318.
- Recker, J., & Lekse, D. (2015). A field study of spatial preferences in enterprise microblogging. *Journal of Information Technology*, Article in Press.
- Reinig, B. A., & Briggs, R. O. (2008). On the relationship between idea-quantity and idea-quality during ideation. *Group Decision and Negotiation*, 17(5), 403-420.
- Reinig, B. A., Briggs, R. O., & Nunamaker, J. (2007). On the measurement of ideation quality. *Journal of Management Information Systems*, 23(4), 143-161.
- Rishika, R., Kumar, A., Janakiraman, R., & Bezawada, R. (2012). The effect of customers' social media participation on customer visit frequency and profitability: An empirical investigation. *Information Systems Research*, 24(1), 108-127.
- Risius, M., & Beck, R. (2015). Effectiveness of corporate social media activities in increasing relational outcomes. *Information & Management*, 52(7), 824-839.
- Robert, L. P., Dennis, A. R., & Ahuja, M. K. (2008). Social capital and knowledge integration in digitally enabled teams. *Information Systems Research*, 19(3), 314-334.

- Roberts, N., Galluch, P. S., Dinger, M., & Grover, V. (2012). Absorptive capacity and information systems research: Review, synthesis, and directions for future research. *MIS Quarterly*, 36(2), 625-648.
- Sabherwal, R., & Robey, D. (1993). An empirical taxonomy of implementation processes based on sequences of events in information system development. *Organization Science*, 4(4), 548-576.
- Sabherwal, R., & Robey, D. (1995). Reconciling variance and process strategies for studying information system development. *Information Systems Research*, 6(4), 303-327.
- Santanen, E. L., Briggs, R. O., & De Vreede, G.-J. (2004). Causal relationships in creative problem solving: Comparing facilitation interventions for ideation. *Journal of Management Information Systems*, 20(4), 167-197.
- Sarker, S., Xiao, X., Beaulieu, T., & Lee, A. S. (2018). Learning from first-generation qualitative approaches in the IS discipline: An evolutionary view and some implications for authors and evaluators (part 1/2). *Journal of the Association for Information Systems*, 19(8), 752-774.
- Schlagwein, D., & Bjorn-Andersen, N. (2014). Organizational learning with crowdsourcing: The revelatory case of lego. *Journal of the Association for Information Systems*, 15(11), 754-778.
- Shah, J. J., Smith, S. M., & Vargas-Hernandez, N. (2003). Metrics for measuring ideation effectiveness. *Design Studies*, 24(2), 111-134.
- Toubia, O. (2006). Idea generation, creativity, and incentives. *Marketing Science*, 25(5), 411-425.
- Tsai, W., & Ghoshal, S. (1998). Social capital and value creation: The role of intrafirm networks. *Academy of Management Journal*, 41(4), 464-476.
- Van Osch, W., Steinfield, C. W., & Balogh, B. A. (2015, 5-8 Jan. 2015). *Enterprise social media: Challenges and opportunities for organizational communication and collaboration*. Paper presented at the the 48th Hawaii International Conference on System Sciences (HICSS).
- von Hippel, E. (2006). *Democratizing innovation*. Boston, MA: The MIT Press.
- von Hippel, E. (2009). Democratizing innovation: The evolving phenomenon of user innovation. *International Journal of Innovation Science*, 1(1), 29-40.
- Vuori, V., & Okkonen, J. (2012). Knowledge sharing motivational factors of using an intra-organizational social media platform. *Journal of Knowledge Management*, 16(4), 592-603.
- Wasko, M. M., & Faraj, S. (2005). Why should I share? Examining social capital and knowledge contribution in electronic networks of practice. *MIS Quarterly*, 29(1), 35-57.
- Wooten, J. O., & Ulrich, K. T. (2017). Idea generation and the role of feedback: Evidence from field experiments with innovation tournaments. *Production and Operations Management*, 26(1), 80-99.
- Yan, Y., Davison, R. M., & Mo, C. (2013). Employee creativity formation: The roles of knowledge seeking, knowledge contributing and flow experience in web 2.0 virtual communities. *Computers in Human Behavior*, 29(5), 1923-1932.
- Yoo, Y., Boland, R. J., Lyytinen, K., & Majchrzak, A. (2012). Organizing for innovation in the digitized world. *Organization Science*, 23(5), 1398-1408.
- Zhang, J. (2015). Voluntary information disclosure on social media. *Decision Support Systems*, 73(C), 28-36.
- Zhou, M., Lei, L., Wang, J., Fan, W., & Wang, A. G. (2015). Social media adoption and corporate disclosure. *Journal of Information Systems*, 29(2), 23-50.

Appendix A – Supplementary Data and Evidence

Table A-1: Social Media Platforms and Social Capital

Three Dimensions of Social Capital		
Social Connections (Structural Capital)	Trust (Relational Capital)	Shared Vision (Cognitive Capital)
<b>How do Internal Social Media Platforms Contribute to the Development of Social Capital?</b>		
<ul style="list-style-type: none"> <li>Builds new connections</li> <li>Communities for hobbies, passions, needs (e.g. Six Sigma, transportation)</li> <li>Allow junior employees to share ideas with management (e.g. innovation, policy feedback)</li> <li>Search for people in the organization with the right expertise (e.g. projects, proposals, travel)</li> <li>Offers a better outlet for existing connections</li> <li>Functional or team groups to facilitate knowledge and project management (e.g. IT, client team)</li> <li>Embedding social aspects into current process systems (e.g. ERP, Salesforce)</li> <li>Virtual meetings and brainstorming for geographically dispersed team members (e.g. Webex)</li> <li>Company-wide communications (e.g. from HR, management)</li> </ul>	<ul style="list-style-type: none"> <li>Sustains relationships</li> <li>Increases the “half life” of connections by offering frequency (e.g. meeting someone at an off-site)</li> <li>Communities for ongoing interaction</li> <li>Socializing new employees to extend connections (e.g. HR)</li> <li>Allows bonding</li> <li>Share personal information, (e.g. cricket, trekking, photos)</li> <li>Promote social events (e.g. fun at work)</li> <li>Employee onboarding (e.g. training, buddies, interns)</li> <li>Virtual meetings and brainstorming for geographically dispersed team members (e.g. see each other)</li> <li>Visible recognition lends credibility</li> <li>Showcase and benefit from expertise as shown in profile (e.g. thermal engineers)</li> <li>Badges that acknowledge employees for skills and accomplishments (e.g. “innovation wall of fame,” likes, “hard worker,” endorsement)</li> </ul>	<ul style="list-style-type: none"> <li>Transforms training</li> <li>Video sessions or webcasts allowing discussion and/or incorporating “gamification” (e.g. “code of conduct,” “performance enablement”)</li> <li>Similar materials for new employees to onboard them</li> <li>Distributes messages from top management</li> <li>Dialogue where management communicates strategy and policy; employees provide feedback through comments and sentiment (e.g. blog posts, video interviews)</li> <li>Answer urgent questions for the whole organization (e.g. related to public relation disasters, FAQs)</li> <li>Encourages an interactive, open company culture</li> <li>Use 360 feedback from social media to guide employee performance</li> <li>Culture of innovation by encouraging participation and feedback from all employees</li> </ul>
<b>How do External Social Media Platforms Contribute to the Development of Social Capital?</b>		
<ul style="list-style-type: none"> <li>Builds new connections</li> <li>Generate awareness through high</li> </ul>	<ul style="list-style-type: none"> <li>Sustains relationships</li> <li>Maintain profiles or communities that offer</li> </ul>	<ul style="list-style-type: none"> <li>Facilitates feedback from external parties on firm direction/strategy</li> </ul>

<p>number of followers by offering content on many sites (e.g. Twitter, Facebook, Tumblr)</p> <ul style="list-style-type: none"> <li>- Identify quality prospective employees (e.g. employee networks, universities)</li> <li>- Acquire and qualify leads for new business (e.g. LinkedIn)</li> <li>• Offers a better outlet for existing connections <ul style="list-style-type: none"> <li>- Engage commercial clients (e.g. B2B with LinkedIn)</li> <li>- More timely information to customers and clients (e.g. new products)</li> <li>- Resolving issues for customers (e.g. customer care, troubleshooting)</li> </ul> </li> </ul>	<p>ongoing communication (e.g. Twitter, Facebook)</p> <ul style="list-style-type: none"> <li>• Allows bonding <ul style="list-style-type: none"> <li>- Timely, customized responses to customers (e.g. direct communication with IT)</li> <li>- Longer content available for those with time (e.g. videos, blogs, "live chats," games)</li> <li>- Can offer incentives for participation (e.g. loyalty card points)</li> <li>- Striving for full disclosure and transparency (e.g. "well-researched" content shared)</li> <li>- Better understanding customers through listening (e.g. satisfaction surveys, data)</li> </ul> </li> <li>• Visible recognition lends credibility <ul style="list-style-type: none"> <li>- Employees act as public advocates for firm (e.g. training on appropriate conduct)</li> <li>- Get current or past customers to recommend firm or products (e.g. LinkedIn professional recommendation)</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>- Elicit ideas from public (e.g. "product refinement," crowd sourcing)</li> <li>- Understand sentiments related to directions and actions taken</li> <li>• Distributes messages from top management: <ul style="list-style-type: none"> <li>- Thought leadership from managers (e.g. CEO blog)</li> </ul> </li> <li>• Shapes company reputation <ul style="list-style-type: none"> <li>- Educates public about products (e.g. YouTube videos) <ul style="list-style-type: none"> <li>- Address public relation disasters quickly and efficiently</li> <li>- Attention to the genre of content shared (e.g. technology and innovation content only)</li> </ul> </li> <li>- Creation of external training content (e.g. universities)</li> </ul> </li> </ul>
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**Table A-2: Social Media and the Flows of Social Exchange**

<b>Exchange Circles</b>	<b>The Exemplary Contents of Exchanges, Excerpted or Summarized from Data</b>
[C1] Individual to Individual	<ul style="list-style-type: none"> <li>• Feedback and input, such as on ideas or RFPs</li> <li>• “Ideas and IPs”</li> <li>• Q&amp;A in projects and from experts</li> <li>• “Raise service requests”</li> <li>• “Expertise” and “thoughts about the organization”</li> <li>• “Technical stuff, to satisfy their real estate need, general queries, official queries etc.”</li> <li>• “External online trainings”</li> <li>• Giving recognition to individuals for their help</li> </ul>
[C2] Group to Group	<ul style="list-style-type: none"> <li>• “Solutions for queries” and past work</li> <li>• News such as “future plans for the group’s products and services”</li> <li>• “Architecture of product and status of execution”</li> <li>• Share “achievements” in the form of project post mortem</li> <li>• Customer requests and proposals</li> <li>• Sharing between client groups and functional groups</li> </ul>
[C3.1] Individual to Group	<ul style="list-style-type: none"> <li>• Questions, ideas, strategies, ideas solutions, and “requirements”</li> <li>• Project and program updates</li> <li>• “technical and non-technical knowledge”</li> <li>• Performance appraisals using social data collection</li> <li>• Customer requests and proposals</li> <li>• “Sharing external online trainings”</li> <li>• “Testing” and “UI design”</li> </ul>
[C3.2] Group to Individual	<ul style="list-style-type: none"> <li>• Questions, workarounds, feedback, requirements and group news</li> <li>• Project and program updates</li> <li>• “Technical and non-technical knowledge” and trainings</li> <li>• Performance appraisals using social data collection</li> <li>• “Testing” and “UI design”</li> </ul>
[C4.1] Group to Organization	<ul style="list-style-type: none"> <li>• “Innovation attempts”</li> <li>• “Knowledge management”</li> <li>• “New direction and philosophy for the company”</li> <li>• “Team knowledge”</li> </ul>
[C5.1] Individual to Organization	<ul style="list-style-type: none"> <li>• Crowd sourcing to generate and develop ideas</li> <li>• Thoughts, discussion, and opinions on policies, products, services, strategies, initiatives</li> <li>• Sentiments, participation, engagement, internal challenges</li> <li>• Employees’ “experiences” and “areas of interest”</li> <li>• Performance appraisals using social data collection</li> <li>• Feedback on internal policies and strategies</li> </ul>
[C5.2] Organization to Individual	<ul style="list-style-type: none"> <li>• Training and “video events”</li> <li>• Strategies and “success stories” from management</li> <li>• PR message and policy dissemination</li> <li>• Organization news and “interviews with employees”</li> <li>• Summary of events from “across DCs”</li> <li>• “Meetings online on emerging technologies”</li> <li>• Performance appraisals using social data collection</li> </ul>



<p><b>[C6.1]</b> Organization to Environment</p>	<p><b>To Customers</b></p> <ul style="list-style-type: none"> <li>• New product information</li> <li>• PR message dissemination</li> <li>• “Customer support issues and other quickly changing information”</li> <li>• “Share thought leadership about business issues and challenges”</li> <li>• Data from other customers</li> <li>• Customized recommendations</li> </ul> <p><b>To the Public</b></p> <ul style="list-style-type: none"> <li>• Information directed at “analysts, investors, and other interested readers of financial information”</li> <li>• Training and research for universities</li> <li>• Information about products or services,</li> <li>• “new innovations” and other brand or company “Stories” or “news”</li> <li>• “Content that’s useful and valuable” and sometimes customized</li> <li>• “Thought leadership” from company executives</li> </ul>
<p><b>[C6.2]</b> Environment to Organization</p>	<p><b>From Customers</b></p> <ul style="list-style-type: none"> <li>• Insights from “customer patterns &amp; behavior” from tweets, blogs and forums for new offerings or personalization</li> <li>• Customer ideas, product and service feedback, support, complaints</li> <li>• Customer service via CRM and satisfaction through surveys</li> </ul> <p><b>From the Public</b></p> <ul style="list-style-type: none"> <li>• “Trends and chatter,” constructive criticism, and sentiments from social data such as tweets, posts, etc.</li> <li>• “Competitor information,” “latest technology,” market trends,</li> <li>• Resumes and applicant information or new talent</li> <li>• Reputation assessment, UGC(user-generated contents), and new ideas</li> </ul>

**Table A-3 Emerging Social Ideation Activities from Social Exchange on Social Media Platforms**

Elements Circulated in the Cycles of Social Exchange		
Data	Knowledge	Preliminary Idea
<p><b>Idea Co-creation Activities Emerging from Internal Social Media Platforms</b></p> <ul style="list-style-type: none"> <li>• <b>[Sourcing &amp; Filtering]</b> Assists in understanding what is working and what is not, which contributes to employee satisfaction and reduces churn: <ul style="list-style-type: none"> <li>- Structured data from polls and surveys employees fill out (e.g. on initiatives, trainings, anonymous feedback portal)</li> <li>- Sentiments can be gauged through unstructured data via content and comments posted (e.g. changes to HR policies, new initiatives)</li> <li>- Coordination of performance appraisals (e.g. 360 feedback from coworkers)</li> </ul> </li> <li>• <b>[Filtering, Elaboration, Integration]</b> Facilitates business management and strategy: <ul style="list-style-type: none"> <li>- Immediate updates from team members on project (e.g. task completion)</li> <li>- Real time updates from employees on new products (e.g. sales team)</li> </ul> </li> <li>• <b>[Integration]</b> Monitors employee engagement: <ul style="list-style-type: none"> <li>- If the number of ideation slows, can address the problem quickly (e.g. competitions, incentives, use of “champions”)</li> <li>- Measure participation on social platforms across individuals and groups (e.g. “perform user analysis”)</li> <li>- Use 360 degree feedback from social media to guide employee performance</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• <b>[Sourcing &amp; Integration]</b> Saves time and energy: <ul style="list-style-type: none"> <li>- Sharing project information across teams reduces reinvention (e.g. sharing innovation attempts)</li> <li>- Communities house the latest relevant information for easy access with alerts (e.g. IT portal, team hub, less dependence on email)</li> <li>- Find needed expertise quickly (e.g. expert search)</li> </ul> </li> <li>• <b>[Elaboration &amp; Integration]</b> Allows co-creation, which improves quality: <ul style="list-style-type: none"> <li>- Multiple users to contribute to document creation (e.g. Wikis, Sharepoint)</li> <li>- Feedback on documents or presentations (e.g. comments on blog posts)</li> </ul> </li> <li>• <b>[Integration]</b> Transforms training: <ul style="list-style-type: none"> <li>- Knowledge is captured in online training systems where employees can access and discuss, thereby increasing retention (e.g. reduces multitasking)</li> <li>- Trainings are always available, so can be accessed when relevant to a particular project or task</li> <li>- New employees can quickly get up to speed because information is readily available</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• <b>[Filtering &amp; Elaboration]</b> More ideas with less work: <ul style="list-style-type: none"> <li>- Allows continuous ideation instead of one-off brainstorming</li> <li>- Participants can assist in narrowing list of ideas to the best ones (e.g. Reddit style)</li> <li>- If number of ideation slows, can address the problem quickly (e.g. competitions, incentives, use of “champions”)</li> </ul> </li> <li>• <b>[Elaboration &amp; Integration]</b> Allows co-creation, which improves quality: <ul style="list-style-type: none"> <li>- Ideas get better through discussion and contributions of different reviewers (e.g. discussion boards)</li> <li>- Ideation naturally arises within communities, which can be open or closed (e.g. IT portal)</li> <li>- Use data gathered from social media for ideation</li> </ul> </li> <li>• <b>[Sourcing &amp; Elaboration]</b> Decentralizes ideation beyond the R&amp;D function: <ul style="list-style-type: none"> <li>- Junior and geographically dispersed employees can contribute new ideas and get feedback (e.g. crowd sourcing, individual blogs)</li> <li>- Groups or forums present a problem and ask for suggested solutions and ideas (e.g. “jamming” and “ideation events”)</li> </ul> </li> </ul>

## Elements Circulated in the Cycles of Social Exchange

Data	Knowledge	Preliminary Idea
<p><b>Idea Co-creation Activities Emerging from External Social Media Platforms</b></p> <ul style="list-style-type: none"> <li>• <b>[Sourcing, Filtering]</b> Derive competitive advantage from customer insights: <ul style="list-style-type: none"> <li>- Delivers direct feedback on quality of customer service and firm operations with opportunity to provide support (e.g. customer relationship management)</li> <li>- Understand company performance through online sentiments (e.g. use of social buzz as KPI)</li> <li>- Identify customer patterns and behaviors to customize their experience (e.g. predictive analytics)</li> <li>- Customer surveys to identify strengths and weaknesses of the relationship</li> </ul> </li> <li>• <b>[Sourcing, Filtering]</b> Capture unstructured data from public: <ul style="list-style-type: none"> <li>- Information on what competitors are doing, pulse of the market and new technologies</li> <li>- Perceptions about the firm or brand, latest buzz</li> <li>- Raise issues on products or services (e.g. “adverse events reports”)</li> <li>- Incorporate into products and services (e.g. pharma, personalization)</li> </ul> </li> <li>• <b>[Sourcing]</b> Derive information about prospective employees: <ul style="list-style-type: none"> <li>- Online platforms for application submission</li> <li>- Use of LinkedIn for references</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• <b>[Sourcing, Filtering]</b> Inform customer: <ul style="list-style-type: none"> <li>- Communication of customer support issues (e.g. Wiki)</li> <li>- Real time updates from employees on new products (e.g. sales team)</li> </ul> </li> <li>• <b>[Sourcing]</b> Educate public through advertising and PR: <ul style="list-style-type: none"> <li>• Provide information on products and services (e.g. YouTube videos, demos)</li> <li>- Inform on company news, priorities and innovations (e.g. corporate and management blogs)</li> <li>- Reinforce need for products and brands (e.g. Facebook)</li> </ul> </li> <li>• <b>[Sourcing]</b> Participate in important discourse: <ul style="list-style-type: none"> <li>- Universities and PhD students (e.g. inside look, research, training)</li> <li>- Offer thought leadership in important forums (e.g. technology)</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• <b>[Sourcing, Filtering, Elaboration]</b> Ideas from customers: <ul style="list-style-type: none"> <li>- Co-innovate with customers (e.g. applied innovation)</li> <li>- Delivers customer feedback on products and services allowing modification or customization</li> </ul> </li> <li>• <b>[Sourcing, Filtering, Elaboration]</b> Ideas and content from the public: <ul style="list-style-type: none"> <li>- User generated content and ideas (e.g. images, invention designs)</li> <li>- Use of influencers to generate content and ideas (e.g. contest)</li> </ul> </li> <li>• <b>[Sourcing, Filtering, Elaboration, Integration]</b> Build an ecosystem of innovation partners: <ul style="list-style-type: none"> <li>- Management blogs discussing their ideas</li> <li>- External partners, customers, consumers, employees all ideating together (e.g. innovation management tool)</li> </ul> </li> </ul>